Aston University

PROGRAMME SPECIFICATION 2012-13

Programme Title	**MICROBIOLOGY & IMMUNOLOGY formerly INFECTION AND IMMUNITY (2011 entry and earlier)**
UCAS/JACS Codes	C550/C550
School/Subject Area	LHS
Final Award	BSc (Honours)
Interim Award(s)	Certificate of Higher Education Diploma of Higher Education Revised June 2012 (Dr P. J. Hanson)
Mode(s) of Study	Full time
Normal Length of Programme	3 or 4 years depending on Sandwich Placement
Total Credits	360 or 480 credits
Programme Accredited By	
Dates Programme Specification Written and Revised	November 2003 (Dr A. D. Perris) Revised September 2005 (Dr A. C. Hilton) Revised July 2006 (Dr A. C. Hilton) Revised February 2007 (Dr A. C. Hilton) Revised July 2007 (Dr A.C. Hilton) Revised July 2009 (Dr A.C. Hilton) Revised September 2010 (Dr P.J. Hanson) Revised July 2011 (Dr P. J. Hanson)

Educational Aims of the Programme	To provide a modern relevant degree programme in general Biology and **Microbiology & Immunology** in particular. To provide an appropriate environment for the achievement of excellence in learning and scholarship. To provide a degree of student choice to pursue a Sandwich Placement and module choice and research project in the final year. To increase understanding of the living world with particular emphasis on the human species. To help develop the knowledge skills and understanding of the professional biologist. To promote an awareness of the application of biological knowledge to human health and welfare. To produce graduates whose skills and qualities equip them for research, appropriate employment and a valuable contribution to society.
Relevant Subject Benchmark Statements and other External and Internal Reference Points used to inform programme outcomes	Benchmark statements for Biology (QAA) Framework for Higher Education Qualifications Biology Programmes Committee External Examiners reports

Programme Structures and Requirements: Levels, Modules and Credits **Stage I**				
Module Title	Credits	Level	Module Code	Core/ Elective
Biology Key Skills	10	4	BY1SK1	Core
Biochemistry	20	4	BY1BC1	Core
Physiology	20	4	PH1CL1	Core
Cell Biology	10	4	BY1CB1	Core
Inheritance and Population Genetics	10	4	BY1GN1	Core
Introductory Immunology	10	4	BY1IM1	Core
Microbiology I	20	4	BY1MI1	Core
Molecular Biology	10	4	BY1MB1	Core
Development and Human Anatomy	10	4	BY1DA1	Core
TOTAL	**120 credits**			

Programme Structures and Requirements: Levels, Modules and Credits **Stage I entry October 2010 and earlier**				
Module Title	Credits	Level	Module Code	Core/ Elective
As above except for:				
Microbiology I	10	4	BY1MI1	Core
Parasitology	10	4	BY1PA1	Core
TOTAL	**120-credits**			

Programme Structures and Requirements: Levels, Modules and Credits **Stage II**				
Module Title	Credits	Level	Module Code	Core/ Elective
Endocrinology	10	5	BY2EN2	Core
Immunology	20	5	BY2 IM1	Core
Microbiology II (introduced from 2011 onwards)	10	5	BY2MI1	Core
Nutrition and Dietetics	10	5	BY2 NU1	Core
Molecular Genetics	10	5	BY2MB1	Core
Metabolism	10	5	BY2BC1	Core
Molecular Pathology	10	5	BY2PA1	Core
Biology Key Skills	20	5	BY2KS1	Core
Biotechnology	20	5	BY2BT1	Core
TOTAL	**120 credits**			

Programme Structures and Requirements: Levels, Modules and Credits **Stage II Entry October 2010 and earlier**				
Module Title	Credits	Level	Module Code	Core/ Elective
As above except for:				
Immunology	10	5	BY2 IM1	Core
Bioethics	10	5	BY2BE1	Core
Biological Basis of Human Disease	10	5	BY2BD1	Core
TOTAL	**120 credits**			

Programme Structures and Requirements: Levels, Modules and Credits **Stage III**				
Module Title	Credits	Level	Module Code	Core/ Elective
Immunology	10	6	BY3IM1	CORE
Clinical Microbiology & Infectious Disease	10	6	BY3CI1	CORE
Food Safety and Hygiene	10	6	BY3FH1	CORE
Two options Chosen from List below	2 x 10	6	See list below	ELECTIVE
Key Skills	40	6	BY3 KS3	CORE
Project	30	6	BY3PR1	CORE
TOTAL	120			

Programme Structures and Requirements: Levels, Modules and Credits **Stage III options**				
Module Title	Credits	Level	Module Code	Core/ Elective
Human Physiology	10	6	BY3HP1	Elective
Medical Biochemistry	10	6	BY3BC1	Elective
Bioethics	10	6	BY3BE1	Elective
Applied Molecular Biology	10	6	BY3MB1	Elective
Cell Biology	10	6	BY3CB1	Elective
Toxicology	10	6	BY3TO1	Elective
Cell Biology of Cancer Metastasis	10	6	BY3CC1	Elective
Stem Cell Biology	10	6	BY3SC1	Elective
Cancer Biology	10	6	BY3CA1	Elective
Biological Basis of Human Disease	10	6	BY3BD2	Elective

Programme Outcomes, Learning and Teaching and Assessment Strategies

A. **Knowledge and Understanding**			
	On successful completion of their programme students, are expected to have knowledge and understanding of:	Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated	
		Learning and Teaching Methods	Assessment Methods
1	how life processes operate at the molecular, cellular, tissue and organismal level.	Lectures: • to introduce students to key concepts and theories • to indicate areas of further study and reading • to provide a broad overview of the subject • to stimulate enthusiasm and desire for further independent enquiry Tutorials: • to clarify, reinforce and extend students' understanding and knowledge • to give an opportunity for more individual advice on difficult concepts • to give students the support which is most appropriate to their ability and experience in the subject • to stimulate discussion Laboratory Practical: • to enable students to put theory into practice and develop essential laboratory skills	Closed Book Examinations/Tests: • to examine appreciation of key issues • to assess understanding of content and aims Multiple Choice tests • to assess students' range of knowledge and understanding of the subject • to provide students with formative information on their progress Written assignments: • to enable students to show their understanding of different perspectives and their critical appreciation of different questions and approaches • to demonstrate whether student are able to apply what they have learnt Practical Reports • to assess students' ability to communicate scientific investigations in the style of a peer reviewed written publication Verbal presentations • to assess students' ability to develop effective verbal communication of scientific information
2	how the diversity of organisms can interact at the population level.		
3	the evolution of man and particularly how his health is maintained.		
4	the biological basis of disease whether caused by pathogens or metabolic disorders.		
5	be aware of the applications of the knowledge of life processes in the interests of health, welfare and commercial exploitation particularly in the areas of pharmacology, nutrition and biotechnology.		
6	core principles, experimental techniques and specialist terminology in their chosen specialist option.		
7	the major research activities in these specialist disciplines, including the theoretical and technical developments in the subjects.		
8	the moral and ethical issues associated with developments in Biology.		

		Independent learning such as computer-based learning packages: • to enable students to work through at their own pace and to develop an understanding of the subject	Poster presentations • to assess students' ability to communicate scientific information in the style of a conference poster

B. Intellectual Skills			
	On successful completion of their programme, students are expected to be able to:	Teaching, Learning and Assessment Strategies to enable outcome to be achieved and demonstrated	
		Learning and Teaching Methods	Assessment Methods
1	Critically review scientific literature.	Tutorials: • to give an opportunity for individual advice on difficult concepts • to stimulate discussion and critical thought in a supportive environment Debates • to stimulate discussion and critical thought and use scientific reasoning to support arguments Project Work • to provide an opportunity to gather, interpret and critically review data Poster presentation: • to provide an opportunity to defend scientific reasoning through effective communication	Examinations (Theory and Practical) • to assess the ability to marshal arguments, apply models, and present ideas in a coherent and literate way • to assess whether students can apply the techniques of analysis taught Essays • to assess students' ability to research the topic • to assess students' ability to assemble and evaluate data, apply models, reason and present ideas in a coherent and literate way • to enable students to show their understanding of different perspectives and their critical appreciation of different questions and approaches Poster presentations • to assess students' ability to communicate scientific information in the style of a conference poster Project thesis • to assess students' ability to plan and perform an independent research study and to analyse appropriately and critically review scientific data
2	Create and test hypotheses.		
3	Report on their studies verbally and in writing.		
4	Ability to design experiments to test hypotheses.		
5	Ability to gather analyse and interpret data from their own studies and that of others.		
6	Express themselves clearly and effectively by displaying logical selection and organisation of factual material and demonstrate clear reasoning verbally and in writing.		

C. **Professional/ Skills**			
	On successful completion of their programme, students are expected to be able to:	Teaching, Learning and Assessment Strategies to enable outcome to be achieved and demonstrated	
		Learning and Teaching Methods	Assessment Methods
1	Use a range of experimental techniques employed in investigative Biology in different subject areas particularly **Microbiology & Immunology**.	Laboratory work • to enable students to put theory into practice and develop essential laboratory skills Project work • to enable students to plan and perform an independent research study, • to analyse appropriately and critically review scientific data	Practical Reports • to enable students to communicate scientific investigations in the style of a peer reviewed written publication Project thesis • to assess students' ability to plan and perform an independent research study and to analyse appropriately and critically review scientific data
2	Select and use appropriate statistical techniques for the analysis of results derived from experiments in these areas.		
3	Use a range of techniques to acquire or access theoretical and practical data in Biology and **Microbiology & Immunology** in particular.		
4	Apply scientific principles to biological topics and be capable of using reflective enquiry to support or refute hypotheses.		

	D. Transferable Skills		
	On successful completion of their programme, students are expected to show:	Learning, Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated	
		Learning and Teaching Methods	Assessment Methods
1	The ability to maintain clear accurate and appropriate laboratory records.	Laboratory work • to enable students to put theory into practice and develop essential laboratory skills including data recording and record keeping Poster presentations • to develop students' ability to communicate scientific information in the style of a conference poster Project thesis • to enable students to plan and execute an independent research study and to analyse appropriately and critically review scientific data Groups Tasks: Debate, poster presentations • to enable students to solve problems and organise and manage group activities CAL and IT training sessions • to enable students to develop essential skills IT literacy	Practical Reports • to assess students' ability to communicate scientific investigations in a clear and accurate manner Project reports • to assess students' ability to communicate scientific investigations in a clear and accurate manner • to assess numeracy skills and ability to evaluate experimental data CAL assessments • to assess students' ability to manipulate data, text and images in standard software and scientific packages Group Poster / Debate • to assess students' ability to work effectively as a group
2	Selective acquisition of data from lectures and written material.		
3	Communications skills covering both written and oral reports.		
4	Group working skills.		
5	Numeracy skills to evaluate experimental data.		
6	Work organisation and time management skills.		
7	Problem solving skills.		
8	IT skills.		
9	Overall sufficient transferable learning skills to sustain lifelong learning and continuing professional development.		

Entry Requirements	Students must satisfy the entry requirements determined by the Life & Health Sciences School Board as well as those of the General Regulations for Undergraduate Programmes.
Transfer to other programmes	With the agreement of the School's Associate Dean for Undergraduate programmes students undertaking the BSc programme in Microbiology & Immunology may transfer to the MBiol programme at the end of stage II, or after completing an industrial placement, provided that the overall mark for stage II was ≥ 60%. With the agreement of the School's Associate Dean for Undergraduate programmes students undertaking the BSc programme in Microbiology & Immunology may transfer to BSc in Cell & Molecular Biology, Biological Sciences or Human Biology at any time up to the beginning of Stage III. Transfer from BSc Microbiology & Immunology to BSc Biomedical Science is not normally allowed.
Transfer from other programmes	Subject to performance being deemed satisfactory by the appropriate Biology examination board, and with the agreement of the School's Associate Dean for Undergraduate programmes, MBiol students may transfer to the BSc programme in Microbiology & Immunology up to the end of stage II or after having completed an industrial placement. Subject to performance being deemed satisfactory by the appropriate Biology examination board, and with the agreement of the School's Associate Dean for Undergraduate programmes, students of Biomedical Science may transfer to the appropriate stage of BSc Microbiology & Immunology during the following time windows: (a) Stage I - enrolment to the beginning of Term 2; (b) immediately before progression to Stage II; (c) Stage II up to the beginning of Term 2 and (d) immediately prior to progression to Stage III. If transfer is in the time window (d) students will be precluded from choosing a final year option in Human Physiology.

Programme Regulations	All honours students taking the **Microbiology & Immunology degree** must study 5 of the Stage III Option Modules, the specialist route for this programme is determined by the choice of elective modules in Stage III. **Students are precluded from the directed combinations leading to the degree titles of Human Biology, Biological Sciences and Cell & Molecular Biology as detailed in the relevant Programme Regulations** **ORDINARY DEGREE** Final stage assessment will comprise two compulsory modules, BY3PR1 and BY3KS3, and three optional modules as set out in stage III.

This specification provides a concise summary of the main features of the programme and the threshold learning outcomes that a student might normally be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. **The individual modules included in the programme may differ from those included in this programme specification as our programmes are subject to continuous review.** Information on admissions requirements and career opportunities is available in the relevant prospectus. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the appropriate module guides and programme handbook(s). The accuracy of the information contained in this document is reviewed by the University and may be audited by the Quality Assurance Agency for Higher Education.