Programme specification

1. Overview/ factual information

Programme/award title(s)	MSc Biosciences
Teaching Institution	University Centre Leeds (UCLeeds)
Awarding Institution	The Open University (OU)
Date of first OU validation	21/08/2020
Date of latest OU (re)validation	2022/23
Next revalidation	
Credit points for the award	180
UCAS Code	
JACS Code	B0 or C0? (B100 or C110?)
Programme start date and cycle of starts if appropriate.	September 2020
Underpinning QAA subject benchmark(s)	Quality Assurance Agency. (2015) Characteristics Statement: Master's Degree. London: QAA. Quality Assurance Agency for Higher Education. (2019) Subject Benchmark Statements **Biomedical Sciences**. London: QAA Quality Assurance Agency for Higher Education. (2019) Subject Benchmark Statements **Biosciences**. London: QAA Quality Assurance Agency for Higher Education. (2019) Subject Benchmark Statements **Chemistry**. London: QAA
Other external and internal reference points used to inform programme outcomes. For apprenticeships, the standard or framework against which it will be delivered.	ST0759 Research Scientist apprenticeship standard
Professional/statutory recognition	n/a
For apprenticeships fully or partially integrated Assessment.	Partly
Mode(s) of Study (PT, FT, DL, Mix of DL & Face-to-Face) Apprenticeship	Full-time and part-time

Duration of the programme for each mode of study	FT: 12 months; PT: 24 months
Dual accreditation (if applicable)	n/a
Date of production/revision of this specification	February 2020

Please note: This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided.

More detailed information on the learning outcomes, content, and teaching, learning and assessment methods of each module can be found in the student module guide(s) and the students handbook.

The accuracy of the information contained in this document is reviewed by the University and may be verified by the Quality Assurance Agency for Higher Education.

2.1 Educational aims and objectives

The Masters in Biosciences programme will give students an opportunity to study theoretical and practical aspects of a broad range of scientific disciplines at Master's level. Taught modules will help you deepen your understanding of topics such as the molecular basis of disorders of the human body, the processes involved in developing new therapeutic agents and the ways in which medical diagnoses can help clinicians treat patients most effectively.

The course involves a large amount of laboratory practical work, allowing students to develop high-level skills in methods and technologies that are key to modern Bioscience research. There is a 60-credit *Dissertation* module, supported by a 20 credit Preparation *for Research* module, which together will allow students to experience the planning (including literature searches and applying for ethical approval) and execution of a substantial self-directed research project. Through this, students will learn not only to utilise laboratory techniques to generate accurate and reliable data, but also how to manage time and shared resources in a busy working lab.

Throughout the course there is an emphasis on the production, presentation and processing of data. Accurate and reliable measurements are critical in all scientific industries, and this course will emphasise the importance of data as well as teaching students how to evaluate the quality of data and manipulate it to draw valid conclusions. The *Bioinformatics and data processing* module will support and enhance this, covering modern computer-based techniques for dealing with the large data sets that are increasingly common in Bioscience.

It aims to:

- Develop practitioners who have innovative approaches to the theory and practice of science
- Produce individuals who work in an evidence-led manner

- Develop a high level of ability in data analysis with critical evaluation to produce justified conclusions
- Produce postgraduates who can use existing information to inform decisions about the implementation of experimental procedures
- Enable postgraduates to manage, lead and respond to change
- Facilitate collaborative working
- Encourage postgraduates to formulate research priorities for the immediate future.
- Produce postgraduates who are able to plan and execute laboratory investigations independently and assess the results generated by these activities
- Produce postgraduates who are able to work independently and are confident and able problem solvers who can rise to meet challenges.
- Produce postgraduates who cultivate intellectual curiosity and intellectual independence through project-based, activity-orientated and self-regulated learning.

2.2 Relationship to other programmes and awards (Where the award is part of a hierarchy of awards/programmes, this section describes the articulation between them, opportunities for progression upon completion of the programme, and arrangements for bridging modules or induction)
This course will provide a progression route to postgraduate study for students who complete either our BSc Biomedical Sciences (Biotechnical Sciences) or BSc Biomedical Sciences (Chemical and Pharmaceutical Sciences) programmes. It will also map to the new Level 7 Research Scientist Apprenticeship standard, and as such will provide a progression route for apprentices on level 3 or level 6 programmes. This meets the requirements of employers and the regional strategy to provide a talent pipeline of qualified personnel to supply STEM industries.

2.3 For Foundation Degrees, please list where the 60 credit work-related learning takes place. For apprenticeships an articulation of how the work based learning and academic content are organised with the award.
Apprentices would attend the University Centre on a day-release model over 2 years, studying for, and being assessed on, the academic content of taught modules in the same way as other students. The Level 7 Research Scientist Standard has been developed by Trailblazers to provide staff development for the laboratory science staff. Apprentices will complete work-based research with their employer, monitored and supported by academic staff. The team have experience working remotely with apprentices to deliver a project based in the workplace and have a range of learning opportunities which are accessible by the student such as a dedicated VLE site as well as regular remote meetings. Staff at University Centre have experience working with apprentices, employers and End Point organizations. Apprentices will receive input on the apprenticeship and EPA, preparing throughout their apprenticeship for end point. Delivery of the course will also highlight to apprentices (who access a separate range of resources through Moodle) where the course contributes to Competences and establishes awareness of the close links of delivery and assessment with EPA.

The Programme Manager and Assessor Trainer will work with apprentices to ensure achievement and offer support in tutorial and taught sessions weekly. The Assessor Trainer is also responsible for providing the link between the college and the workplace, monitoring and supporting progress towards EPA. This close linking between workplace and academic institution will provide a strong foundation on which to base acquisition of the academic qualification as well as the Standard. Materials designed to support the evolution of the collaborative project involving the workplace are used to ensure that targets are being met and progress continues at an appropriate rate. Regular tutorial and review provides support and that sufficient progress is being made. continuous feedback to workplace mentors and line managers on apprentice engagement and achievement also promotes achievement and allows the business organization an awareness of how the taught elements map to the Standard.

2.4 List of all exit awards
Postgraduate Certificate (60 credits) Postgraduate Diploma (120 credits) Master of Science (180 credits)

3. Programme structure and learning outcomes

Teaching for modules would be delivered on 2 days per week. There will also be flexible, online delivery which students will have to complete outside of these 2 days, along with significant private study for all modules. In order to complete the Dissertation module, students will initially be offered laboratory time for half a day per week and will be expected to conduct initial literature searches and plan their research outside of this time. Laboratory time will subsequently increase to a full day per week to enable lengthy procedures to be conducted.

Programme Structure - LEVEL 7					
Compulsory modules	**Credit points**	**Optional modules**	**Credit points**	**Is module compensatable?**	**Semester runs in**
Applied Biomedical Techniques (20 credits)	160			Yes	1
Cellular Pathology (20 credits)				Yes	1
Bioinformatics and data analysis (20 credits)				Yes	1+2
Advanced Pharmacology and Toxicology (20 credits)				Yes	2
Preparation for research (20 credits)				Yes	1
Dissertation (60 credits)				Yes	1+2
				No	
		Advanced Analytical Science (20 credits)	20	Yes	2
		Diagnostic techniques (20 credits)		Yes	2

Course Structure – Full Time

2 days per week plus either an evening or Saturday 'access session' to allow extra time for use of facilities. This would be a supervised session – but without formal teaching. The *Bioinformatics and Data Analysis* module will be delivered entirely online, however, this will be closely monitored and supported with regular short individual tutorials.

semester	am	Day 1	pm
1	Applied Biomedical Techniques		Cellular Pathology
2	Advanced Pharmacology and Toxicology		Advanced Analytical Science (OPTION)
			Diagnostic techniques (OPTION)
semester	am	Day 2	pm
1	Preparation for research		Dissertation
			Tutorial
2	Tutorial		
	Dissertation		

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Course Structure – Part Time (Apprentices will follow this structure on day release)

Year 1 - 1 day per week covering 80 credits of taught modules

semester 1	Applied Biomedical Techniques		Cellular Pathology
2	Advanced Pharmacology and Toxicology		Advanced Analytical Science (OPTION)
			Diagnostic techniques (OPTION)

Year 2 - 1 day per week plus evening or Saturday 'access session' covering 100 credits. The *Bioinformatics and Data Analysis* module will be delivered entirely online in year 2, however, this will be closely monitored and supported with regular short individual tutorials.

semester 1	Preparation for research		Dissertation
			Tutorial
2	Tutorial		
	Dissertation		

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Course Structure – Blended online with summer school (Apprentices may follow this route on block release)

This is a model that we may wish to use in the future in the case where apprentices are unable to attend the University Centre for one day per week but can complete all theoretical aspects of the work online and all essential practical work through an intensive summer school.

Year 1 - covering 80 credits of taught modules, mostly delivered online with some practical work and assessment through a summer school

Weeks 1-6	Advanced Analytical Science (all content and assessment online) OR Diagnostic techniques (all content and assessment online)
Weeks 7-12	Advanced Pharmacology and Toxicology (all content + one assessment online, one assessment in summer school)
Weeks 13-18	Cellular Pathology (all theoretical content delivered online – both assessments in summer school)
Weeks 19-24	Applied Biomedical Techniques (all theoretical content delivered online – both assessments in summer school)
Weeks 25-30	6-week summer school ● Induction programme – lab safety and introduction to laboratory techniques and equipment ● Practical work in Cellular Pathology – including formative and summative assessment ● Presentation for Cellular Pathology ● Presentation for Advanced Pharmacology and Toxicology ● Practical work in Applied Biomedical Techniques – including formative and summative assessment ● Face to face individual tutorials and progress monitoring

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Year 2 - covering 100 credits, mostly delivered online with laboratory access for Dissertation research available at a summer school

Weeks 1-6	Bioinformatics and Data Analysis (all content and assessment online)
Weeks 7-12	Preparation for research (all content and assessment online)
Weeks 13-24	Dissertation – initial planning and literature search – thorough and detailed planning of all methods and protocols that are to be used – all required equipment and chemicals identified and agreed with supervisor Parts of the thesis will be written and must be submitted as a draft at this stage before laboratory work begins
Weeks 25-30	6-week summer school ● Refresher induction – lab safety and recap of laboratory techniques and equipment ● Intensive laboratory work for formal scientific report ● Face to face individual tutorials and progress monitoring

Intended learning outcomes at Level 7 are listed below:

Postgraduate Certificate – these are the learning outcomes that must be met for the award of Postgraduate Certificate (they are a subset of the learning outcomes for Master of Science and follow the same numbering scheme)

Learning Outcomes – LEVEL 7 for award of **Postgraduate Certificate**	
3A. Knowledge and understanding	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
A2 – Critically evaluate recent advances in the production and analysis of chemical or biological data in relevant industrial contexts	● Lectures ● Seminars and student-led discussions based on individual research tasks ● Problem classes and workshops ● Self-directed learning **Assessment methods** ● Quizzes with vocationally relevant essay style (or longer answers) question ● Seminar discussions with formal structure ● Poster and oral presentations including audience questions ● Production of formal scientific paper ● Presentation of results including plenary questions ● Formal written exam

3B. Cognitive skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
B2 - Construct conclusions by synthesising information from more than one source B3 - Apply advanced knowledge to the solution of complex problems, including those in which there is no one unique solution	● Lectures ● Seminars ● Problem classes and workshops ● Independent online learning **Assessment methods** ● Seminar discussions with formal structure ● Poster and oral presentations with audience questions ● Data analysis tasks

	● Case studies ● Production of formal scientific paper ● Presentation of results including plenary ● Formal written exam

3C. Practical and professional skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
C1 - Plan and perform research tasks using up to date standard techniques and methodologies	● Self-directed learning ● Laboratory activities ● Demonstrations ● Simulations and interactive electronic activities including simulations of laboratory practical activities **Assessment methods** ● Poster and oral presentations with audience questions ● Laboratory practical activities ● Reports in formal scientific style ● Data analysis tasks

3D. Key/transferable skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
D2 - Use appropriate IT solutions to store, process and communicate data and research findings	● Self-directed independent learning ● Demonstration and self-development of specialist IT skills ● Laboratory activities ● Demonstrations ● Simulations and interactive electronic activities **Assessment methods**

	● Poster and oral presentations with audience questions ● Reports in formal scientific style ● Data analysis tasks ● Case studies ● Production of formal scientific paper ● Formal presentation of results including plenary

Postgraduate Diploma – these are the learning outcomes that must be met for the award of Postgraduate Diploma (they are a subset of the learning outcomes for Master of Science and follow the same numbering scheme)

Learning Outcomes – LEVEL 7 for award of **Postgraduate Diploma**	
3A. Knowledge and understanding	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
A1 – Critically analyse and evaluate key areas of biological, biomedical, pharmaceutical and data sciences A2 – Critically evaluate recent advances in the production and analysis of chemical or biological data in relevant industrial contexts A3 - Draw upon a broad knowledge of practical techniques and methodologies used in biological, biomedical, pharmaceutical and data sciences to inform the planning or execution of research activities.	● Lectures ● Seminars and student-led discussions based on individual research tasks ● Problem classes and workshops ● Self-directed learning **Assessment methods** ● Quizzes with vocationally relevant essay style (or longer answers) question ● Seminar discussions with formal structure ● Poster and oral presentations including audience questions ● Production of formal scientific paper ● Presentation of results including plenary questions ● Formal written exam

3B. Cognitive skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
B1 - Identify and critically analyse literature sources in order to evaluate scientific practices and relate them to own research. B2 - Construct conclusions by synthesising information from more than one source B3 - Apply advanced knowledge to the solution of complex problems, including those in which there is no one unique solution	● Lectures ● Seminars ● Problem classes and workshops ● Independent online learning **Assessment methods** ● Seminar discussions with formal structure ● Poster and oral presentations with audience questions ● Data analysis tasks ● Case studies ● Production of formal scientific paper ● Presentation of results including plenary ● Formal written exam

3C. Practical and professional skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
C1 - Plan and perform research tasks using up to date standard techniques and methodologies C3 - Identify relevant information in published sources; compare and contrast information from different sources, including novel information generated from own research.	● Self-directed learning ● Laboratory activities ● Demonstrations ● Simulations and interactive electronic activities including simulations of laboratory practical activities **Assessment methods** ● Poster and oral presentations with audience ● Laboratory practical activities ● Reports in formal scientific style ● Data analysis tasks

3D. Key/transferable skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
D2 - Use appropriate IT solutions to store, process and communicate data and research findings	● Self-directed independent learning ● Demonstration and self-development of specialist IT skills ● Laboratory activities ● Demonstrations ● Simulations and interactive electronic activities **Assessment methods** ● Poster and oral presentations with audience ● Reports in formal scientific style ● Data analysis tasks ● Case studies ● Production of formal scientific paper ● Presentation of results including plenary

Master of Science

Learning Outcomes – LEVEL 7 for award of **Master of Science**	
3A. Knowledge and understanding	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
A1 – Critically analyse and evaluate key areas of biological, biomedical, pharmaceutical and data sciences A2 – Critically evaluate recent advances in the production and analysis of chemical or biological data in relevant industrial contexts	● Lectures ● Seminars and student-led discussions based on individual research tasks ● Problem classes and workshops ● Self-directed learning **Assessment methods**

A3 - Draw upon a broad knowledge of practical techniques and methodologies used in biological, biomedical, pharmaceutical and data sciences to inform the planning or execution of research activities.	● Quizzes with vocationally relevant essay style (or longer answers) question ● Seminar discussions with formal structure ● Poster and oral presentations with audience questions ● Production of formal scientific paper ● Presentation of results including audience questions ● Formal written exam

3B. Cognitive skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
B1 - Identify and critically analyse literature sources in order to evaluate scientific practices and relate them to own research. B2 - Construct conclusions by synthesising information from more than one source B3 - Apply advanced knowledge to the solution of complex problems, including those in which there is no one unique solution	● Lectures ● Seminars ● Problem classes and workshops ● Independent online learning **Assessment methods** ● Seminar discussions with formal structure ● Poster and oral presentations with audience questions ● Data analysis tasks ● Case studies ● Production of formal scientific paper ● Presentation of results including plenary ● Formal written exam

3C. Practical and professional skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
C1 - Plan and perform research tasks using up to date standard techniques and methodologies C2 - Manage, lead and respond to change individually and as part of a team C3 - Identify relevant information in published sources; compare and contrast information from different sources, including novel information generated from own research. C4 - Appraise laboratory procedures against standards of good ethical, environmental or sustainable practice	● Self-directed learning ● Laboratory activities ● Demonstrations ● Simulations and interactive electronic activities including simulations of laboratory practical activities **Assessment methods** ● Poster and oral presentations with audience questions ● Laboratory practical activities ● Reports in formal scientific style ● Data analysis tasks

3D. Key/transferable skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
D1 - Plan, organise and manage independent projects, working individually and in cooperation with others D2 - Use appropriate IT solutions to store, process and communicate data and research findings D3 - Summarise and report on research findings in written and oral formats	● Self-directed independent learning ● Demonstration and self-development of specialist IT skills ● Laboratory activities ● Demonstrations ● Simulations and interactive electronic activities **Assessment methods** ● Poster and oral presentations with audience questions ● Reports in formal scientific style ● Data analysis tasks ● Case studies

	● Production of formal scientific paper ● Formal presentation of results including plenary

4. Distinctive features of the programme structure

- **Where applicable, this section provides details on distinctive featurs such as:**
- where in the structure above a professional/placement year fits in and how it may affect progression
- any restrictions regarding the availability of elective modules
- where in the programme structure students must make a choice of pathway/route
- **Additional considerations for apprenticeships:**
- how the delivery of the academic award fits in with the wider apprenticeship
- the integration of the 'on the job' and 'off the job' training
- how the academic award fits within the assessment of the apprenticeship

We believe we have developed a uniquely cross-disciplinary, practical-based offering that has been developed with input from many local companies and will develop the knowledge and skills of students in areas of both biology and chemistry that is valued by employers. A broad and practical-skills-focussed course like this is not available from any local competitors.

The programme places an emphasis on the balance between core scientific theory and skills, setting both into industry-relevant contexts, informed by discussion with a number of employers. It aims to produce students with the tools to succeed in employment with appropriate transferable skills, as specified by our industrial contacts. These are regularly updated and feed into delivery. There is an outstanding range of opportunities to develop practical scientific experience valued by sectors such as chemical industries (e.g. fine or bulk chemical production, analytical or environmental chemistry), bioscience and biotechnology industries (e.g. production and regulation of microbial processes including production of pharmaceuticals and bio-products) and clinical research specializations. The programme aims to generate confident hands-on postgraduates with a can-do attitude and understanding of business landscape and economic environment of specialist scientific employers.

Unlike traditional courses at other institutions, almost all of our teaching takes place in laboratories, with very little delivery in classrooms. We strongly believe that the use of practical activity-led teaching in most of the modules sets this course and its students apart from the majority (where most teaching will be in lecture theatres and classrooms, supplemented by laboratory-based teaching in separate sessions).

Throughout the course students will have many opportunities to develop a wide range of practical skills that are valued by employers in a range of industries. The employability skills of our postgraduates are enhanced by developing their confidence in working in a laboratory environment and through their extensive practice of common industry-standard procedures along with currency in work practices. There is also a cross pollination through working with apprentices which feeds into the currency of the course as well as industry knowledge and practice. Apprentices benefit from a course designed to produce students who have hands on as well as academic training which aims to provide industry relevant experience even for those

students who are not apprentices. This is reflected in the choice of assessments (both formative and summative) as well as the nature of the briefs which identify and offer vision as to situations and strategies found in industry. Key amongst these are problem solving and the management of a project, valued by employers and assessed in the Level 7 Standard.

We have consulted carefully with a range of employers to ensure that both the theoretical content and the practical experience that is delivered fits their requirements, ensuring that our postgraduates have the best chance of being well-equipped to compete for jobs in the science sector.

The range of modules offer an excellent opportunity to work across disciplines, providing an innovative and contemporary way of developing scientific skills. This is particularly well-evidenced in the Advanced Pharmacology and Toxicology, Preparation for Research and dissertation core modules, through which students gain experience of techniques specific to both bioscience and chemical laboratories.

The balance of applied bioscience and chemistry also sets this programme apart from many others, providing opportunities for students to progress into industries requiring significant chemical knowledge. This would not be possible for postgraduates of equivalent courses from local competitors where there is not the opportunity to study as much chemistry. This has also been cited by employers as a reason for their choosing to offer apprenticeships through the department.

Key Learning & Teaching Strategy and Methods

Students will attend the University Centre on two days per week but will be expected to conduct a significant amount of independent self-driven learning outside of this time. In their time at the University Centre, lectures will be used to introduce topics and provide guidance as to the nature of the independent study that is required. Progress will be monitored through group workshops and tutorials in which material will be discussed and formative assessment activities undertaken.
Almost all teaching will be in laboratories and much of this time will be used to demonstrate and practice the use of equipment and standard techniques of relevance to the topics under discussion. Students will also have supervised laboratory time in which they will be expected to conduct their own research.

The use of guest speakers in some modules will provide an industrial perspective on some topics and will raise awareness of the range of activities undertaken in local scientific organisations - inspiring students and placing the theory that is being learned firmly in a real-world context.

The use of specially designed joint teaching-laboratory spaces allows for a mix of practical and theoretical based delivery. Some sessions will involve a blend of short, traditional expositions and lecture-style presentations interspersed with practical activities designed to reinforce or extend the material that has been presented. Other sessions will involve longer, investigative practical activities. Students will be directed to particular chapters of textbooks or journal articles to read prior to teaching sessions, and there will also be videos, interactive quizzes,

lecture notes and simulations of laboratory activities available for study before and after taught sessions.

In this way students will have the opportunity to learn and discover for themselves new information using a wide variety of methods. They will also be regularly performing laboratory activities commonly employed in industry with the aim of increasing their competence and confidence in working safely and effectively in a laboratory environment.

The University Centre, and particularly the HE Science team, have a strong background in using technology to enhance learning. A rich and accessible single point of access for all material has been developed using the VLE - which has some services, such as Turnitin, embedded and also links seamlessly to other platforms such as Google Classrooms and Sites.

As well as providing access to written materials, videos, interactive quizzes and simulations, the VLE will provide a central place in which all work will be submitted (through integration with Turnitin). Students will be directed to use the VLE also as a means of communication through the embedded forums, wikis, blogs and instant messaging facilities.

Students will be taught to use common IT tools such as word processing and spreadsheet programmes in order to produce documents to meet standards of scientific writing. They will also regularly make use of more specialist pieces of software (including '*R*' and *SPSS*) in order to analyse data to reach valid conclusions. Use of all of these will be incorporated into theory and practical teaching and students will be expected to use them in producing assessed work.

The qualification will support delivery of the Level 7 Research Scientist delivered in a day release model over a period of 2 years. Apprentices would complete 3 or 4 (dependent on year) modules per year in the University Centre, plus work-based research with their employer as part of their occupation duties. In addition, apprentices will be supported in their work-based research project in preparation for the end point assessment. (This is not part of the academic qualification and is only offered to apprentices)

For these and other part-time students, learning materials and online activities will be available through our VLE, and a robust support system will be in place. Full-time students will also be able to access these resources.

Key Assessment Strategy and Methods

To exploit the expertise and research experience of staff, students will be assigned a tutor as a research partner who will support and develop the student's benchwork and attitude to the bench. Students will work in small groups as well as individually mirroring the experience of laboratory practice in academia and industry

Regular formative assessment activities with feedback from staff (e.g. quizzes, seminar discussions, presentations (poster and oral), seminar activities (such as "lab meetings"), laboratory practical activities and data analysis tasks) will provide students with opportunities to monitor their own progress and prepare for summative assessment. Summative assessment tasks will be varied (including practical activities, written tests, presentations, reports, case

studies, annotated bibliographies and formal exams) and deadlines will be spread throughout the year.

Pair and small group activities will be regularly used in all modules, allowing students to improve their communication and teamwork skills. Short presentations by students will form part of the body of formative and summative assessment activities, increasing student confidence in speaking and presenting to an audience, who will ask questions.
Formative assessment will begin very early in the course, with short basic tests increasing in demand over the weeks. This is in order to identify any students who may need extra support.

Some formative assessment will be delivered via the VLE and will provide instant feedback. Preparation for practical activities will be available in the form of virtual experiments in which online feedback is instantly available. Real and simulated practical activities will also provide data and the processing of this provides another opportunity for formative assessment with feedback on both the quality of the data collected, and how this may be improved, and the way in which it is displayed and manipulated to form conclusions.

The range of summative assessment types provides the opportunity for all students to demonstrate the knowledge and skills that they have acquired throughout the course of their studies. The mix of practical and written assessment, including formal examinations, will provide evidence to employers of the level of laboratory skills and other abilities (such as teamwork, communication skills, ethical integrity, etc.) that a student has developed, whilst also enabling any students who wish to progress onto Ph.D. research to demonstrate the required level of laboratory competence and ability to manage a substantial research project.

Examinations are included as part of the varied set of assessment methods as they are still widely used across the sector. Our students will be expected by employers to have experience of demonstrating their ability to apply knowledge under exam conditions.

For apprentices, there will be continuous assessment of Competences specified in the Level 7 Standard which begin with the programme and culminate in a rigorous range of end point assessment articles. These include a portfolio of work (comprising a problem-solving project report, presentation with questioning, and professional discussion). Additional tutorial time with a qualified assessor will be added at the end of each academic year to support apprentices in their preparation for end-point assessment as well as tutorial time with a qualified Assessor Trainer during the academic course on a regular basis.

5. Support for students and their learning.

Students will be assessed either very early or even before the beginning of the course to identify any additional support needs.

A detailed induction programme has been designed specifically for Masters students to introduce them to the key features of the course and methods of working such as use of the

VLE and safe working practice in the laboratories. The structure and regulations of the course will be explained at this point in addition to a skills scan and advice on academic skills and library support. Students will be introduced to the learning support officer and made aware of the support available and how to access it.

Induction also includes activities to give students hands-on experience of using the University Centre IT systems, laboratory equipment and facilities whilst also being engaging and providing opportunity for students to interact socially and become comfortable with the environment.

This induction programme will take place over a single day and will be offered to both full-time and part-time students.

Each student (whether full-time or part-time) is allocated a tutor for regular tutorials and personal development planning. The personal tutor will also provide pastoral care, plus the department has an attendance and well-being officer who will provide ancillary support where needed. Additional learning support is provided by a dedicated University Centre learning support officer.

These arrangements are implemented in the first term and continued throughout all years of study.

Part-time students will have access to support materials through the VLE and will be able to contact staff for support remotely using the VLE and other communication tools through email and One File. Regular tutorials, and the ability to contact a tutor electronically, will also provide support and a means for signposting other forms of support should they be needed.

Apprentices will receive additional support in the workplace through their mentors and work-based assessors. Each apprentice is attached to a designated Assessor Trainer who records achievement and provides preparation for End Point throughout the course including use of mini-mock assessments for each Competence.

Academic support beyond the delivery of modules is provided by staff, aided by study skills support tutors. This will be tailored to the needs of each student - challenging the highest achieving to go even further whilst providing support for those struggling in any areas. Staff holidays are managed, wherever possible, to ensure at least one person is available during vacations.

The library and librarians provide a range of services to help students in finding information and producing high quality work that complies with set academic standards. Sessions can be delivered on simple academic online searching, understanding and avoiding plagiarism and correct referencing style.

Apprentices, who would be attending the University Centre on one day per week, will have access to an increasing range of textbooks available remotely as e-books. A small number of vital texts that cannot be accessed remotely will be provided as hard copies for apprentices to use outside the University Centre. The academic librarian makes themselves available remotely

through email and other electronic systems to provide support and guidance in a timely manner.

Support for preparation for the end-point assessment is built into the apprenticeship timetable. Guidance will be provided for those wishing to progress to the degree apprenticeship.

6. Criteria for admission

(For apprenticeships this should include details of how the criteria will be used with employers who will be recruiting apprentices.)

	Typical offer	**Minimum Offer**
	2(ii) or better BSc (hons) in Biomedical Science or related discipline	Level 6 qualification in relevant subject
BTEC L3 Diploma or Extended Diploma:	N/A	N/A
GCSE English:	Requested but not required if IELTS 5.5 or above held	
IELTS:	5.5 or above	
International qualifications:	Equivalent to Level 6 in relevant subject	
Mature applicants:	We welcome applications from mature* applicants who may not have met the academic criteria, but who can demonstrate potential academic ability and a wealth of experience in their chosen field. Candidates in this category and otherwise are likely to be interviewed to assess their suitability for the course and may be asked to provide a portfolio of evidence to support their application. *21 years and over at the start of the course*	
RPL claims:	The course structure actively supports claims for Recognition of Prior Certified Learning (RPCL) or Recognition of Prior Experiential Learning (RPEL)	

7. Language of study

English

8. Information about non-OU standard assessment regulations (including PSRB requirements)
n/a

9. For apprenticeships in England End Point Assessment (EPA).
The programme can be used to support achievement of the Level 7 Research Scientist Standard , delivered in a day release model over a period of 2 years where students will complete 3 or 4 modules per year of study to achieve the MSc and allowing completion of project work in preparation for end point assessment (EPA). EPA for this Standard requires a project report, presentation and questioning (based on a work-based project) and professional discussion underpinned by a portfolio of evidence. In line with our department's experience of offering other science standards, Additional support will be scheduled in, within tutorial time, within the teaching timetable and with an assessor at the end of each academic year. The evidence will be collated on the One File platform. Support for students begins at recruitment where students complete initial tests to assess any additional needs for support. Induction contains an introduction to the structure and regulations of the course in addition to a skills scan and advice on academic skills and library support (with research and referencing). Students receive individual support through tutorial and are assigned a pastoral tutor, who will meet each student once per half term in addition to being the first port of call when a support need arises. All students have access to welfare and may access specialist support through the learning support mentor. The VLE supports students with further resources and extension and is available 24/7 anywhere with internet access and contains not only module specific areas but additional sites to support apprentices including tutorial resources, academic skills area and preparation for EPA. The nature of the VLE allows each individual apprentice to access a bespoke remote delivery system tailored to their needs and timely progress. Students who are attending only one day within the college week (as do the current apprentices) are supported by strong communications between the teaching team, work-based assessor and the workplace. At least weekly communication takes place so that any issues are picked up and addressed as they begin. This includes attendance reporting as well as performance and behaviour (as enshrined within the Standard). The crucial requirement for apprentice success is the cohesive and coherent interaction of the college team with the workplace.

Students are taught in specialist laboratories using a mixture of lecture, practical and workshop activities with access to specialist tutorial and additional resources including the course textbook and VLE sites. Tutors on the programme are highly qualified and experienced subject specialists with industry experience, which allows a comfortable and targeted working relationship based on common knowledge and outlook.

End point assessment (EPA) requires the students to have gained knowledge and training and to be able to produce evidence of this. EPA is performed by an external assessor appointed by the end point assessment organization (EPO) selected by the employer. and the requirements to progress to end point and to succeed are determined by the EPO. EPA will be supported by close working of the teaching team with the work-based assessor and use of a range of teaching materials offered through the VLE, including opportunities to develop material for the portfolio in addition to interactive activities to develop and test knowledge in preparation for end point. The team has extensive experience of developing these resources for lower level Standards and has received excellent feedback on their utility and availability by this route.

10. Methods for evaluating and improving the quality and standards of teaching and learning.

In addition to the Annual Programme Monitoring process the following mechanisms are in operation:

- Peer Review
- Annual Planning
- Peer Observation
- Student module reviews
- Tutor module reviews
- Enrolment and induction reviews
- Course Committee meetings
- Pathway Committee meeting
- Student Pathway meetings

11. Changes made to the programme since last (re)validation

n/a

Annexe 1: Curriculum map

Annexe 2: Teaching and Learning Map

Annexe 3: Assessment Map

Annexe 4: Curriculum mapping against the apprenticeship standard or framework (delete if not required.)

Annexe 5: Notes on completing the OU programme specification template

Annexe 1 - Curriculum map

This table indicates which study units assume responsibility for delivering (shaded) and assessing ( ) particular programme learning outcomes.

Level	Study module/unit	A1	A2	A3	B1	B2	B3	C1	C2	C3	C4	D1	D2	D3
7	Applied Biomedical Techniques		■						■		■			■
	Cellular Pathology									■				
	Bioinformatics and data analysis				■	■								
	Advanced Pharmacology and Toxicology			■						■				
	Preparation for research		■					■						■
	Dissertation			■	■						■	■		
	Advanced Analytical Science (option)						■	■						
	Diagnostic techniques (option)							■					■	

Annexe 2 – Teaching and Learning Map

Level 7

	Methods							
Module Titles	Lectures	Case Studies	Skills workshops	Practicals (design and production sessions)	Group activities	Guest speakers	Independent / E Learning/ On-line forums	(Problem Classes)
Applied Biomedical Techniques	X		X	X	X			
Cellular Pathology	X	X		X	X		X	
Bioinformatics and data analysis		X			X	X	X	X
Advanced Pharmacology and Toxicology	X	X		X	X		X	X
Preparation for research			X			X	X	
Dissertation			X	X				
Advanced Analytical Science (option)	X			X	X		X	X
Diagnostic techniques (option)	X			X	X		X	X

Annexe 3 – Assessment Map

	Methods										
Module Titles	Laboratory report (GLP standard)	Research project report	Journal-style article	Research proposal	Data production report	Online Exam	Data analysis & presentation	Presentation seminar	Presentation	Case study	Annotated bibliography
Applied Biomedical Techniques					50%, wk6 3000 words		50%, wk14 3000 words (or eq)				
Cellular Pathology	50%, wk9 3000 words								50%, wk13 3000 words eq (5 mins recorded)		
Bioinformatics and data analysis										100%, wk29 6000 words	
Advanced Pharmacology and Toxicology		60%, wk15 3600 words							40%, wk7 2400 words (or eq)		
Preparation for research				70%, wk10 4200 words							30%, wk5 1800 words
Dissertation			70%, wk34 6000 words					30%, wk36 5400 words (or eq)			
Advanced Analytical Science (option)					60%, wk23 3600 words	40%, wk30 2400 words					

Diagnostic techniques (option)	60%, wk23 3600 words					40%, wk30 2400 words					

Level 7

Annexe 4 - Curriculum mapping against the apprenticeship standard

This table indicates which study units assume responsibility for delivering (shaded) and assessing ( ) particular knowledge, skills and behaviours.

Level	Study module/unit	Apprenticeship standard																						
		K1	K2	K3	K4	K5	K6	K7	K8	S1	S2	S3	S4	S5	S6	S7	S8	B1	B2	B3	B4	B5	B6	B7
7	Applied Biomedical Techniques				✓						✓				✓	✓								✓
	Cellular Pathology	✓		✓				✓			✓			✓			✓					✓		
	Bioinformatics and data analysis					✓	✓								✓								✓	
	Advanced Pharmacology and Toxicology	✓		✓									✓	✓						✓			✓	
	Preparation for research		✓				✓	✓	✓			✓				✓		✓	✓		✓			
	Dissertation	✓	✓			✓			✓				✓	✓				✓	✓					
	Options:																							
	Advanced Analytical Science									✓					✓									✓
	OR																							
	Diagnostic techniques									✓					✓					✓				