



CORPORATE AND ACADEMIC SERVICES

MODULE SPECIFICATION


Part 1: Basic Data					
Module Title	Immunohaematology				
Module Code	USSKBT-30-3	Level	3	Version	1
Owning Faculty	Health & Applied Science	Field	BBAS		
Contributes towards	BSc (Hons) Healthcare Science (Life Sciences)				
UWE Credit Rating	30	ECTS Credit Rating	15	Module Type	Standard
Pre-requisites	Studies in the Biology of Disease (USSKAT-30-2) AND Human Physiological Systems (USSKAS-30-2)	Co- requisites	None		
Excluded Combinations	None	Module Entry requirements	N/A		
Valid From	September 2016	Valid to	September 2022		

<b>CAP Approval Date</b>	28/03/2014
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Part 2: Learning and Teaching	
Learning Outcomes	<p>On successful completion of this module students will be able to:</p> <ul style="list-style-type: none"> <li>discuss the generation of antibody diversity and critically evaluate immunodiagnosis and immunotherapy [A, B1, B2]</li> <li>evaluate the role of cytokines in the regulation of the immune system [A, B1, B2]</li> <li>critically assess the origin of autoimmunity [A, B1, B2]</li> <li>critically evaluate immune surveillance strategies in relation to cancer, bacterial and viral intervention [A, B1, B2]</li> <li>discuss the immunological aspects of transplantation rejection and immunosuppression [A, B1, B2]</li> <li>discuss the dysfunction of the immune system and disease [A, B1, B2]</li> <li>discuss critically the biological bases of selected haematological disease states and related therapeutic strategies [A, B1, B2]</li> <li>discuss the biological bases of the different immunohaemolytic disease states and prophylactic strategies [A, B1, B2]</li> <li>utilise electronic information sources effectively as learning aids and be able to critically and analytically appraise the relevant scientific literature [A, B1, B2]</li> </ul>
Syllabus Outline	

	<ul style="list-style-type: none"> <li>• Molecular immunology. The structure of antibodies and the development of antibody specificity. Production of cytokines and mode of action. Cytokine classification. Th1 and Th2 subpopulations. Role of cytokines in T and B cell activation, humoral and cell mediated immunity. Immunosuppression.</li> <li>• Cellular immunology. Cell-cell interactions. Receptors involved in cell activation pathways. Induction of tolerance; central and peripheral. Possible ways that tolerance can break down. Autoimmune disease and allergy; induction and disease mechanisms. Transplantation rejection and immunosurveillance. Cancer immunology.</li> <li>• 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 disease.</li> <li>• Physical and chemical requirements for optimal haemopoiesis throughout life. Content of the blood and bone marrow. Reference values. Ontogeny and sites of haemopoiesis. Regulation of haemopoiesis. Nutritional requirements.</li> <li>• Haematological malignancy. Aetiology and the multi-hit hypothesis. Classification. Principles of investigation and diagnostic criteria. Pathophysiology. Theoretical basis of cytotoxic chemotherapy.</li> <li>• Haemostasis. Structure and contribution to haemostatic function of blood vessels, platelets, coagulation proteins and fibrinolytic proteins. Functional inter-relationships between the vascular, platelet, coagulation and fibrinolytic systems. Naturally occurring inhibitors of coagulation and fibrinolysis. Haemorrhagic conditions. The hypercoagulable state.</li> <li>• Immunohaematology. Laboratory investigation of serological reactions to aid diagnosis of immunohaemolytic disease and immunological transfusion reactions. Strategies for the prophylaxis of immunohaemolytic disease.</li> <li>• Transfusion therapy. The appropriate use of blood components. Hypersensitivity responses to transfusion.</li> </ul>
Contact Hours	<ul style="list-style-type: none"> <li>• The contact hours (72) are distributed as follows:</li> <li>• 48 hours of lectures</li> <li>• 24 hours of tutorials / seminars</li> <li>• This contact time will be underpinned by provision of online material to be delivered in an asynchronous manner through the University's online E-learning platform (Black Board). This may include:- additional recorded lectures, journal articles, a discussion forum, links to related news reports and scientific animations and invitations to attend internal and external specialist seminars related to the lecture content</li> </ul>
Teaching and	

<p>Learning Methods</p>	<p><b>Students are expected to spend 72 hours on scheduled learning and 228 hours on independent study</b></p> <p><b>Scheduled learning</b>  The module will be delivered using keynote lectures designed to highlight the important principles and concepts of each topic and to provide a framework for personal study. Where appropriate experimental evidence that underpins our current theoretical knowledge framework will be discussed, to allow the student to develop an appreciation of how scientific theory becomes established and evolves.</p> <p>Lectures will be supported by tutorials and seminars, case studies and guided reading. Interactive tutorials will be used to explore selected topics from the syllabus in more detail. Students will be encouraged to utilise their existing knowledge to develop their understanding of haematology and immunology in both lecture and tutorial sessions.</p> <p>Case studies will be used to build upon lectures and facilitate the development of analytical and interpretative skills, where appropriate.</p> <p><b>Independent learning</b>  The development of study skills will be supported by UWE's dedicated online study skills resources (via UWE library web site) which will be introduced at the start of the module (<a href="http://www1.uwe.ac.uk/students/studysupport/studyskills.aspx">http://www1.uwe.ac.uk/students/studysupport/studyskills.aspx</a>)</p> <p>Student learning will be further supported through the University's E-learning environment, Blackboard, where a handbook, lecture slides / handouts, links to external websites, videos, quizzes, invitations to external seminars, journal articles and other resources will be available.</p> <p>Guided reading will be provided to support or extend the lectures and will be used to direct the student to preparative and / or supplementary information sources. An essential reading list will also be provided.</p> <p>A web site has been constructed which links to some of the best available information sources on the internet, which have been investigated for their validity and usefulness in this context.</p> <p>Students will also undertake a critical and current review of an agreed topic area aligned to the syllabus (to include some experimental data) and to present their findings in an assessed seminar presentation, along with a lay and a scientific summary of the content. TEL may be further used to support the delivery and or marking of these assessments. [Students are expected to spend approximately 37 hours on preparation for this assessment]</p>
<p>Key Information Sets Information</p>	<p>Key Information Sets (KIS) are produced at programme level for all programmes that this module contributes to, which is a requirement set by HESA/HEFCE. KIS are comparable sets of standardised information about undergraduate courses allowing prospective students to compare and contrast between programmes they are interested in applying for.</p>

Number of credits for this module				30	
Hours to be allocated	Scheduled learning and teaching study hours	Independent study hours	Placement study hours	Allocated Hours	
300	72	228	0	300	

The table below indicates as a percentage the total assessment of the module which constitutes a -

**Written Exam:** One unseen written exam

**Coursework:** An assessed seminar and oral presentation; plus abstracts (both scientific and lay)

Please note that this is the total of various types of assessment and will not necessarily reflect the component and module weightings in the Assessment section of this module description:

Total assessment of the module:		
Written exam assessment percentage		60%
Coursework assessment percentage		40%
		100%

### Reading Strategy

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. Students will be presented with opportunities within the curriculum to develop their information retrieval and evaluation skills in order to identify such resources effectively.

Any **essential reading** will be indicated clearly, along with the method for accessing it, e.g. students may be expected to purchase a set text, be given or sold a print study pack or be referred to texts that are available electronically, etc. This guidance will be available in the module handbook, via the module information on Blackboard and through any other vehicle deemed appropriate by the module/programme leaders.

If **further reading** is expected, this will be indicated clearly. If specific texts are listed, a clear indication will be given regarding how to access them and students will be given guidance on how to identify relevant sources for themselves, e.g. through use of bibliographical databases.

A detailed reading list will be made available through relevant channels e.g. module handbooks, blackboard etc.

### Indicative Reading List

*The following list is offered to provide validation panels/accrediting bodies with an indication of the type and level of information students may be expected to consult. As such, its currency may wane during the life span of the module specification. However, as indicated above, CURRENT advice on readings will be available via other*

more frequently updated mechanisms, such as the module handbook.

**The recommended immunology module texts are the current versions of the following::**

Male, D. Brostoff, J. Roth, D.B. and Roitt, I. *Immunology*. Canada: Mosby Elsevier

Owen, J.A. Punt, J.P. and Stranford, S.A. *Kuby Immunology*. New York. WH Freeman & Company

**The recommended haematology module texts are the current versions of the following::**

Hoffbrand, A. V. Pettit, J. E. & Moss, P.A.H. *Essential Haematology*. Oxford: Wiley-Blackwell

Overfield, J., Dawson, M.M., and Hamer, D. *Transfusion Science*  
Bloxfordham: Scion Publishing Ltd

Pallister, C. and Watson, M. *Haematology* Bloxfordham: Scion Publishing Ltd

**Indicative reading lists**

All aspects of the syllabus are covered in general Haematology and Molecular Biology books such as:

- Appelbaum, F.R., Forman, S.J., Negrin, R.S. and Blume, K.G. (2009) *Thomas' Hematopoietic Cell Transplantation* 4<sup>th</sup> Ed. Oxford: Wiley-Blackwell
- Daniels, G. (2013) *Human Blood Groups* 3<sup>rd</sup> Ed. Oxford: Wiley-Blackwell
- Hoffbrand, V.A., Catovsky, D., Tuddenham, E.G.D. and Green, A.R. *Postgraduate Haematology* Oxford: Wiley-Blackwell
- Hughes-Jones, N.C., Wickramasinghe, S.N. and Hatton, C.S.R. *Haematology (Lecture Notes)* Oxford: Wiley-Blackwell
- Klein, H.G. and Anstee, D.J. *Mollison's Blood Transfusion in Clinical Medicine* Oxford: Wiley-Blackwell
- Knight, R. *Transfusion and Transplantation Science (Fundamentals of Biomedical Science)*. Oxford: Oxford University Press
- McCullough, J. *Transfusion Medicine*. Oxford: Wiley-Blackwell
- Okpala, I. *Practical Management of Haemoglobinopathies*. Oxford: Wiley-Blackwell
- Pallister, C.J. *Blood: Physiology and Pathophysiology*. Bloxfordham: Scion Publishing
- Provan, D. and Gribben, J. *Molecular Hematology*. Oxford: Wiley-Blackwell

In addition, students will be actively encouraged to source recent articles from a number of scientific journals, including (but not limited to):

- Journal of immunology
- Blood
- Bone Marrow Transplantation
- British Journal of Haematology
- Critical Reviews in Oncology/Haematology
- Current Opinion in Haematology
- Current Opinions in Immunology
- Clinical and experimental immunology Current Topics in Haematology
- Experimental Hematology
- Haematologica
- Journal of Thrombosis and Haemostasis
- Leukaemia
- Stem Cells
- Transfusion
- Transfusion and Apheresis Research
- Transfusion Medicine Reviews

- Transplantation Proceedings
- Trends in Immunology
- Vox Sanguinis

Other sources include the British Society of Immunology home page  
<http://www.immunology.org>

### Part 3: Assessment

#### Assessment Strategy

The Assessment Strategy has been designed to support and enhance the development of subject-based knowledge and skills, whilst ensuring that the Learning Outcomes are achieved.

The controlled assessment is one 3 hour examination comprising essay based questions and is an effective method of assessing a student's ability to utilise and apply knowledge gained at this level. Questions will allow an element of choice of subjects covered, with the paper as a whole encompassing a representative cross-section of the syllabus and Learning Outcomes, which in combination with the assignments set will allow assessment of many of the main aspects of the module. The paper will be sectioned in such a way as to assess both the Immunology (2 of 4 questions) and the Haematology components (1 of 2 questions) independently.

Formative feedback is available throughout the module using Q+A sessions in lectures, group discussions, particularly in tutorials/seminars, together with use of 'Turning Point Technologies' to enable students to gain an indication of their progress anonymously. The latter will also be used to give formative feed-forward on their understanding of how to give a good oral presentation and write a good abstract, prior to undertaking of the assignment. Similarly, exam questions will be discussed throughout the course, combined with specific exam revision and preparation sessions prior to the exam.

The coursework consists of two integrated elements, designed to provide students with the opportunity to critically analyse a current area of literature. Specifically students will undertake a self selected literature search, read and digest some primary data, then present and explain the findings in several different scientific formats to other scientists. The first element is comprised of an assessed seminar with oral presentation and the second element is comprised of the both lay and scientific summaries of the presentation. Together the coursework elements provide students with an opportunity to develop core science communication skills, which are vital to any future scientist and are rarely used as assessment vehicles at any level. The coursework will be submitted outside of the exam period and will be time restricted rather than word restricted. Additionally, the seminars which are designed to align with the taught lecture topics and evenly cover the whole module content, will provide an additional and contemporary source of information, to build upon student understanding from the lectures.

Summative feedback will be provided after submission of the assignment, which will clearly identify areas of strength and will give constructive advice on areas for improvement. Both the contemporary content of the seminar series and the experience of summarising and presenting from a primary research article, will enhance the student appreciation of experimental design and interpretation of scientific data; and will provide a rich source of additional information, aligned with, but additional to, the taught content.

Identify final assessment component and element

% weighting between components A and B (Standard modules only)	<b>A:</b>	<b>B:</b>
	<b>60%</b>	<b>40%</b>
<b>First Sit</b>		
<b>Component A</b> (controlled conditions) <b>Description of each element</b>	<b>Element weighting</b> <b>(as % of component)</b>	
1. EX1 Examination (3 hours)	100	
2.(etc.)		
<b>Component B</b> <b>Description of each element</b>	<b>Element weighting</b> <b>(as % of component)</b>	
1. CW1 Critical review via seminar presentation & oral delivery	80	
2.CW2 Science communication via Lay summary & concise scientific précis of current research topic	20	

<b>Resit (further attendance at taught classes is not required)</b>		
<b>Component A</b> (controlled conditions) <b>Description of each element</b>	<b>Element weighting</b> <b>(as % of component)</b>	
1. EX1 Examination (3 hours)	100	
2.(etc.)		
<b>Component B</b> <b>Description of each element</b>	<b>Element weighting</b> <b>(as % of component)</b>	
1. CW1 Critical review via seminar presentation (slides only)	80	
2. CW2 Science communication via Lay summary & concise scientific précis of current research topic	20	
If a student is permitted an <b>EXCEPTIONAL RETAKE</b> of the module the assessment will be that indicated by the Module Description at the time that retake commences.		