

Royal Holloway, University of London
Course specification for an undergraduate award
BSc Biomedical Sciences with a Year in Industry (B991)

Section 1 – Introduction to your course

This course specification is a formal document, which provides a summary of the main features of your course and the learning outcomes that you might reasonably be expected to achieve and demonstrate if you take full advantage of the learning opportunities that are provided. Further information is contained in the University prospectus, and in various handbooks, all of which you will be able to access online. Alternatively, further information on the University's academic regulations and policies can be found [here](#). Further information on the University's Admissions Policy can be found [here](#).

Your degree course in Biomedical Sciences with a Year in Industry is delivered in four stages, apart from the year in industry, each stage comprises one year of full-time study, during which you must follow modules to the value of 120 national credits. The curriculum is based around a set of mandatory modules and the course offers a strong foundation in Stages one and two, which covers the requirements of the benchmarking statements in Biosciences and Biomedical Sciences and allows for specialisation in Stage four, while at the same time allowing some degree of diversification of interests.

Stage one comprises a fixed selection of mandatory modules and seeks to provide the necessary grounding for the study of the subject at degree level with appropriate Biochemistry, Cell Biology, Chemistry, Genetics, and Physiology and including a strong element of laboratory training that forms the cornerstone of the subject. In **Stage two** you take 5 mandatory modules to the value of 75 credits in Physiology, Molecular Biology, as well as molecular studies of biomedical subjects such as Immunology, Neurology and Pharmacology and select optional modules that include Microbiology, Developmental Biology, Cell Dynamics and Bioenergetics and Metabolism. Stage two builds on the foundations laid in Stage one and provides a basis for the study of the research-led specialist options in Stage four. All the modules include a substantial element of laboratory training that prepare you for the selection and implementation of the individual research project in stage four. In Stage 3, you spend a year in a relevant industry placement, to gain valuable experience in the workplace. The assessment from this year in industry counts as 30 credits which, for the purposes of award classification, is counted in the fourth stage. In **Stage four** there are 2 mandatory modules the value of 45 credits, which are the Molecular Basis of Inherited Disease module and the individual research project. The project is regarded as your graduate capstone experience, as it is the culmination of your training in experimental design, research techniques, data analysis and presentation. You select the remaining modules from options. Many of the modules specialise in medically oriented aspects of the subject, and have a strong element covering specific categories of disease, their underlying cause and treatment. The options include Clinical Physiology and Medicine, Clinical Diagnosis of Disease, Biology of Parasitic Diseases, Cell and Molecular Neuroscience, Human Embryology and others. Clinicians and other hospital experts contribute to several of the final year modules, providing teaching at the cutting-edge of clinical approaches and expertise.

The course emphasises the importance and relevance of a wide range of subject areas for medicine and the understanding and scientific investigation of human disease. It also involves training in a variety of practical techniques and skills relevant to research work in Biomedical Sciences. The system is also flexible and allows you to transfer to other degree streams within the Department up to the start of the second term, or indeed to other Molecular Bioscience degrees up to the start of the second stage. You can also take up to 30 credits from outside the Department of Biological Sciences, but within other Science departments, during stage two/four. Options are selected in consultation with your Personal Tutor and the Director of Teaching/Department Lead in UG Education.

While Royal Holloway keeps all the information made available under review, courses and the availability of individual modules, especially optional modules are necessarily subject to change at any time, and you are therefore advised to seek confirmation of any factors which might affect your decision to follow a specific course. In turn, Royal Holloway will inform you as soon as is practicable of any significant changes which might affect your studies.

The following is a brief description for some of the most important terminology for understanding the content of this document:

Degree course – May also be referred to as ‘degree programme’ or simply ‘programme’, these terms refer to the qualification you will be awarded upon successful completion of your studies.

Module – May also be referred to as ‘course’, this refers to the individual units you will study each year to complete your degree course. Undergraduate degrees at Royal Holloway comprise a combination of modules in multiples of 15 credits to the value of 120 credits per year. On some degree courses a certain number of optional modules must be passed for a particular degree title.

Section 2 – Course details			
Date of specification update	August 2023	Location of study	Egham Campus
Course award and title	BSc Biomedical Sciences with a Year in Industry	Level of study	Undergraduate
Course code	3477	UCAS code	B991
Year of entry	2024/25		
Awarding body	Royal Holloway, University of London		
Department or school	Department of Biological Sciences School of Life Sciences and the Environment	Other departments or schools involved in teaching the course	N/A
Mode(s) of attendance	Full-time	Duration of the course	Four years
Accrediting Professional, Statutory or Regulatory Body requirement(s)	You must pass the BS3010 Individual Research Project to qualify for an Honours Degree in Biomedical Sciences; this is a requirement of the Royal Society of Biology for an accredited degree.		
Link to Coursefinder for further information:	https://www.royalholloway.ac.uk/studying-here/	For queries on admissions:	https://royalholloway.ac.uk/applicationquery

Section 3 – Degree course structure					
3.1 Mandatory module information					
The following table summarises the mandatory modules which students must take in each year of study					
Year	Module code	Module title	Credits	FHEQ level	Module status (Mandatory Condonable MC or Mandatory Non-Condonable MNC)
1	BS1021	Becoming a Bio scientist	15	4	MC
1	BS1031	Chemistry of Life	15	4	MC
1	BS1032	Fundamental Biochemistry	15	4	MC
1	BS1061	Introductory Animal Physiology	15	4	MC
1	BS1062	Introduction to Human Physiology in Health and Disease	15	4	MC
1	BS1071	Cell Biology and the Origin of Life	15	4	MC
1	BS1072	Genetics	15	4	MC
1	BS1091	Protein Biochemistry and Enzymology	15	4	MC
2	BS2050	Human Physiology in Health and Disease II	15	5	MC
2	BS2530	Molecular Biology	15	5	MC
2	BS2540	Immunology	15	5	MC
2	BS2550	Neuronal and Cellular Signalling	15	5	MC
2	BS2560	Pharmacology and Toxicology	15	5	MC
3	BS3900	Year in Industry	30	6	MNC
4	BS3010	Individual Research Project	30	6	MNC
4	BS3590	Molecular Basis of Inherited Disease	15	6	MC

This table sets out the most important information for the mandatory modules on your degree course. These modules are central to achieving your learning outcomes, so they are compulsory, and all students on your degree course will be required to take them. You will be automatically registered for these modules each year. Mandatory modules fall into two categories: 'condonable' or 'non-condonable'.

In the case of mandatory 'non-condonable' (MNC) modules, you must pass the module before you can proceed to the next year of your course, or to successfully graduate with a particular degree title. In the case of mandatory 'condonable' (MC) modules, these must be taken but you can still progress or graduate even if you do not pass them. Please note that although Royal Holloway will keep changes to a minimum, changes to your degree course may be made where reasonable and necessary due to unexpected events. For example: where requirements of relevant Professional, Statutory or Regulatory Bodies have changed and course requirements must change accordingly, or where changes are deemed necessary on the basis of student feedback and/or the advice of external advisors, to enhance academic provision.

3.2 Optional modules

In addition to mandatory modules, there will be a number of optional modules available during the course of your degree. Although Royal Holloway will keep changes to a minimum, new options may be offered or existing ones may be withdrawn. For example where reasonable and necessary due to unexpected events, where requirements of relevant Professional, Statutory or Regulatory Bodies (PSRBs) have changed and course requirements must change accordingly, or where changes are deemed necessary on the basis of student feedback and/or the advice of External Advisors, to enhance academic provision. There may be additional requirements around option selection; please contact the Department for further information.

During stage two, you must choose options equal to the value of 45 credits from a list of stage two modules offered by the Department.
During stage four, you must choose options equal to the value of 75 credits from a list of FHEQ level 6 modules offered by the Department.

Section 4 - Progressing through each year of your degree course

For further information on the progression and award requirements for your degree, please refer to Royal Holloway's [Academic Regulations](#).

Progression throughout the year/s is monitored through performance in summative or formative coursework assignments. Please note that if you hold a Student Visa and you choose to leave (or are required to leave because of non-progression) or complete early (before the course end date stated on your CAS), then this will be reported to UKVI.

All first-year undergraduate students are required to take and pass the non-credit bearing Moodle-based Academic Integrity module SS1001 to progress into the second year of study (unless their course includes the alternative mandatory SS1000 module). The pass mark for the module assessment is stated in the on-line Academic Integrity Moodle module. Students

may attempt the assessment as often as they wish with no penalties or capping. Students who meet the requirements for progression as stipulated in the [Academic Taught Regulations](#) but fail to pass the Moodle-based Academic Integrity module will not be permitted to progress into their second year of academic study.

Year in Industry

Students taking an industrial year take additional module BS3900 and thus have 150 credits in their final year.

Students on degree courses with Year in Industry need to fulfil the requirements set out in the departmental Year in Industry Handbook to progress to the placement and be eligible for the degree title.

Section 5 – Educational aims of the course

The aims of the Honours Degree course in Biomedical Sciences with a Year in Industry are to:

- provide, through a core of modules, a sound knowledge and understanding of those areas of Bioscience necessary for understanding the biology of diseases and the scientific investigation of human health and disease. These include biochemistry, cell biology, genetics, molecular biology, physiology and anatomy, and pharmacology;
- provide a sound knowledge and understanding of those areas of the subject relevant to the diagnosis and development of therapies for a range of diseases;
- develop an insight into the current frontiers of knowledge in major aspects of the Biomedical Sciences, primarily through a series of specialised Stage 3 modules;
- develop, through a flexible and progressive structure, a range of subject-specific and transferable skills, including practical laboratory skills, self-management, information retrieval, communication and presentation skills, working with others, decision making and meeting deadlines, that equip you for future employment;
- provide professional experience in a relevant workplace environment;
- provide experience of independent research through a final year project;
- produce graduates who can work safely and responsibly with biological and chemical materials and laboratory equipment.

Section 6 - Course learning outcomes				
In general terms, the courses provide opportunities for students to develop and demonstrate the following learning outcomes. (<i>Categories – Knowledge and understanding (K), Skills and other attributes (S), and Transferable skills (*)</i>)				
Theme	Course learning outcome	Level 4	Level 5	Level 6
1. Graduates from this course will demonstrate KNOWLEDGE and CURIOSITY	<p>Describe and discuss the key biological concepts and phenomena relevant to the Biomedical Sciences, from molecular to cellular, and from health to disease, and to do so confidently, accurately and in detail, using appropriate terminology.</p> <p>Be aware of the historical context, ethical issues, and societal impacts of advances in Biomedical Sciences and appreciate the contribution of the field to the innovations that characterise the modern world and their potential future impact.</p>	<p>Recall basic knowledge of key biological concepts in the subjects that underpin the understanding of bodily function and human disease, including chemistry, biochemistry, cell biology, genetics, and physiology.</p> <p>Demonstrate an appreciation of the historical context of subjects in the field and the global reach of the Biomedical Sciences, the impact on human life and the environment and the ethical considerations implicit in their application.</p>	<p>Explain biomedical sciences phenomena in the human body in health and disease at molecular, cellular, organ and system levels, and explain how these systems function both biologically and clinically.</p> <p>Recognise the relationships and interfaces between Biomedical Sciences and other subjects, enabling efficient interactions in a multidisciplinary environment, and identify and discuss the application of Biosciences to solving current and future challenges in the world.</p>	<p>Apply a comprehensive knowledge of concepts and phenomena in Biomedical Sciences including the molecular and cellular basis of a range of human diseases and disorders and the complexity of bodily function and demonstrate evidence of enquiry beyond this.</p> <p>Critically assess the merits of contrasting subject-specific theories, paradigms, concepts, and principles, and develop a reasoned argument to support their position on a topic using evidence from a range of published articles.</p> <p>Engage with philosophical and ethical debates arising from current advances in the biosciences and their impact on society.</p> <p>Demonstrate awareness of the cutting-edge developments in the field and relevant interdisciplinary activity and the potential of Biomedical Sciences graduates to develop solutions to current and future challenges.</p>
2. Graduates from this course will demonstrate PRACTICAL SKILLS and RISK AWARENESS	<p>Select and carry out appropriate quantitative and qualitative practical, laboratory and computational techniques to solve problems relevant to the course, including consideration of the theoretical basis and limitations of various techniques, and be able to work safely with</p>	<p>Demonstrate individual competency in a selection of appropriate practical techniques relevant to the course.</p> <p>Recognise Good Laboratory Practice and record data accurately.</p> <p>Follow instructions to work safely and demonstrate awareness of</p>	<p>Demonstrate individual competency in a broad range of appropriate qualitative and quantitative practical laboratory techniques and discuss their theoretical basis and limitations.</p> <p>Follow Good Laboratory Practice in the planning, performance and recording of results.</p>	<p>Design an approach and use appropriate practical techniques and skills to address the aims of a research project or investigation, whilst discussing the limitations of the techniques and suggesting alternatives.</p> <p>Implement Good Laboratory Practice in the way experiments are planned, performed, monitored, recorded, reported, and retained.</p>

	an awareness of the associated risks.	the relevant risk factors involved in both biological and chemical laboratory activities.	Follow standard operating procedures to enact safe working practices whilst understanding the relevant risks from biological and chemical factors and how to mitigate them.	Independently produce and apply risk assessments for completing project work in a safe and reliable manner, including identification of relevant risks from biological, chemical, laboratory or field-based work.
3. Graduates from this course will be able to DESIGN EXPERIMENTS AND ANALYSE DATA	<p>Apply knowledge and understanding of biological systems and methodologies to design experiments and to solve theoretical and practical problems, with awareness of appropriate controls, possible bias, ethics, and sustainability.</p> <p>Collect qualitative and quantitative data from investigations relevant to the course and analyse and interpret these data to allow testing of hypotheses, contextualisation of findings, presentation of results, and suggestions for further lines of investigation.</p> <p>Deploy mathematical and statistical concepts, processes, and tools, such as the manipulation of equations and graphical and statistical analysis, to solve problems or evaluate data.</p>	<p>Design simple experiments and consider appropriate controls and sources of possible bias.</p> <p>Record data accurately and perform appropriate data analysis and presentation of results.</p> <p>Carry out numerical calculations and statistical analyses as appropriate in the Biomedical Sciences and interpret the outcomes.</p> <p>Reflect on practical outcomes in terms of the quality of results obtained.</p>	<p>Devise and evaluate solutions to solve both routine and unfamiliar problems using a range of methods, and demonstrate awareness of appropriate controls, possible bias, ethics, and sustainability.</p> <p>Record data accurately and apply appropriate methods for analysis using numerical calculations, Excel spreadsheets, bioinformatic analysis, and other computational techniques.</p> <p>Present results clearly using appropriate terminology and interpret data with relevant statistical analyses to test hypotheses.</p> <p>Critically assess the quality of evidence obtained and make suggestions for improvement.</p> <p>Place the work in context by integrating relevant information from the scientific literature and suggest further lines of investigation.</p>	<p>Discuss the application of techniques in biochemistry, cell biology, molecular biology, and molecular genetics to understanding the causes, diagnosis and treatment of human diseases and evaluate the development of novel therapeutic intervention strategies.</p> <p>Demonstrate independent and accurate data collection in the project, including selection of appropriate numerical, statistical, bioinformatic and computational methods for analysis.</p> <p>Present and evaluate data effectively, interpret findings, make, and test hypotheses, make decisions, and consider further lines of investigation with a thorough understanding of the context within the field.</p> <p>Evaluate the evidence base for scientific claims in the primary literature by commenting on the adequacy of the methods, data, and interpretation.</p>

<p>4. Graduates from this course will demonstrate RESEARCH SKILLS and the ability to EVALUATE LITERATURE</p>	<p>Complete independent open-ended investigative work through a project/research-based assignment relevant to the course and demonstrate the ability to think independently, work autonomously and solve problems.</p> <p>Engage with literature from the Biomedical Sciences to develop insight into the subject and to stay up to date with advances in the field, including aspects of sustainability, while appreciating the fluid nature of knowledge that evolves as new findings emerge.</p> <p>Use appropriate databases, computational techniques, and tools to aid further understanding and insight of Biomedical Sciences processes, and to innovate and solve problems creatively in a digital world.</p>	<p>Generate a solution to a task by following instructions or using ideas borrowed from elsewhere.</p> <p>Use search strategies to identify published scientific articles relevant to a topic.</p> <p>Apply a variety of methods of study in investigating, recording and analysing material.</p> <p>Demonstrate the ability to appropriately cite and reference source materials.</p>	<p>Assemble and apply information from different sources to address a problem and formulate a solution through independent effort or teamwork.</p> <p>Access and evaluate information from a wide range of sources such as texts, published journal articles, reports and clinical data and demonstrate the ability to put that information into context.</p> <p>Demonstrate critical and analytical skills, including a recognition that statements and hypotheses should be tested, and that evidence is subject to assessment and critical evaluation.</p> <p>Sort, filter, abstract, evaluate and synthesise information from a range of sources to produce a written body of work with complete and accurate citations and references.</p>	<p>Plan, execute and present an independent piece of work which includes analysis or evaluation of data within a supported framework, and demonstrate evidence of time management, problem-solving, and independence.</p> <p>Create solutions to problems using imaginative, creative, or innovative approaches, either independently or with teamwork, and employ appropriate databases, computational techniques, and tools.</p> <p>Demonstrate well-developed strategies for updating, maintaining, and enhancing their knowledge of the biosciences, synthesise information from different sources, and generate hypotheses based on current data while acknowledging that our understanding continues to evolve as new findings emerge.</p> <p>Assess the quality of evidence from different sources by evaluating the context, aims, objectives, experimental design, methodology, data interpretation and application of the study.</p>
<p>5. Graduates from this course will demonstrate PROFESSIONAL SKILLS AND BEHAVIOURS</p>	<p>Act professionally, with due regard for legal, ethical, and societal responsibilities, modelling good practice that promotes positive perceptions of the Biomedical Sciences and Biomedical Scientists including working successfully in a group environment, contributing</p>	<p>Interact with others in groups and understand the importance of inclusive working practices.</p> <p>Recognise the importance of effective communication within a team and demonstrate consideration of the views of others.</p>	<p>Work with others in groups and demonstrate inclusive working practices.</p> <p>Communicate effectively with all members of a team and demonstrate consideration of the views of others and social intelligence.</p>	<p>Collaborate with others to work in an effective team by coordinating to exchange information and tackle problems.</p> <p>Demonstrate leadership to help drive a project forwards, inspiring, and motivating others.</p> <p>Demonstrate an understanding of how to identify, protect and exploit intellectual property (IP) as part of the scientific innovation process.</p>

	positively and flexibly to team outputs.	<p>Recognise and apply the principles and codes of practice that underpin personal and professional integrity and standards.</p> <p>Reflect on their progress from feedback provided.</p>	<p>Demonstrate personal integrity and self-awareness of the ethical approach to their work.</p> <p>Reflect on their progress from feedback provided and apply comments on areas of improvement to further pieces of work.</p>	<p>Evaluate their development of intellectual and transferable skills, for demonstration to employers.</p> <p>Demonstrate resilience and initiative to overcome problems or respond to changes in circumstance.</p>
6. Graduates from this course will demonstrate COMMUNICATION SKILLS and DIGITAL LITERACY	Communicate effectively, selecting appropriate content, media and methods for the audience, purpose, and subject.	<p>Generate short written reports that transfer key information to non-scientists.</p> <p>Give a short verbal presentation on a science topic for a peer group, using PowerPoint or similar software for visual aids.</p> <p>Demonstrate knowledge of fundamental topics for biomedical sciences through succinct written (or verbal) answers to exam questions.</p>	<p>Produce written reports in Word or similar software to convey the outcomes of practical work for a scientific audience.</p> <p>Create and deliver a verbal presentation on a science topic for a peer group, using PowerPoint (or similar) to produce high quality visual aids.</p> <p>Demonstrate detailed knowledge of topics in biomedical sciences through focussed and accurate written answers to exam questions and be able to defend knowledge verbally.</p>	<p>Create substantial written reports that effectively explain the results of data analysis for a scientific audience, and which communicate information synthesised from published papers in a way that is organised, topical and recognises the limits of current hypotheses.</p> <p>Use creative approaches to design materials that convey key scientific information to scientific or non-scientific audiences.</p> <p>Give a clear, current, and accurate account of the subject area, and critically discuss and debate both with specialists and non-specialists, using appropriate scientific language.</p>

Section 7 - Teaching, learning and assessment

The overall strategy is to provide a progressive approach to biological concepts and systems of increasing complexity that underpin Biomedical Sciences and that are directly relevant to the understanding and treatment of human disease. This strategy is realised through a range of teaching methods that aid learning and stimulate interest. Specific knowledge of the molecular, cellular and biochemical bases of diseases, their diagnosis and treatment are developed through a range of specialist final stage modules dealing with particular types of disease, e.g. the molecular basis of inherited disease, the biochemical diagnosis of disease, neurological disorders (cell and molecular neuroscience). Teaching is mostly by means of lectures, laboratory classes, computer exercises, seminars, tutorials, study/revision sessions, with knowledge and understanding further developed by guided independent study.

Learning and analytical ability are developed and reinforced through problem solving, essay writing, laboratory classes, critical evaluation and by giving you the opportunity to design, execute and evaluate their own experiments. You are encouraged to acquire further knowledge beyond taught material, e.g. by reading topical reviews, original research literature and attending research seminars, especially in the final year.

The practical assignments associated with first year and second year modules provide training in a range of subject specific laboratory techniques, including safety assessment. The culmination of these skills is demonstrated in the final year research project, and for literature skills the preparation of a literature report. You have to prepare your own risk assessment prior to commencing your final year project work.

Training in intellectual and key transferable skills is embodied throughout the course and forms a strong element of the tutorial and study session programmes. You are required to meet basic standards in information technology.

Assessment is typically by formal unseen written examinations, practical exams, and a range of coursework assignments such as essays, laboratory reports, oral and poster presentations, and the individual research project. Full details of the assessments for individual modules can be obtained from the Department.

Contact hours come in various forms and may take the form of time spent with a member of staff in a lecture or seminar with other students. Contact hours may also be laboratory or, studio-based sessions, project supervision with a member of staff, or discussion through a virtual learning environment (VLE). These contact hours may be with a lecturer or teaching assistant, but they may also be with a technician, or specialist support staff.

The way in which each module on your degree course is assessed will also vary. Assessments designated as 'summative' will receive a mark for it which will count towards your overall mark for the module, and potentially your degree classification, depending on your year of study. On successful completion of the module you will gain the credits listed.

More detailed information on modules, including teaching and learning methods, and methods of assessment, can be found via the online [Module Catalogue](#). The accuracy of the information contained in this document is reviewed regularly by the university, and may also be checked routinely by external agencies.

Section 8 – Additional costs
There are no single associated costs greater than £50 per item on years 1, 2 and 4 of this degree course, however, costs incurred by students while on a Year in Industry/Business (year 3) vary depending on the nature and location of the placement. For further information please contact the Student Services Centre
These estimated costs relate to studying this particular degree course at Royal Holloway. General costs such as accommodation, food, books and other learning materials and printing etc., have not been included, but further information is available on our website.

Section 9 – Indicators of quality and standards	
QAA Framework for Higher Education Qualifications (FHEQ) Level	4-6
Your course is designed in accordance with the FHEQ to ensure your qualification is awarded on the basis of nationally established standards of achievement, for both outcomes and attainment. The qualification descriptors within the FHEQ set out the generic outcomes and attributes expected for the award of individual qualifications. The qualification descriptors contained in the FHEQ exemplify the outcomes and attributes expected of learning that results in the award of higher education qualifications. These outcomes represent the integration of various learning experiences resulting from designated and coherent courses of study.	
QAA Subject benchmark statement(s)	http://www.qaa.ac.uk/quality-code/subject-benchmark-statements
Subject benchmark statements provide a means for the academic community to describe the nature and characteristics of courses in a specific subject or subject area. They also represent general expectations about standards for the award of qualifications at a given level in terms of the attributes and capabilities that those possessing qualifications should have demonstrated.	

Section 10– Intermediate exit awards (where available)		
You may be eligible for an intermediate exit award if you complete part of the course as detailed in this document. Any additional criteria (e.g. mandatory modules, credit requirements) for intermediate awards is outlined in the sections below.		
Award	Criteria	Awarding body
Diploma in Higher Education (DipHE)	Pass in 210 credits of which at least 90 must be at or above FHEQ Level 4 and at least 120 of which must be at or above FHEQ Level 5	Royal Holloway and Bedford New College

Certificate in Higher Education (CertHE)	Pass in 120 credits of which at least 90 must be at or above FHEQ Level 4	Royal Holloway and Bedford New College
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