University of the West of England
BRISTOL

ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data						
Module Title	Applied Immunology					
Module Code	USSJ6A-30-M		Level	M	Version	3.1
UWE Credit Rating	30	ECTS Credit Rating	15	WBL module?	No	
Owning Faculty	Health and Applied Sciences		Field	Applied Sciences		
Department	Biological Biomedical and Analytical Sciences		Module Type	Standard		
Contributes towards	MSc Biomedical Science					
Pre-requisites	Study of immunology in undergraduate degree		Co- requisites	None		
Excluded Combinations	None		Module Entry requirements	Study of immunology at undergraduate degree level		
First CAP Approval Date	30th May 2012		Valid from	September 2012		
Revision CAP Approval Date	2nd February 2016		Revised with effect from	September 2016		

Review Date	~ 5 years post approval for PSRB requirements

Part 2: Learning and Teaching	
Learning Outcomes	On successful completion of this module students will be able to: On successful completion of this module (components A (exam) and B (coursework)) students will be able to critically evaluate and discuss the following topics: • the role, application, modification and or generation of antibodies • the role of cytokines in the regulation of the immune system • the origin of autoimmunity in the light of current research • the role of cell-cell interactions in the immune system • developments in immunodiagnosis and immunotherapy • dysfunction of the immune system and associated disease states and • evidence their ability to produce written work and oral presentations in their chosen specialism to the standard expected at M level
Syllabus Outline	

	Molecular immunology The structure of antibodies and genetics of antibody diversity. Production of cytokines, modes of action, types of cytokine. T helper cell subpopulations. Role of cytokines in T and B cell activation, humoral and cell mediated immunity. Intracellular receptor signalling. Cellular immunology. Cell-cell interactions. Receptors involved in cell activation pathways. Antigen presentation. Mucosal immunology. Microbial immunology and vaccination. Induction of tolerance; central and peripheral. Tolerance and autoimmunity. Autoimmune disease and allergy; induction and disease mechanisms. Transplant rejection and immunosuppression Applied immunology Application of antibodies in immunodiagnostics and current technology. Antibody engineering and use of monoclonal and other synthesized antibodies. Applications of antibodies and cytokines in the treatment of diseases. Chemotherapy.
Contact Hours	Formal lectures – 2 hours per week during teaching weeks (two semesters) M level tutorials – 1 hour per week for 20 weeks
Teaching and Learning Methods	Teaching will comprise a mix of formal lecture, group discussion, tutorials and data interpretation exercises. For each hour of scheduled study students are advised to undertake 9 hours of independent study - as this is an M level module the amount of guidance on activities will be reduced as the year progresses so that students develop independent learning skills, and gain the chance to study topics from within the module in alignment with their areas of interest. The interactive nature of the M level tutorials will mean that students will need to spend time each week preparing for the next session. The students will be advised to allow at least 50 hours of the independent study time working on the coursework for the module (which contributes 50% of the module mark). Students on the module will also be required to attend a conference week at an appropriate time in the year (dependent on changes to the academic calendar). During this week a range of visiting lecturers will be brought in to give keynote lectures (for example based on their clinical practice) or research focused lectures that map to the syllabus content. The conference week will also give students an experience of what it is like to attend a scientific conference, with an intensive schedule of talks across the week to be attended. Engagement with the conference week will be assessed as part of USSJYR-15-M (Advanced Topics in Biomedical Science) but the lecture content of conference week will augment this module as well. **Scheduled learning** includes lectures, seminars, tutorials, project supervision, and may include:- demonstration, practical classes and workshops; fieldwork; external visits; work based learning; supervised time in studio/workshop. **Independent learning** includes hours engaged with essential reading, assignment preparation and completion etc. These sessions constitute an average time per level as indicated in the table below. Scheduled sessions may vary slightly depending on the module choices made.
Key Information Sets Information	Not applicable for level M programmes/modules
Reading	At Masters level students are expected to demonstrate the ability to find

Strategy	information, assess its relevance and utilise it in their studies in an independent manner; however the programme team recognise that students entering the programme may be at different levels of the development of the skills required to undertake this successfully. Therefore module leaders will provide you with a starting point in terms of core readings and the lecture material will also give you a strong starting point. However it is in the area of further reading that you need to show the independence of skills and of knowledge development, so you will need to find the further readings yourself. However, the skills required to do this are covered during the early stages of the course, during induction week you will have a library induction session, and in the Research and Diagnostic Methodologies module (USSJYT-30-M) that you take during the first semester we will cover how to undertake a literature search and how to assess and use the material you find appropriately. The programme tutorials will provide opportunities for you to further develop these skills and to ask any questions that you have. Further support and guidance is available through the library which runs workshops that you can sign up to, and also has advice in its website. Module leaders will give you a clear indication of any essential reading, and point you towards the appropriate textbooks and journals for their discipline. This will usually be in the form of a reading list in the module guide; the indicative list on this module specification is as it states indicative as the relevant available books and journals can change regularly – and the module specification is a document written only once when a module is modified and can last for many years. So it is important that you refer to the reading list for your specific year group as the definitive document. All students will be encouraged to make full use of the print and electronic resources available to them through membership of the University. These include a range of electronic journals and a wide variety of resources available through web sites and information gateways. The University Library's web pages provide access to subject relevant resources and services, and to the library catalogue. Many resources can be accessed remotely.
Indicative Reading List	**Selected Books:** **NB. The editions listed are those in the library as at January 2016, newer editions may become available and should be used where possible.** • Kindt, T.J., Goldsby, R.A. and Osbourne, B.A. (2007) *Kuby Immunology*. 7th ed. New York: W.H. Freeman • Male, D.K., Brostoff, J. and Roitt, I.V. (2001) *Immunology*. 6th ed. Edinburgh: Mosby • Abbas, A.K., Lichtman, A.H. and Pillai, S. (2015) *Cellular and Molecular Immunology*. 8th ed. Philadelphia: Elsevier Saunders **Immunology Journals** • Trends in Immunology (review articles) • Current Opinions in Immunology (review articles) • Annual Reviews in Immunology (review articles) • Journal of Immunology (original research) • Clinical and Experimental Immunology (original research) • Clinical and Experimental Allergy (original research) • Immunology (original research) • Clinical Immunology (original research) • European Journal of immunology (original research • BMC Immunology (original research) • Nature (review articles and original research) • Frontiers in Immunology (review articles and original research) • Immunology Letters (review articles and original research) • Plus other relevant journals in Biological and Biomedical Sciences as guided by the module team

	Internet Web Sites e.g. British Society for Immunology, Science Direct, Public Health England, WHO, CDC

Part 3: Assessment	
Assessment Strategy	The MSc BMS Programme has a programme level assessment strategy (see Programme Specification appendix 1), and all modules have their assessments designed to relate to that document. For parity across all routes the specialist subject modules on the MSc BMS programme have a 50:50 weighting of course work to final exam – this module is one of the specialist modules. Therefore the coursework has been designed in line with the programme assessment strategy. This module has coursework designed to test the ability of students to express their chosen specialist discipline in both written form and in oral form. The coursework essay is similar in style to a review article in a journal, and the presentation is designed to replicate those given at conferences. Both are highly relevant assessments for higher level science graduates to have undertaken, preparing them for future academic style writing and presentation in their professional lives. The assessments are marked to the BBAS standard PG marking criteria, and students are fully briefed on the assessment both in writing and through a tutorial session. Students also develop several transferable skills during this assessment including negotiation (they are allowed to pick their own title and refine it), critiquing of published literature, scientific writing etiquette, and editing documents to a high editorial standard. The exam enables students to demonstrate a breadth of knowledge that it would be reasonable for future employers to see in a Masters graduate in relation to their chosen specialism.

Identify final assessment component and element	***A1***	
% weighting between components A and B (Standard modules only)	**A:** **50**	**B**: **50**
First Sit		
Component A (controlled conditions) **Description of each element**	**Element weighting** **(as % of component)**	
1. Examination (3 hours)	100	
Component B **Description of each element**	**Element weighting** **(as % of component)**	
1. Essay (2000 words)	40	
2.Oral Presentation and defence (20 minutes) and Associated Abstract	60	

Resit (further attendance at taught classes is not required)	
Component A (controlled conditions) **Description of each element**	**Element weighting** **(as % of component)**
1. Examination (3 hours)	100
Component B **Description of each element**	**Element weighting** **(as % of component)**

1. Extended Essay (2000 words)	40
2. Presentation Report and Slides	60
If a student is permitted a retake of the module under the University Regulations and Procedures, the assessment will be that indicated by the Module Description at the time that retake commences.	