



# Module Catalogue

*School of Life and Medical Sciences*

*Biological and Environmental Sciences*

**A DIRECTORY OF UNDERGRADUATE MODULES FOR  
EXCHANGE AND STUDY ABROAD STUDENTS**

SEMESTER A, B AND AB 2021/22

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## INTRODUCTION

This module directory is specifically designed for exchange students to select modules at School of Life and Medical Sciences, Biological and Environmental Sciences, University of Hertfordshire.

1. Please see the box below explaining the module codes:

4LMS0149		
<b>4</b>	<b>LMS</b>	<b>0149</b>
Module level	School of study	Module code

2. As an exchange student you can choose modules from levels 5, 6 and exceptionally at level 4.

<b>Level 4</b>	<b>Level 5</b>	<b>Level 6</b>
First Year module	Second year module	Third Year module

3. Co-requisites, pre-requisites and prohibited combinations.

Some of the modules may have co-requisites or pre-requisites which you will find indicated in each module. Please note for you, as an exchange student, *if a module has co-requisites or pre-requisites you must have previously studied the subject and have completed the relevant module(s) at your home institution.* When sending your application, please include a copy of your transcript to show that you have taken the minimum required co-requisites or pre-requisites module(s) at your home institution. Additionally, we may require you to provide a module description in order to evidence prior study.

If you are in the process of completing the required module(s) at the time of the application and you do not have the final copy of the transcript, please include a letter from your home institution clearly listing the modules that you are registered on.

**Prohibited combinations-** please note if there are modules listed under prohibited combinations you can only study one of the modules.

Sports

## Module name: Understanding the Sport Industry

Module code: 4LMS0149

Semester: A

Credits: 15

### Module Aims:

Develop an understanding of the management skills and knowledge needed to operate and promote a range of fitness, sports and leisure facilities within the public, commercial and voluntary sector environments.

### Intended Learning Outcomes:

Successful students will typically: Be aware of the similarities and differences between managing fitness, sports and leisure facilities within the different sporting sectors. Obtain an understanding of the day to day operational requirements needed to manage fitness, sports and leisure facilities, including customer care, staff management, marketing, budgeting, health and safety, programming and physical resources. Successful students will typically: Be able to identify the management challenges faced by managing fitness, sports and leisure facilities in each of the main sectors Apply the management tools required to operate fitness, sports and leisure facilities effectively, efficiently and safely

### Module Content:

This module will develop an understanding of the management skills and knowledge needed to operate and promote a range of fitness, sports and leisure facilities within the public, commercial and voluntary sector environments. It will identify and explore the basic skills and knowledge required to operate these facilities, including those required for customer care, staff management, marketing, budgeting, health and safety, programming and maintenance of physical resources. All learning outcomes will be achieved through the lectures, tutorials, workshops, directed independent study and the assessment.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Assessment will normally include a Progress Test, and Written Assignment. A grade of at least 40% must be achieved in the Written Assignment to pass the module. While an aggregate module grade of 40% must be achieved in order to pass the module

Exam	Coursework	Practical
0%	100%	0%

Sports

## Module name: Physical Activity and Sport Policy in Practice

Module code: 4LMS0147

Semester: AB

Credits: 30

### Module Aims:

Study the nature, scope, structure, context and potential of sports development Examine sports development programmes in education, community and high performance sport settings Understand the concepts that influence sports development practice

### Intended Learning Outcomes:

Successful students will typically: Be aware of the key landmarks (policies, strategies and programmes) that have shaped sports development Understand the role and responsibilities of physical activity and sport development organisations Recognise the policy context for sports development and outline current programmes in youth/education, community and high performance sport settings. Successful students will typically: Recognise the priorities for Physical Activity and Sports Development organisations at national and local level Be able to demonstrate awareness of the concepts that influence sports development practice Be able to identify the roles and responsibilities of a sports development professional

### Module Content:

This module will consider the nature and scope of physical activity and sports development. To provide students with an understanding of the growth and evolution of sports development and the value of an active lifestyle. The varied organisational perspectives and priorities relating to sports development will be considered in both a global and UK perspective. The strategies and programmes that have been developed will be explored with a consideration of the role and responsibility of being a Sports Development professional. All Learning Outcomes will be achieved through the lectures, tutorials, workshops, directed independent study and the assessment.

### Pre and Co requisites:

none

Total hours: 300

### Assessment:

Assessment will normally include a combination of a Progress Test, Written Assignment, and a Group Presentation. A grade of at least 40% must be achieved in both the Written Assignment and Group Presentation to pass the module. While an aggregate module grade of 40% must be achieved in order to pass the module.

Exam	Coursework	Practical
0%	100%	0%



Sports

## Module name: Developing Academic Approach

Module code: 4LMS0152

Semester: A

Credits: 15

### Module Aims:

Be introduced to a range of concepts and themes required to develop a successful academic approach  
develop understanding and awareness of the academic and research skills required in higher education

### Intended Learning Outcomes:

Successful students will typically: demonstrate awareness, understanding and basic evaluation of theoretical methods and approaches used within sports research outline and appreciate the techniques used for successful academic study (i.e. research, writing style, referencing, presentations, analysis, statistics) Successful students will typically: demonstrate evidence of planning, developing and producing a range of academic assessments identify and apply appropriate research techniques to sporting themes engage and enhance skills in IT/computer software applications

### Module Content:

This module is focussed on introducing and developing skills required to develop a successful academic approach to be a successful student in in a Higher Education. While also considering the professional/transferable skills for a successful career. With regards to academic approach, this module primarily provides an introduction to the academic, IT and communication skills that students will require to become effective autonomous learners in Higher Education. All Learning Outcomes will be achieved through the lectures, tutorials, workshops, directed independent study and the assessment

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Assessment will normally include a Log Book assessment that may comprise a Progress Audit, Final Audit, Reflection on the Module, Written Assignments, Meetings with Personal Tutor, Academic Presentations and Progress Tests. An aggregate module grade of 40% is required to successfully pass the module

Exam	Coursework	Practical
0%	100%	0%

Sports

## Module name: Foundations of Sports Coaching

Module code: 4LMS0153

Semester: AB

Credits: 30

### Module Aims:

Be introduced to a range of topics that inform the coaching process in its early stages examine the basic rationale behind principles of coaching, and practical applications of coaching, with reference to supporting theory and literature develop a foundational understanding of how coaching theory informs coaching practice in context, through the practical experience of coach shadowing develop practical coaching capabilities through the combination of gaining a vocational coaching award of their choice, and through undertaking planning, delivery and evaluation of their own coaching

### Intended Learning Outcomes:

Successful students will typically: produce evidence of underpinning application and understanding of academic theory behind coaching principles and coaching practices gain and reflect upon practical coaching environment experience, including reflecting upon the coaching practice of others demonstrate awareness and understanding of the importance of academic as well as practical issues in the coaching process, and gain insight into real world implications for coaching utilise the theoretical and practical experience base from this module as a structure to facilitate learning from subsequent coaching modules, and coaching awards Successful students will typically: be able to demonstrate their knowledge of underpinning principles and theory related to coaching practice through written assignments, practical exercises, and progress tests plan a coaching programme, and deliver selected sessions under the supervision of a more qualified/experienced coach evaluate and reflect upon the coaching practice of others; and their own coaching practice, coaching related learning, and future development needs provide evidence of having undertaken coach shadowing and practical coaching experiences; and of gaining a recognised vocational coaching award

### Module Content:

This module involves an examination of the basic rationale behind the foundational principles of coaching, and the application of coaching practices, with reference to relevant supporting theory and literature. It aims to facilitate the development of practical coaching experience in context through the combination of undertaking a coach shadowing placement; gaining a vocational coaching award; and planning, delivery and evaluation of the student s own coaching. This module is designed to introduce the novice coach to a range of relevant topics that inform the coaching process in its early stages.All learning outcomes will be achieved through the lectures, workshops, tutorials, practical sessions, directed independent study and the assessment.

### Pre and Co requisites:

none

Total hours: 300

Assessment:

Assessment will normally comprise of progress tests, written assignments with submission of supporting evidence. A grade of 40% in both the written assignments needs to be achieved in order to pass the module. While an aggregate module grade of 40% must be achieved in order to pass the module.

Exam	Coursework	Practical
0%	100%	0%

Sports

Module name: Sports as Social and Global Phenomena

Module code: 4LMS0151

Semester: B

Credits: 15

Module Aims:

Develop awareness of sports as significant social phenomena consider the extent to which sports may be seen as global phenomena appreciate the interactions between sports and culture in the social context

Intended Learning Outcomes:

Successful students will typically: show understanding of the development of sports into significant social phenomena demonstrate awareness of the global context in relation to sports be cognisant of interactions between sports, society and culture Successful students will typically: be able to explain the development of sports into significant social phenomena use examples to illustrate the extent to which sports may be seen as global phenomena produce evidence of interactions between sports and culture in a social context

Module Content:

This module will focus on the social context of sport and the interaction between sport, society and culture. This will include an exploration of the development of sport as a significant part of many societies today, as well as consideration of the ways in which sports may be seen as global phenomena. All learning outcomes will be achieved through the holistic programme of lectures, tutorials, workshops, directed independent study and assessment.

Pre and Co requisites:

none

Total hours: 150

Assessment:

Assessment will normally include a case study or literature based essay. An aggregate module grade of 40% must be achieved in order to pass the module

Exam	Coursework	Practical
0%	100%	0%

Sports

## Module name: Sport Business Management: National and International Perspectives

Module code: 4LMS0150

Semester: B

Credits: 15

### Module Aims:

Develop awareness of the sports business landscape both within the UK and at an international level  
Understand the different organisation and delivery models for sport adopted across the world

### Intended Learning Outcomes:

Successful students will typically: Be aware of sport business management in different countries globally Describe and explain organisational structure and concepts of international sport business organisations Successful students will typically: Discuss reasons for similarities and differences in management of global sport businesses Demonstrate the significance of different examples of management internationally in sport business

### Module Content:

This module will set the scene for the way in which sport is run as both a commercial and not for profit business both in the UK and internationally. For example it will explore the delivery models for sport in different parts of the UK and consider international delivery such as the franchise model popular in North American sport.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Assessment will normally include a presentation and written report. A grade of 40% must be achieved in the written report in order to pass the module. While an aggregate module grade of 40% must be achieved in order to pass the module.

Exam	Coursework	Practical
0%	100%	0%

Sports

## Module name: Sport Development

Module code: 5LFS1019

Semester: AB

Credits: 30

### Module Aims:

\*consider the contemporary sociological relationship between participation in the various forms of physical activity and sport \*explore the different motivations and practical differences that different stakeholders such as education sectors, Community Sport Partnerships (CSP) and National Governing Bodies (NGB), Local authorities (LA) and Voluntary Sports Clubs (VSC) have towards the development of sport and development through sport \*appreciate different strategic planning approaches and the range of available resources that can assist with sports facility developments \*examine the varied responsibilities of NGB s to promote sport performance with partners while also influencing sports clubs and their volunteers to adhere to the implications of professionalisation

### Intended Learning Outcomes:

Successful students will typically: \*define and differentiate, participation in active recreation, everyday activity, physical education and sport, as a form of physical activity \*apply key sociological perspectives to the formalisation of team and individual sports with awareness of the patterns of continuity and change in contemporary sport participation \*consider the different motivation stakeholders such as education sectors, Community Sport Partnerships (CSP), National Governing Bodies (NGB), Local Authorities ( LA) and voluntary sports clubs (VSC) have towards sports development \*appreciate different strategic planning approaches and the range of available resources that can assist with sports facility developments Successful students will typically: \*identify with the broader social policy outcomes and practical differences between the development of sport and development through sport \*summarise the key debates on the role of the club in the development of sport and the different approaches taken by NGB s to facilitate sports clubs inthe community and education sectors \*Organise thoughts on the various ways in which sports volunteers may be recruited, retained, developed and managed. While also appreciating the implications of professionalisation to them \*compare the variety of performance pathways that exist across different sports. While assessing the role of different individuals and organsatiions in creating, developing and sustaining performance pathways

### Module Content:

This module will explore the factors that impact on sports development such as sociological perspectives and situational circumstances that affect participation. The influence and relationship between sports development and associated themes such as physical activity, active recreation and leisure will be considered in the context of continuity and change in contemporary sport. The array of different stakeholders such as sport in educational settings, National Governing Bodies (NGB's), local authorities and sports clubs will be considered for their different responsibilities and motivations. This module will involve students in debates focusing on the role of sports volunteers in club environments and in an appreciation of creating, developing and sustaining performance pathways. Of key importance to this module is an appreciation of the array of different stakeholders to sports

development and their varying priorities. All Learning Outcomes will be achieved through the lectures, tutorials, workshops, directed independent study and the assessment.

Pre and Co requisites:  
none

Total hours: 300

Assessment:

Coursework will comprise a minimum of two of the following types of assessment: case study; presentation; literature based essay; progress test; MCQ; reflective account.

Exam	Coursework	Practical
0%	100%	0%

Sports

Module name: Sports Management

Module code: 5LFS1020

Semester: AB

Credits: 30

Module Aims:

\*appreciate a variety of sport organisational business structures \*appreciate aspects of management and organisational behaviour in sport organisations \*demonstrate an awareness of the implications of conflict and change within sport organisations \*understand marketing principles & their functions in a business context & in relation to events \*provide marketing and event management solutions for sport organisations.

Intended Learning Outcomes:

Successful students will typically: \*describe and explain a variety of sport business structures \*describe and analyse organisational culture and behaviour \*explore concepts of change & conflict management & apply change management theory to sport organisational scenarios \*explain and describe the principles of sports event management \*describe and explain how to execute a marketing strategy for a sports event. Successful students will typically: \*demonstrate an awareness of a variety of sport business structures and organisational cultural behaviours \*appreciate process of managing change & conflict management theory \*research and market a sports event \*implement a marketing strategy for a sports event.

Module Content:

This module develops the subject of sport management in terms of further understanding the variety of sport business structures and moves on from understanding simple micro environments cross sector to understanding the legal and financial implications of being self employed, partnerships and public limited companies. How these structures behave and how culture is evidenced will be examined along with the theoretical concepts of change management and conflict resolution. This module will then begin to examine less permanent sport organisational structures through sports events and understanding purpose and variety of sports events and associated structures. Finally students will be able to examine an operational management strategy for delivery of a sport event through either having observed or managed an event of choice. 9a1 9a3 learning outcomes will be assessed primarily through examination 9a4 9a5 learning outcomes will be assessed primarily coursework and group based assessment 9b1 9b2 learning outcomes will be assessed primarily through examination 9b3 9b4 Learning outcomes will be assessed primarily coursework and group based assessment

Pre and Co requisites:

none

Total hours: 300

Assessment:

The assessment will comprise: Learning Outcomes A3 & A4 involve a group based assessment opportunity which requires research, organisation, implementation and evaluation of a sport /



leisure orientated event. Students will conduct a feasibility study to ascertain probability of event, develop a marketing strategy to promote the event, organise, implement and evaluate the event. Assessment will comprise : written report and final group presentation 50% and a written self reflection. An average of 40% must be achieved in order to pass the module, with no element of assessment (exam/coursework) being below 35%

Exam	Coursework	Practical
40%	60%	0%

Sports

Module name: Research Skills

Module code: 5LFS1018

Semester: B

Credits: 15

Module Aims:

\* develop awareness of the role of research in sports studies, including the importance of reviewing and critiquing appropriate literature \* develop understanding of research design and methodologies, including awareness of appropriate methods for collecting, analysing and presenting both quantitative and qualitative data \* develop the fundamental research knowledge required to successfully complete a level 6 dissertation in the inter-disciplinary field of sports studies

Intended Learning Outcomes:

Successful students will typically: \* appreciate the role of research as it applies to sports studies \* understand how to locate, critically evaluate and utilise appropriate sources of literature \* be aware of the key components involved in designing a research proposal \* be familiar with both quantitative and qualitative methods of research and analysis within the context of specific sports studies disciplines \* understand the responsibilities and requirements involved in planning and executing a final year research project in sports studies. Successful students will typically: \* identify relevant research and its contribution to the field of sports studies \* demonstrate an ability to critically evaluate appropriate literature \* develop a potential sports studies research design \* identify appropriate methods of data collection and analysis \* produce a feasible indicative plan for a level 6 sports studies research project.

Module Content:

This module is directed toward preparing students for their level 6 dissertation. Students are introduced to research traditions and philosophies within the context of sports studies. The concept of research design is explored, with an emphasis on the role of literature in informing decisions about what to investigate and how to do so. The topic of research ethics is also introduced. Both quantitative and qualitative methods of data collection and analysis are examined. Overall, the core aim of the module is to enable students to develop the skills required in order to progress to a final year research project within a relevant sports studies discipline. Learning outcomes 9a1 & 9a2 and 9b1 & 9b2 will primarily be achieved through coursework assignment 1 Learning outcomes 9a3, 9a4 & 9a5 and 9b3, 9b4 & 9b5 will primarily be achieved through coursework assignment 2 All learning outcomes will be embedded in the holistic experience of the module i.e. the combination of lectures, seminars, workshops, tutorials, and assessments.

Pre and Co requisites:

none

Total hours: 150

Assessment:

Coursework assignment 1: identification and critical evaluation of relevant literature for a specific area of study within the field of sports studies. Coursework assignment 2: indicative plan of a potential sports studies research project design.

Exam	Coursework	Practical
0%	100%	0%

Sports

## Module name: Foundations of Human Physiology

Module code: 4LMS0028

Semester: AB

Credits: 30

### Module Aims:

Acquire a basic theoretical and practical understanding of human physiology, in the particular contexts of exercise and health Describe the structure, function and interrelationships between the cells, tissues, and organs of the human body Develop the skills of collection, presentation, interpretation, and reflection of physiological data under laboratory and practical settings

### Intended Learning Outcomes:

Successful students will typically: Identify the micro and gross structure of selected organ systems and describe a range of human physiological processes at cell, organ and organism level Demonstrate comprehension of the homeostatic, control and regulatory mechanisms related to a range of human physiological processes and the basic responses and adaptations of the body to exercise Demonstrate insight into physiological variables characteristic of health and disorder Successful students will typically: Collect and interpret a range of quantitative physiological data Conduct safe and effective simple physiological experiments on human subjects and demonstrate an awareness of basic health and safety issues applied during laboratory and practical settings

### Module Content:

Foundations of Human Physiology will provide students with an introduction to human physiology applied to sport and exercise. In particular, this module will involve fundamentals of structure, function and biochemistry from cellular, to tissue, organ, and organism levels. A basic understanding of muscular, cardiovascular, respiratory, renal, digestive, endocrine and nervous systems will be developed. There will some coverage of applied sporting topics of relevance to physiology, such as the principles of training and periodicity, and the design of training programmes. Practical work will be used to provide additional insight into specific physiological systems. Practical work will include instruction in the use of physiological interfaces, transducers, and recording and analytical software, basic studies on the respiratory (spirometry and off-line techniques) and cardio-vascular system (ECG and blood pressure) and measurement of spinal reflexes and reaction times. This fourth level module will provide students with an introduction to human physiology particularly applied to the context of sport and exercise.

### Pre and Co requisites:

none

Total hours: 300

### Assessment:

Coursework 1: In class Physiology test 30%, Laboratory practical report 30% Exam: one 2-hour unseen written examination 40% A pass is required in coursework (in class Physiology test and Laboratory practical report combined) and exam. Attendance at workshops and practicals is

compulsory. Unauthorised absence from practical and workshop sessions on this module will result in an academic penalty of -2.5% from a students overall grade.

Exam	Coursework	Practical
40%	60%	0%

Sports

Module name: Foundations of anatomy and biomechanics

Module code: 4LMS0032

Semester: AB

Credits: 30

Module Aims:

Acquire a theoretical and practical knowledge of human anatomy. Acquire a comprehensive knowledge of the principles of biomechanics and how they apply to human movement in sport and exercise.

Intended Learning Outcomes:

Successful students will typically: Describe the structure and function of bones, joints, tendons, ligaments and muscles. Describe the movements possible at selected joints of the skeletal system in relation to the anatomy and biomechanics of sport and exercise movements. Comprehend and explain biomechanical principles as applied to human movement in sport and exercise. Successful students will typically: Identify features of the gross anatomy of the human body. Demonstrate the movements possible at selected joints of the skeletal system in relation to the anatomy and biomechanics of sport and exercise movements. Perform calculations on quantitative kinematic and kinetic data using numeracy and problem solving skills. Work effectively as a member of a team to design and conduct a group assignment.

Module Content:

The module provides an introduction to human anatomy and biomechanics, relating to structures, properties and functions of bones, joints, tendons, ligaments and muscle, in relation to the mechanical principles which govern human movement. The axial and appendicular skeleton will be studied in regard to joint type and associated movements, while the skeletal muscle system will be investigated in terms of the origins and insertions of selected muscles and the movement they produce. Human movement will be studied in terms of the basic variables and units associated with concepts in both linear and angular kinematics and kinetics, including calculations and quantification of human movement. The learning outcomes will be achieved by an integrated programme of lectures, laboratory practical classes and workshops. Data for analysis and interpretation will be collected in laboratory practicals and workshops will provide opportunities for an understanding for the subject areas to be developed.

Pre and Co requisites:

none

Total hours: 300

Assessment:

Coursework 1: Group movement analysis assignment (20%) and an Anatomy practical assessment (40%) Exam 1: 2-hour unseen examination (40%) A pass is required in coursework (coursework 1 and practical combined) and exam. Attendance at workshops and practicals is compulsory. Unauthorised

absence from practical and workshop sessions on this module will result in an academic penalty of - 2.5% from a students overall grade.

Exam	Coursework	Practical
40%	30%	40%

Sports

Module name: Exercise Physiology

Module code: 5LMS0030

Semester: AB

Credits: 30

Module Aims:

Gain an in-depth understanding of the physiological changes occurring in response to acute exercise and the long-term adaptations to chronic training in humans develop practical experience in the measurement of physiological variables during exercise together with monitoring training adaptations in athletes, and the analysis and interpretation of the data obtained comprehend the effect of exercise on the risk of developing various diseases and disorders

Intended Learning Outcomes:

Successful students will typically: discuss the physiological responses of the human body to acute exercise. explain the long-term effects of exercise on physiological systems of the human body and the physiological mechanisms by which exercise benefits health. evaluate the effect of exercise on health and the risk of developing chronic diseases and disorders. Successful students will typically: demonstrate the ability to undertake physiological testing relevant for an athlete and recognise and quantify the potential physiological limitations to exercise performance. conduct safe, accurate and effective experiments to assess physiological changes occurring during exercise in human subjects.

Module Content:

Cardiovascular aspects of exercise, blood pressure and haemodynamic response at rest and exercise, exercise and cardiovascular disease. Respiratory aspects of exercise: haemoglobin and respiratory variables, acid balance and asthma. Basic laboratory testing in athletes and metabolic responses to training. The endocrine system during exercise, exercise-induced endocrine secretions/catecholamine response. Endocrinology-fluid balance. The immune system and exercise. Fatigue and exhaustion; de-training and the human body. The effect of exercise in different environmental conditions and on different populations such as ageing; energy supply and systems. This module involves the detailed study of the component areas of exercise physiology. Learning outcomes will be developed by lectures, laboratory practical classes and workshops. Data for analysis and interpretation will be collected in the laboratory practicals and workshops. This information will have a direct application to the theory presented in lectures to allow for a greater understanding of the subject areas.

Pre and Co requisites:

none

Total hours: 300

Assessment:

Coursework 1: a laboratory report or oral presentation (30%), and a progress test (30%)

Examination: one 2 hour unseen examination (40%) A pass is required in coursework (laboratory report or oral presentation and progress test combined) and exam. Attendance at workshops and



practicals is compulsory. Unauthorised absence from practical and workshop sessions on this module will result in an academic penalty of -2.5% from a students overall grade.

Exam	Coursework	Practical
40%	60%	0%

Sports

Module name: Applied Nutrition for health and physical activity

Module code: 5LMS0029

Semester: A

Credits: 15

Module Aims:

Develop an applied knowledge of the theoretical concepts of human nutrition, with applications to health and physical activity develop an applied and theoretical awareness of the importance of both macro- and micro-nutrients for supporting underlying health and selected aspects of physical activity and recreational sports

Intended Learning Outcomes:

Successful students will typically: Discuss the physiological processes of macro-nutrients involved with human digestion and absorption, and the regulation of metabolic pathways Discuss the importance of nutrition to support fundamental aspects of health and selected recreational sports pertinent to the general public Successful students will typically: undertake an applied evaluation of dietary intake using different methods for the assessment of both macro and micro-nutrients apply a range of consultation skills and feedback pertinent to implementing nutritional programmes for general health and physical activity, in both an applied and scientific manner demonstrate skills in reflective practice pertinent to nutritional interventions and self development and presentation skills through the evaluation and design of a nutrition programme pertinent to an applied scenario

Module Content:

This module follows on from theoretical and practical aspects of human nutrition introduced at level 4, with a focus on how nutrition can be beneficial for health and aspects of physical activity. The module involves a deeper exploration of the physiological processes of human digestion, absorption and metabolism, with reference to the macro-nutrients in particular. Additionally, implications of hormonal and enzymatic regulation of metabolic pathways under different conditions will be explored. The module also aims to introduce topics pertinent to the scientific evaluation of the beneficial effects of nutrition on human health and physical activity. Students undertaking this module will also develop key skills pertinent to case study evaluation, reflective practice and nutritional programme implementation. This module aims to explore key processes of human digestion, absorption and metabolism, including hormonal and enzymatic regulation of metabolic pathways. The module extends awareness of key concepts developed at level 4, through a wider application of dietary assessment tools and case study scenario skills. Students undertaking this module will undertake applied case study scenarios, designed to improve selfevaluation through reflective practice as well as skills pertinent to nutrition programme evaluation, design and implementation. Topics relevant to the application of nutrition for health and physical activity, including recreational sports, will be discussed throughout the module. The learning outcomes will be developed by a programme of lectures, laboratory practical classes, problem based case scenario workshops, and groupwork independent research. Classroom based lectures will be supported through practical work aiming to undertake and analyse dietary intake (using survey, current and retrospective methods) as well as apply key learnings from underlying theoretical concepts. The module will culminate in

students presenting key findings from a dietary assessment of a case study, along with an evidence-based rationale for an applied nutrition programme.

Pre and Co requisites:

none

Total hours: 150

Assessment:

Coursework 1: a group presentation (50%) Exam: a 2 hour unseen written exam (50%) A pass is required in coursework and exam. Attendance at workshops and practicals is compulsory.

Unauthorised absence from practical and workshop sessions on this module will result in an academic penalty of -2.5% from a students overall grade.

Exam	Coursework	Practical
50%	50%	0%

Sports

Module name: Foundations of Nutrition

Module code: 4LMS0030

Semester: A

Credits: 15

Module Aims:

Develop a fundamental knowledge of the basic concepts of human nutrition, hydration and the processes of digestion and metabolism with conceptual applications to sport and exercise understand the influence of endocrine control, the importance of energy requirements and potential consequences of malnutrition and deficiency.

Intended Learning Outcomes:

Successful students will typically: Describe the key principles of human nutrition and substrate provision, human digestion and metabolism (including hormonal regulation) as applied to various states of nutritional intake Identify macro- and micro- nutrients required for human health, along with potential consequences of malnutrition and deficiency Demonstrate an understanding of the key principles of human nutrition and metabolism pertinent to the field of sport and exercise science Successful students will typically: demonstrate an awareness of the key methods involved with assessing dietary intake and perform a simple dietary analysis carry out laboratory-based work pertinent to applying theoretical concepts, and communicate key findings in a scientific manner understand key applications menu planning and nutritional labelling pertinent to dietary assessment and evaluation

Module Content:

This module introduces students to basic components of human nutrition, with applications to sport, health and exercise. The module involves the study of human digestion and absorption, including aspects of endocrine control of metabolism. There is also an introduction to essential themes underlying dietary macro- and micronutrients, and explores basic applications of nutrition pertinent to dietary assessment and problem-based learning scenarios. Foundations of nutrition explores the fundamental areas of human digestion, absorption and metabolism with pertinent relevance to dietary intake. The module aims to explore concepts of energy requirements, macro- and micro-nutrient intake with applications to sport, health and exercise as appropriate. Basic concepts of cellular metabolism, including endocrine control under different states will also be explored. The learning outcomes will be developed by a programme of lectures, laboratory practical classes, problem based case scenario workshops, and groupwork independent research. Classroom based lectures will be supported through practical work aiming to undertake and analyse dietary intake using retrospective methods such as diary recalls; as well as experimental work assessing key concepts such as glycemic response to different foods. Workshops will provide an opportunity to develop a broader awareness of the subject area. The module will culminate in students presenting key findings from a dietary assessment of a case study, along with an evidence-based rationale for a nutrition programme.

Pre and Co requisites:

none

Total hours: 150

Assessment:

Coursework 1: A group presentation of a nutritional case study (50%) Exam: a 2 hour unseen written exam (50%) A pass is required in coursework and exam. Attendance at workshops and practicals is compulsory. Unauthorised absence from practical and workshop sessions on this module will result in an academic penalty of -2.5% from a students overall grade.

Exam	Coursework	Practical
50%	50%	0%

Sports

Module name: Research Design

Module code: 5LMS0032

Semester: B

Credits: 15

Module Aims:

Evaluate relevant research methods in the fields of sport and exercise science and sports therapy  
Design and develop appropriate research proposals for the fields of sport and exercise science and sports therapy

Intended Learning Outcomes:

Successful students will typically: Recognise, describe, and appraise relevant quantitative and qualitative research approaches Identify, explain, and justify the appropriate research methods and statistical techniques for use in the fields of sport and exercise science and sports therapy Discuss the ethical considerations of undertaking research in the fields of sport and exercise science and sports therapy Successful students will typically: Formulate appropriate research questions, aims and hypotheses through engagement with relevant scientific literature Design appropriate research methodologies to investigate the fields of sport and exercise science and sports therapy

Module Content:

In this module students will explore the principles and methods that underpin scientific research in sport and exercise science and sports therapy. The module will enable students to comprehend, critique, and effectively utilise existing scientific research in their studies and professional practice, either as sport and exercise scientists or sport therapists. The knowledge gained will also provide a foundation upon which to design and develop an appropriate research proposal in order to successfully complete the final year project. Through the lecture programme, the module will include examination of relevant quantitative and qualitative research approaches, consideration of reliability, validity and control, appropriate subject selection techniques, construction and development of literature reviews, statistical analysis, ethical considerations and reflective practice. Through the programme of workshops, the module will consider development of appropriate research questions, aims and hypotheses, critical appraisal of scientific literature, presentation and interpretation of results, laboratory equipment, pilot testing, statistical analysis and ethics applications. The workshops will also support the development of the research proposal.

Pre and Co requisites:

none

Total hours: 150

Assessment:

Coursework 1: Research Proposal (75%) Exam 1: A one-hour part-seen or unseen exam (25%) A pass is required in both coursework and exam. A pass at 40% or above is required in coursework. A pass will be awarded at 35% or above for the exam provided the overall module grade is 40% or above.

Exam	Coursework	Practical
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25%	75%	0%
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Biosciences

## Module name: Human Physiology with pharmacology

Module code: 4LMS0002

Semester: AB

Credits: 30

### Module Aims:

Describe the appearance of normal cells, tissues and organs within the human body. Identify a range of organ structures in relation to specialised functions. Describe the interactions between major body systems through understanding the principles of homeostasis and other control mechanisms. Explain how drugs interact with cells to alter their function, and how this enables their therapeutic use.

### Intended Learning Outcomes:

Successful students will typically: 1. gain an appreciation of human anatomy and identify the gross structure of selected organ systems and tissues 2. appreciate normal cellular microscopic appearance of commonly investigated tissues 3. describe a range of physiological processes at cell, tissue, organ and organism level (for humans) 4. identify the mechanisms involved in the regulation of body functions and appreciate the integrative aspects of body function 5. define drug action in terms of interaction with receptors and how drugs can be used as research tools and for treatment 6. describe the fate of a medicine after it is administered to humans Successful students will typically: 1. collect and communicate physiological information 2. solve problems in physiological experimentation 3. use computer simulation software to understand how drugs act in the body 4. interpret and explain a range of physiological data

### Module Content:

This module has been designed to provide students with an understanding of human physiology, enabling them to describe physiological processes at cell, tissue, organ and organism levels. Topics covered will include: \* Homeostasis and control mechanisms \* Cell differentiation, basic tissues and musculature \* Nervous system (electrical signalling, autonomic nervous system and central nervous system) \* Cardiovascular system and blood \* Respiratory system \* Digestive system \* Renal system \* Endocrine system and reproduction \* Immune system \* Integrative physiology \* Basic pharmacology including receptor theory and pharmacokinetics to show how medicines may be effectively used to treat disease. \* Drug discovery, design and the process of drug development. The importance of clinical trials The module will be delivered via a mixture of learning experiences including lectures, tutorials/workshops and set assignments. Teaching will be further supported by the use of learning materials and computer software packages.

### Pre and Co requisites:

none



Total hours: 300

Assessment:

Coursework Weighting: 100% (i) An unseen progress test at the end of semester A 25% (ii) An unseen progress test at the end of semester B 30% (iii) Laboratory report (peer assessed) 25% (iv) Group poster 20% A pass in the coursework overall is required to pass the module.

Exam	Coursework	Practical
0%	100%	0%

Biosciences

## Module name: Cell and Microbiology

Module code: 4LMS0005

Semester: A

Credits: 15

### Module Aims:

Understand how cell structure relates to function in prokaryotic and eukaryotic organisms and to appreciate the diversity of micro-organisms and their impact on human health.

### Intended Learning Outcomes:

Successful students will typically: describe the relationship between structure and function of prokaryotic and eukaryotic cells and the origin of the cellular components. explain the fundamental aspects of the nature of genetic information and the processes of DNA replication, transcription and translation. describe the key features and growth characteristics of microbes and show how these are used in their classification and identification. explain how the structures and products of microbes contribute to their ability to cause disease of animals and plants as well as their roles in industry and in the environment and explain the importance of public health measures to monitor and control infectious diseases Successful students will typically: locate and communicate information within the context of cell biology and microbial disease of humans identify microbes using classification keys and tables

### Module Content:

The module will cover key areas of cell biology and microbiology: the nature of cells and how they divide; how the genetic information in cells is converted into functioning components; and then there will be a focus on one particular group of cells, the microbes, to investigate their importance in human health. Key topics covered will include the following 1. The structure of both prokaryotic and eukaryotic cells with an emphasis on the evolutionary origins of the cell components. Cell division. 2. The nature of the genetic material and its organisation in the cell. DNA replication, transcription and translation. 3. a. The structure and components of bacteria, fungi and viruses with relation to their identification and disease causing ability. b. The basic principles of microbial growth. c. Microbes as infectious agents; transmission and control to include basic principles of public health and epidemiology. The taught material will be delivered as lectures supported by small group tutorials where key concepts and applications of the knowledge will be discussed.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Coursework Weighting: 50% Examination Weighting: 50% Coursework: Drop quizzes (10%); data interpretation (15%); literature based exercise (25%) Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in

order to pass the module, with no element of assessment (examination or coursework) being below 35%

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Chemistry for Biologists

Module code: 4LMS0004

Semester: A

Credits: 15

### Module Aims:

Apply chemical principles to the study of biological sciences. Gain an understanding of physical science applied to biological systems and measurements. Gain knowledge of techniques for characterisation and separation of biological molecules. Appreciate the chemistry of functional groups and their behaviour in biological molecules and relate structure and molecular shape to biological mechanisms

### Intended Learning Outcomes:

Successful students will typically: Identify functional groups and their relationship to chemical behaviour; Understand the principles to apply physical chemistry concepts to biological systems; Understand how molecular structure and shape affect biological processes; Describe techniques for characterisation and separation of biological molecules Successful students will typically: Use computer software and molecular models to represent chemical structure; Perform relevant calculations relating to concentration, equilibrium, pH and buffers; Use chemical concepts to explain the structure and behaviour of biological molecules;

### Module Content:

The philosophy of this module is to prepare students for their future studies in the biological sciences. The module introduces the chemical and physical principles that underlie biological processes. Students on this module will learn techniques for characterisation and separation of biological molecules, perform physicochemical calculations appropriate to biological systems and understand how the structure and reactivity of functional groups relates to their biological function. Students will gain experience of computer software packages to draw and understand the structures and shapes of molecules of relevance in biology. Students will learn about the structure and shape of organic molecules, stereochemistry, the chemical nature of functional groups and their function within biological molecules. Concepts of chemical equilibrium, electrochemistry, buffer systems, solubility constants and physicochemical properties such as hydrophobicity and hydrophilicity are conveyed. Spectroscopic techniques used for identification and quantification of biological molecules will be described. Students will gain an appreciation of the chromatographic methods used for separation of molecules of biological relevance.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Coursework 100 % Progress test 30% End of module test 40% Written assignment 30% A pass in the coursework overall is required to pass the module. The written assignment will contain a number of structured, short answer questions which require the student to demonstrate application of

knowledge and their problem-solving abilities related to topics they have covered in lectures and workshops, and have supplemented with wider directed reading.

Exam	Coursework	Practical
0%	100%	0%

Biosciences

## Module name: Introduction to Biochemistry

Module code: 4LMS0001

Semester: B

Credits: 15

### Module Aims:

Understand the basis of the three-dimensional structure of macromolecules and the relationship to their function appreciate the role of key catabolic and anabolic pathways in the functioning of cells and organisms appreciate the study of kinetic parameters and their importance to enzyme activity

### Intended Learning Outcomes:

Successful students will typically: describe the structure of key macromolecules and their relevance to their function in cells and organisms describe the main catabolic and anabolic pathways and develop knowledge of their relationship to health and disease describe the basis of energy production and utilisation in metabolic processes appreciate the principles of kinetics and how these relate to the control of metabolic processes in the cell Successful students will typically: apply an understanding of metabolism to problems of biochemical relevance relate experimental data to kinetic theory access protein databases and use specific software to explore protein structure

### Module Content:

The module will provide an introduction to biochemistry and will also incorporate aspects of chemistry specific to the study of biological systems. Subjects covered will include: the structure of key macromolecules and how this relates to their function in a cell or organism; major catabolic and anabolic pathways and their integration including glycolysis and gluconeogenesis, the TCA cycle, substrate and oxidative phosphorylation, oxidation of fatty acids, storage and mobilisation of glycogen, triglyceride storage and mobilisation, proteins for energy; kinetics including Michaelis-Menton kinetics of enzymes and the calculation of key enzyme parameters; radioactivity and its application to the study of biochemistry, thermodynamics and its application to bioenergetics. This module provides an introduction to biochemistry and is a basis for further study of the discipline and also underpins the study of other disciplines with the biosciences. In addition it incorporates aspects of chemistry that directly underpin the study of biological molecules. These include kinetics and its application to the study of enzyme activity, thermodynamics and its application to the supply and use of energy in living systems, the structure of macromolecules and how they are related to function. The study of metabolism will enable students to understand the relationships between catabolism and anabolism the influence of kinetic parameters on the operation of biochemical pathways and the control of metabolism. A consideration of protein structure leads to an understanding of the mechanisms of enzyme actions.

### Pre and Co requisites:

none

Total hours: 150

Assessment:

Coursework 50% Weighting: Exam 50% Weighting: The coursework will comprise Drop Quizzes (10%), a written assignment (25%) and an interpretative exercise (15%). Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Molecular Biology and Genetics

Module code: 4LMS0007

Semester: B

Credits: 15

### Module Aims:

Understand the principles of genetic inheritance and the use of molecular biological techniques in fundamental and applied bioscience

### Intended Learning Outcomes:

Successful students will typically: explain the principles behind genetic inheritance and gene variation. describe at a fundamental level how gene expression may be regulated describe the molecular biological techniques used to analyse nucleic acids and discuss their application in clinical and industrial settings. Successful students will typically: explain and interpret genetic and molecular data. use computer based technologies to examine genetic inheritance patterns

### Module Content:

The genetics component covers: Mendelian inheritance including meiosis and the production of primordial germ cells and gametes (oogenesis, spermatogenesis); linkage and basic human genetic epidemiology. The relationship of mutation to genetic variation and disease is included as well as an introduction to gene regulation. Molecular methods used to study DNA and inheritance are covered and the application of these methods to research, diagnosis and treatment of disease is discussed. The taught material will be delivered as lectures supported by small group tutorials where key concepts and applications of the knowledge will be discussed. Students will carry out specific tasks delivered using specialist computer software

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Coursework Weighting: 50% Examination Weighting: 50% Coursework: Drop quizzes (10%); computer based exercise (20%); data interpretation exercise (20%) A pass in the coursework overall is required to pass the coursework component of the assessment. Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%.

Exam	Coursework	Practical
50%	50%	0%



Biosciences

## Module name: Clinical Biochemistry and Immunology

Module code: 6LMS0094

Semester: A

Credits: 30

### Module Aims:

Discuss the biochemical principles underlying disease and develop a knowledge of the biochemical methods used in the investigation, treatment and monitoring of disease. relate biochemical markers of disease to disease pathophysiology. discuss quality management in the context of the biochemistry and immunology laboratories. discuss the immunological processes involved in autoimmune diseases, hypersensitivity, tissue typing and organ transplantation reactions and how immune-related disorders are diagnosed, treated and monitored. evaluate the scientific and clinical rationale behind the use of immunosuppressive agents.

### Intended Learning Outcomes:

Successful students will typically: critically discuss the basis of biochemical methods used in investigating disease. explain the biochemical principles underlying the study of disease. relate the biochemical evidence for disease to the pathophysiology and clinical presentation of disease. critically discuss the immunological processes giving rise to clinical disorders. explain the relationship between laboratory findings and the underlying immunopathology of selected disorders. Successful students will typically: discuss the relationship between biochemical markers and disease pathophysiology. apply quality management principles to the determination and interpretation of biochemical and immunological data critically evaluate biochemical and immunological data relevant to the diagnosis of disease.

### Module Content:

The aim of the module is to enable the students to relate the measurement of biochemical parameters in bodily fluids to the diagnosis, treatment and monitoring of disease. Markers reflecting the pathophysiology in selected diseases including cardiac, renal, hepatic, bone and endocrine will be considered. The importance of quality management will be addressed. Tumour markers, will also be covered. Immune-mediated disorders: mechanisms of autoimmunity with specific examples of diseases, hypersensitivity reactions (types I-IV) with examples of specific clinical disorders. Immunological markers of disease, serum immunoglobulins, cytokines and related proteins. Transplantation immunology: HLA polymorphism, HLA function, mechanisms of host versus graft disease and graft versus host disease, anti-rejection therapy. The outcomes will be achieved by lectures, workshops, practicals, problem-based learning and case studies

### Pre and Co requisites:

5LMS0007 Blood Sciences and 5LMS0009 Principles of Immunology.

Total hours: 300

Assessment:

Coursework Weighting 50% Exam Weighting 50% Assessment will be by a report on a case study (25%) and an in-course test (25%). A pass in the coursework overall is required to pass the coursework component of the assessment. Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%. The module has an attendance requirement of at least 50% of the practical sessions. Failure to attend the required proportion of sessions will normally result in the award of an FREN (Fail, re-enrol) grade.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Practical and Transferable skills

Module code: 4LMS0006

Semester: AB

Credits: 30

### Module Aims:

Carry out scientific methodologies safely and accurately; develop the transferable skills /graduate attributes necessary for success in their chosen degree pathway

### Intended Learning Outcomes:

Successful students will typically: describe the application of basic techniques in chemical and biological investigations interpret scientific data appropriate for level 4 students use appropriate calculations and statistics in the planning and analysis of biological experiments Successful students will typically: carry out key laboratory scientific methodologies both accurately and safely; communicate the results of basic scientific experiments; find and collate key information in scientific literature and understand the importance of referencing in science work in teams to complete a mini project on a biological topic reflect on the value of personal transferable skills and graduate attributes in personal development and future professional roles.

### Module Content:

The content of this module is designed to develop: Practical laboratory skills in: o Safe laboratory practice o Accurate pipetting and measurement, making up solutions. o Measurement of pH o Sample preparation, staining and microscopy o DNA isolation and analysis o Cell counting methodologies o Chemistry methodologies to include purification, extraction, synthesis and analysis of biological molecules o Analytical techniques including centrifugation, chromatography, spectroscopy and electrophoresis o Use of dye-binding assays and standard curves in biological measurement o Microbiology skills including aseptic technique, viable counting, diagnostic methods o Enzyme activity assays and enzyme kinetic s methodology o Measurement of physiological parameters Transferable skills/Graduate attributes as follows: o Mathematics required for biological calculations, statistical analysis, scientific recording, presentation of data, scientific writing, use of literature and literature searching, referencing, avoiding plagiarism o Development of graduate attributes around research skills, professionalism, employability and enterprise. Practical work will be supported by lectures introducing the methodology. Tutor group meetings with a personal tutor will be used to support the development of transferable skills and graduate attributes. Students will produce a portfolio of evidence demonstrating their skills development including a reflection on their personal development and acquisition of graduate attributes throughout the year

### Pre and Co requisites:

none

Total hours: 300

Assessment:

Coursework Weighting: 70% Practical Weighting: 30% Practical skills will be assessed by two Direct Observed Practical Skills (DOPS) sessions (30%). Coursework will include: Scientific writing based on laboratory work including data analyses (40%), group presentation (10%), progress test (10%), skills development portfolio (10%). An overall pass mark of 40% is required to pass the module which must include a pass mark of at least 40% in the practical component (DOPS).

Exam	Coursework	Practical
0%	70%	30%

Biosciences

## Module name: Molecular Structure and Reactivity

Module code: 4LMS0040

Semester: A

Credits: 15

### Module Aims:

Appreciate the central role of chemistry (especially organic and physical chemistry) in the bio-molecular sciences; develop their abilities to predict chemical reactivity and properties of biologically and pharmaceutically important classes of molecules on the basis of molecular structure; understand the chemistry associated with the key functional groups found in biological and pharmaceutical molecules.

### Intended Learning Outcomes:

Successful students will typically: describe features of atomic and molecular structure and the organic chemistry of the major functional groups demonstrate a knowledge of pH, buffers and buffer capacity demonstrate a knowledge of thermodynamics, introductory chemical kinetics orders of reaction and chemical half life describe phase behaviours of biological and pharmacological systems Successful students will typically: predict how molecules will behave in biological and/or pharmaceutical situations from an understanding of their physiochemical properties; manipulate both quantitative and qualitative chemical data; interrogate chemical data bases

### Module Content:

The module covers aspects of : Organic, structural and physical chemistry appropriate for the biochemical and pharmaceutical sciences including: a study of the key organic functional groups, introductory kinetics and thermodynamics and their role in the biomolecular and pharmaceutical sciences and an introduction to the chemistry associated with basic pharmaceuticals. This module will cover introductory chemical kinetics and thermodynamics, the structural basis of organic chemistry and the relationship of physical properties to chemical structure and organisation, the properties of solutions, buffers, electrolytes and associated properties (pH, pKa, LogP).Tutorials, seminars and workshops will support the lecture material. The taught material will be supported by examples that are relevant to the biochemical and pharmaceutical sciences.

### Pre and Co requisites:

A level chemistry or equivalent qualification

Total hours: 150

### Assessment:

Coursework 50% Weighting: 50% Exam 50% Weighting: 50% One unseen 2 hour examination, Computer-based assignment (30%). Progress test (20%) A pass in the coursework overall is required to pass the coursework component of the assessment. Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Microbiology of Disease

Module code: 5LMS0005

Semester: A

Credits: 15

### Module Aims:

Understand the structure and function of microorganisms associated with human disease, the methods used in their identification in a diagnostic laboratory and how microbial disease is monitored and controlled.

### Intended Learning Outcomes:

Successful students will typically: identify the features of bacteria, fungi, viruses and parasites associated with their ability to cause human disease. explain the methods used to distinguish between different microbes in diagnostic microbiology. assess the role of epidemiological methods and infection control in preventing or minimising the effects of microbial disease. Successful students will typically: apply microbiological techniques to isolate and grow a range of medically important bacterial and fungal genera. use key identification techniques to distinguish between different bacteria and fungi in the laboratory. carry out methods used to measure antibiotic susceptibility.

### Module Content:

The module will introduce the subject of microbial disease and the identification and treatment of the microbes involved at a general level using selected examples. Subjects covered in the module will include the following. How bacteria spread and cause disease: the role of virulence factors in pathogenicity. The role of commensal bacteria. Bacterial growth; the design and use of diagnostic media; biochemical and serological tests and other methods used in diagnostic microbiology. Fungal classification, growth and pathogenicity. How viruses proliferate and cause disease. Classification and identification of viruses in the laboratory. An introduction to parasites associated with human disease. Key features used in their identification. An introduction to epidemiological methodology and how it is used to monitor the spread of infection. The role of the HPA. The importance of nosocomial infections and opportunistic infections. Basic infection control methods including vaccines and use of antimicrobial agents. Material will be presented in lectures and in directed-learning packages. Concepts will be discussed in workshop session. Practical sessions will be used to develop the necessary laboratory skills and to help students to apply their theoretical knowledge to diagnostic microbiology. Assignments will be used to test knowledge and its application. Practical sessions in diagnostic microbiology will include: use isolation and differential media; staining and microscopic analysis of fungi and bacteria; use of biochemical tests for microbes including standardised test strips; antimicrobial susceptibility testing.

### Pre and Co requisites:

Pre-requisite: 4LMS0006 Practical and Transferable Skills; 4LMS0005 Cell and Microbiology

Total hours: 150

Assessment:

Coursework 50% Weighting: Exam 50% Weighting: Practical % Weighting: Coursework assessment will consist of a laboratory test (15%); drop quizzes throughout the module (10%) and a written assignment (25%). Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%. The module has an attendance requirement of at least 50% of the practical sessions. Failure to attend the required proportion of sessions will normally result in the award of an FREN (Fail, re-enrol) grade.

Exam	Coursework	Practical
50%	50%	0%



Biosciences

## Module name: Cytology & Histopathology

Module code: 5LMS0006

Semester: B

Credits: 15

### Module Aims:

Understand the fundamental pathological processes that determine disease and comprehend the differences between healthy and diseased states explain how cellular pathology services support the investigation and treatment of disease explain the principles, practice, quality assurance and application of commonly employed methods and techniques used across cellular pathology

### Intended Learning Outcomes:

Successful students will typically: describe and explain how common human disease processes have an effect at the functional, cellular, tissue, organ and system levels of organisation and explain their clinical presentation. comprehend the principles, practice, quality assurance and application of methods for retrieval, preservation, preparation and analysis of cells, tissues and organs for cellular pathology testing. understand preparation, staining and analysis of biological samples for cellular pathology testing and explain their rationale of explain the rationale of histochemistry, immunocytochemistry and special stains. understand the roles and responsibilities of healthcare professionals in the health service and in the cellular pathology services. Successful students will typically: demonstrate a range of key pathological processes through the use of laboratory experiments using safe and precise technical skills prepare, stain and investigate biological specimens for cellular pathology investigation and identify the normal and abnormal macroscopic, cellular and sub-cellular appearance and morphological changes in a range commonly investigated tissues appreciate the legal and ethical boundaries of cellular pathology manipulate, analyse and present clinical data appropriately and demonstrate a logical and systematic approach to problem solving.

### Module Content:

This module has been designed to provide students with an understanding of cytology and histopathology. Topics covered will include: Cell death and cell injury. Overview of benign pathological processes ( e.g. inflammation, embolism, infarction, ischemia, fibrosis, oedema, etc.), with reference to their pathogenesis, clinical presentation and investigation. Macroscopic and microscopic appearance of commonly investigated human tissues Macroscopic, cellular and sub-cellular changes resulting from pathological conditions Common methods for the collection, receipt and processing of human tissues and biological samples for cellular pathology. Implications for sample integrity and clinical validity. Special stains, immunocytochemistry and molecular methods used in cellular pathology. Quality control. Regulations and guidelines relating to the use, storage and disposal of human tissues Appreciation of the roles and responsibilities of healthcare professionals in the health service and in the cellular pathology services. Case studies demonstrating the relationship between the pathophysiological process and the morphological changes within tissues. The module will be delivered via a mixture of learning experiences including lectures, workshops, laboratory classes and assignments.

Pre and Co requisites:

none

Total hours: 150

Assessment:

Coursework Weighting: 50% Exam Weighting: 50% Assessment comprises drop quizzes (10%), image analysis(15%) written assignment (25%) Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%. The module has an attendance requirement of at least 50% of the practical sessions. Failure to attend the required proportion of sessions will normally result in the award of an FREN (Fail, re-enrol) grade.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

Module name: Blood Sciences

Module code: 5LMS0007

Semester: AB

Credits: 30

#### Module Aims:

Build on fundamentals of biochemistry and metabolism to support the clinical investigations performed in a biochemistry laboratory. Apply haematology theory to explain how blood associated disease states develop in humans, and the laboratory diagnosis of these haematological disorders. Demonstrate how immunology theory is applied in the area of blood transfusion and how this is significant to patient care. Explain how the clinical laboratory specialties in the module are related and how they work together to contribute to the investigation and treatment of disease.

#### Intended Learning Outcomes:

Successful students will typically: Demonstrate underpinning knowledge of biochemical pathways and relate this to changes that occur when they are disrupted in disease. Demonstrate a detailed understanding of the pathophysiology and range of laboratory investigations linked to blood cell disorders, and blood coagulation. Explain the use of different biological specimens, collection tubes and reference ranges in the clinical laboratory. Discuss good blood transfusion practice by demonstrating knowledge of blood group systems and the importance of compatibility testing, provision of blood products and regulation in blood transfusion science. Successful students will typically: Effectively analyse and interpret scientific and clinical data both in the laboratory and for case studies and demonstrate the ability to keep a good laboratory logbook. Begin to use critical appraisal skills in the assessment of the quality and content of scientific and clinical data. Demonstrate effective communication of scientific data and concepts and in a logical and systematic manner. Demonstrate an understanding and experience of methods and techniques used in routine clinical biochemistry, core and specialized haematology and blood transfusion science. Demonstrate professionalism and adherence to good laboratory practice including conforming to health and safety requirements specific to the handling of human blood.

#### Module Content:

Fundamental haematology: haemopoiesis, bone marrow structure and normal red cell physiology. The nature and diagnosis of red cell associated disorders including nutritional anaemias, haemoglobinopathies and haemolytic anaemias. Principles of haemostasis and understanding of bleeding, thrombotic and platelet disorders. Role of the haematology laboratory in diagnosis, monitoring and prognosis of disease. Blood transfusion science theory includes; blood group systems, the blood bank laboratory (components, regulatory bodies, guidelines, quality), hazards of transfusion, and principles of compatibility testing. Haemolytic disease of the newborn alongside the role of RhD prophylaxis will be addressed. The biochemistry will build on first year studies and incorporate the biosynthesis of lipids and amino acids. The pentose phosphate pathway in red blood cells will be addressed. The underlying biochemistry in selected diseases (eg hepatic) will be covered and students will be introduced to the role of the clinical biochemistry laboratory in the diagnosis, monitoring and treatment of disease. The module will be delivered via a mixture of learning experiences including lectures, practicals, tutorials/workshops and set assignments. Teaching will be

further supported by the use of clinical case scenarios and journal based study to emphasise how these disciplines work are applied. Multidisciplinary case studies will be incorporated to demonstrate the relationship between the different disciplines in the diagnosis of disease.

Pre and Co requisites:

none

Total hours: 300

Assessment:

Coursework Weighting: 50% Examination Weighting: 50% (i) An unseen progress test at the end of semester A 15% (ii) Data Interpretation 10% (iii) Health and Safety practical competency 5% (iv) Practical competence assessment 5% (v) Diagnostics seminar 5% (vi) Drop quizzes 10% Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%. The module has an attendance requirement of at least 50% of the practical sessions. Failure to attend the required proportion of sessions will normally result in the award of an FREN (Fail, re-enrol) grade.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Principles of Immunology

Module code: 5LMS0009

Semester: A

Credits: 15

### Module Aims:

Develop an understanding of the central principles of immunology and appreciate the mechanisms of natural and acquired immunity. gain awareness of the role of the immune system in hypersensitivity reactions. develop an understanding of vaccines and vaccine design.

### Intended Learning Outcomes:

Successful students will typically: describe the main components of natural and adaptive immunity and explain the processes involved in generating an effective immune response. explain the immunopathology of inflammatory disease. demonstrate knowledge of microbial:host interactions and their importance in vaccine design. Successful students will typically: perform selected immunological techniques. interpret immunological laboratory data. effectively communicate information drawn from a range of sources

### Module Content:

Anatomy and physiology of the immune system: cells, primary and secondary lymphoid tissues, leukocyte circulation and key phenomena including; chemotaxis, opsonisation, phagocytosis, inflammation, antigen processing and clonal expansion. Natural immunity: role of phagocytic cells, the complement system, cytokines, chemokines and the acute inflammatory response. Hypersensitivity reactions. Adaptive immunity: antigen specificity of B and T cells. Antibody structure and effector functions. T cell subsets; antigen processing and presentation to T cells, the role of the major histocompatibility complex. T-helper cell subpopulations and cytokines in determining the immune response. Immunity to microbial pathogens including bacteria, and viruses. Vaccine design strategies. Inflammation: immunology of chronic inflammation; immunopathology of selected chronic inflammatory diseases. Anti-inflammatory therapies; steroidal and nonsteroidal anti-inflammatory drugs. The outcomes will be achieved by le

### Pre and Co requisites:

Practical skills module, Human Physiology with pharmacology

Total hours: 150

### Assessment:

Coursework 50 % Weighting: Exam 50 % Weighting: Practical % Weighting: Assessment will be by a practical report (25%), a written assignment (15%), Drop quizzes(10%) Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%. The module has an attendance requirement of at least 50% of the practical sessions. Failure to attend the required proportion of sessions will normally result in the award of an FREN (Fail, re-enrol) grade.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Biology of Disease

Module code: 5LMS0022

Semester: B

Credits: 15

### Module Aims:

Understand the biology of the major diseases that affect human populations of the developed world and the influence of genetic and environmental factors that contribute to the development of disease.

### Intended Learning Outcomes:

Successful students will typically: comprehend the alterations in biological processes that occur in the transition between good health and disease explain the pathology of selected major diseases at cellular, tissue and organ systems levels assess the role of the genetic and environmental factors that affect the incidence of selected disorders Successful students will typically: identify tissue types and the main organs of the human body interpret the evidence for a range of key pathological processes present both an oral and a written analysis of aspects of individual disease pathologies

### Module Content:

This module will examine the major non communicable disease affecting western human populations in the 21st century. This will include cardiovascular and respiratory disease, cancer, diabetes and degenerative disorders. Students will study the pathophysiology of the disease at both the cellular, tissue and systems levels. The contribution of genetics and environment to the incidence of the disease will also be explored. Selected examples of current topical diseases will be chosen, including those affecting physiological, cellular and biochemical systems and the influence of both internal and external factors discussed. Material will be presented in lectures and in directed learning packages. Concepts will be discussed in workshop sessions. Practical sessions will be used to develop laboratory skills and help students apply their knowledge to understanding changes due to disease at the cellular, tissue and organ levels. Assignments will be used to test knowledge and its application.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Coursework 50% Weighting: Exam 50% Weighting: Practical % Weighting: Coursework assessment will consist of a laboratory report (25%); drop quizzes throughout the module (10%) and a group poster (15%) Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Chemistry & Analytical Science

Module code: 5LMS0023

Semester: AB

Credits: 30

### Module Aims:

Understand and apply the techniques used for identification, characterisation and evaluation of biologically relevant compounds appreciate the concept of quality as related to analytical measurement use analytical instruments to help solve problems relating to pharmaceutical and biochemical analysis understand the structure and reactivity of organic molecules of biological interest

### Intended Learning Outcomes:

Successful students will typically: understand the fundamental concepts of modern analytical science as applied in a pharmaceutical and biochemical context describe the techniques for the analysis, identification and characterisation of compounds understand the process of an analysis from instrument calibration and sample preparation to data analysis describe aspects of the synthesis, structure and reactivity of organic molecules of biological interest Successful students will typically: conduct laboratory experiments to obtain and analyse compounds of biological relevance generate, interpret and communicate scientific data use spectroscopic data to identify organic molecular structure solve problems related to pharmaceutical analysis and chemical reactivity

### Module Content:

The module builds on first year chemistry foundations to prepare students for final year study of advanced biochemical and pharmaceutical topics. Students will gain an understanding and appreciation of the analysis of pharmaceutical compounds including chromatographic and spectroscopic techniques together with an ability to interpret the data thus generated. An understanding of the chemical structure and reactivity of some organic molecules of biological relevance will be communicated. Students will gain practical experience of the synthesis and characterisation of organic molecules and techniques for their analysis. An understanding of analysis applied to compounds of biochemical and pharmaceutical relevance will be communicated. Techniques for analysis will be discussed and practical experience gained in the laboratory classes. The principles of spectroscopic techniques for the identification of molecules will be described and applied to elucidating the structures of organic compounds. The structure, synthesis and reactivity of organic molecules of relevance in biology will be described. Laboratory classes will also give experience of synthesis of organic molecules of biological interest. The principles of electrochemistry applied to biological systems will be conveyed.

### Pre and Co requisites:

Level 4 chemistry (advisory only)



Total hours: 300

Assessment:

Coursework 50 % Weighting: Exam 50 % Weighting: Practical % Weighting: One unseen 3 hour written examination Practical reports: 20% Assignment and interpretative exercise: 20% Progress test: 10% Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Dosage Form Design & Manufacture

Module code: 5LMS0024

Semester: AB

Credits: 30

### Module Aims:

Develop an understanding of the physicochemical principles of dosage form designs. Explain drug delivery systems and how they are used. Evaluate the product development of a pharmaceutical compound. Apply the principles of good manufacturing practice and pharmaceutical quality to the manufacture of medicines

### Intended Learning Outcomes:

Successful students will typically: Possess a detailed knowledge of the physicochemical properties of molecules and particles that impact on solubility, dissolution, absorption and disposition. Recognise the approaches developed for delivering drugs for systemic and topical effect. Explain the choice of excipients to be used when formulating dosage forms. Analyse results and make recommendations relevant to the evaluation of dosage forms both in vivo and in vitro. Successful students will typically: Demonstrate an ability to evaluate the properties of active pharmaceutical ingredients and recommend an appropriate dosage form strategy. Demonstrate skill in the practical methodologies used for medicines formulation and product analysis. Evaluate the factors that influence drug release and absorption from conventional formulations. Interpret, process and communicate scientific data appropriately and complete pharmaceutical documentation

### Module Content:

This module will introduce students to the pharmaceutical properties of drugs and the important considerations to be made during product design, development and manufacture. The anatomical and physiological barriers which drug products encounter will be emphasised to enable students to develop an understanding of the requirements for pharmaceuticals. This knowledge will be developed in parallel with an understanding of pharmaceutical materials including the physicochemical properties of drug molecules and particles and how these influence bioavailability and drug disposition. The methods used to characterise these properties will be discussed and developed as practical skills. The module will also cover the manufacture of formulations into products. This module builds on the knowledge and understanding of physical pharmaceutics which were introduced in the Level 4 chemistry modules. The lecture programme will cover the theoretical basis of the following areas: Physicochemical barriers to bioavailability and dissolution; physical and formulation strategies to improve drug delivery; techniques of particle manufacture and powder characterisation strategies; processes used in dosage form manufacture including solid and semi-solid dosage forms and injection formulations. The lecture programme will be augmented by practical illustration of dosage form production, product testing and quality assurance. Workshops and tutorials will support the lecture series with structured coursework to engage students' critical appreciation, analysis and interpretation of formulation data.

Pre and Co requisites:

**none**

Total hours: 300

Assessment:

Coursework 50% Weighting: Exam 50% Weighting: Coursework assessment will take the form of ongoing skills assessments, written exercises and problemsolving exercises. Normally both elements (examination and coursework) must be passed.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Pharmacology

Module code: 5LMS0025

Semester: AB

Credits: 30

### Module Aims:

Gain a knowledge of the principles of pharmacological action of drugs, and fate of drugs in the body understand the basis of therapeutic actions of drugs in a number of specific disease areas.

### Intended Learning Outcomes:

Successful students will typically: describe the fate of drugs in the body in terms of the processes of absorption, distribution, metabolism and elimination define the actions of drugs by their interaction with molecular targets and the consequent cellular and tissue responses account for the therapeutic response of a number of classes of drugs in selected disease states using clinical evidence appreciate the need for the development of new therapeutic approaches to the treatment through a detailed understanding of the pathophysiological basis of disease appreciate all factors that determine therapeutic response to drugs, including pharmacogenomics and chronopharmacology. Successful students will typically: analyse dose/concentration response relationships in the comparison of potency and efficacy of drugs interpret computer analysis of pharmacokinetic data to describe the fate of drugs in the body critically appraise evidence based clinical studies.

### Module Content:

This module will describe the analysis of drugs action in the general sense, (to assess potency and efficacy through interaction with known receptors and cellular transduction mechanisms), and the mode of altered physiological function at a tissue and systems level to account for therapeutic effects in specific disease states. The fate of drugs (pharmacokinetics and drug metabolism) will also be considered as it influences the development of new drugs and as an important aspect to the success of therapeutics. Classes of drug treatments will be characterised for specific diseases of the cardiovascular system, endocrine system, central nervous system and chemotherapeutics of cancers and infectious diseases, dermatology and wound healing. The limitations of existing therapies will also be identified and the possible new target for future drug treatment discussed in terms of present understanding the pathology and genetic basis of disease. Alternative therapeutic approaches will also be discussed. This module material will be delivered primarily by lectures to cover the full range of therapeutic areas a pharmacist must be familiar with. Workshops sessions will consolidate understanding of concepts of pharmacodynamic and pharmacokinetic aspects of drugs that contribute to therapeutic outcomes, using case studies. Students will also attain an in depth knowledge of a particular area of therapeutics of their choice in preparing an extended assignment which will require a literature search from a variety of sources. Practical experience and skill in data analysis will also be an outcome of this module. Numeric skills will be tested in the analysis of pharmacokinetic data generated from computer simulations of drug administration studies. Testing and quantifying of pharmacological responses in the laboratory will reinforce taught material and demonstrate design of experimental studies.

Pre and Co requisites:

Level 4 Human Physiology and Pharmacology

Total hours: 300

Assessment:

Coursework 50% Weighting: Exam 50% Weighting: Practical % Weighting: The coursework will comprise electronic submission of analysed data from a practical (10%), a computer-based quiz on theory and methodology of a practical (10%), a progress test (20%) and a presentation (10%). Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%. The module has an attendance requirement of at least 50% of the practical sessions. Failure to attend the required proportion of sessions will normally result in the award of an FREN (Fail, re-enrol) grade.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

Module name: Applied and Integrated Biomedical Science

Module code: 6LMS0001

Semester: B

Credits: 15

Module Aims:

Apply a detailed knowledge of subject specialities to the evaluation of problems that cross the laboratory disciplines and to appreciate the need for an integrative approach when investigating diseases.

Intended Learning Outcomes:

Successful students will typically: critically discuss disease examples showing how multiple laboratory disciplines are involved in patient care. critically discuss ethical issues which impact on the advances of biomedical science. explain why quality parameters are important in interpretation of clinical data. Successful students will typically: design and perform laboratory investigations of disease involving procedures from different subject specialties. undertake reflective practice to solve problems encountered in clinical diagnosis. interpret clinical information and data to conclude pathology based case studies. use effective and professional written and oral communication.

Module Content:

The module consists of a set of laboratory sessions, computer-based exercises and case studies that will encourage students to integrate their knowledge across subject specialities. Scenarios will be provided that involve a range of patient presentations and students will be required to assess which laboratory investigations should be carried out. Alternatively, laboratory findings will be provided to illustrate the multidisciplinary nature of patient diagnosis and students will be required to analyse and report on these. In all cases students will be required to reflect and report on these results and they will be required to comment on issues relating to data quality and identify quality assurance processes to ensure accurate diagnoses. There will be a continued emphasis on good professional conduct, ethical issues in biomedical science and application of scientific knowledge and skills. Lectures will be provided to support the practical work. These will include information on methodologies that have not been previously encountered, experimental design and data analysis. In addition some online material will be provided.

Pre and Co requisites:

none

Total hours: 150

Assessment:

Coursework Weighting: 100% Coursework will include: A substantial laboratory report showing experimental design and method development as well as the results and discussion (50%) A case study-based assignment that includes a viva (50%) The module has an attendance requirement of at least 50% of the practical sessions. Failure to attend the required proportion of sessions will normally result in the award of an FREN (Fail, re-enrol) grade.

Exam	Coursework	Practical
0%	100%	0%

Biosciences

## Module name: Cellular and Molecular Pathology

Module code: 6LMS0003

Semester: AB

Credits: 30

### Module Aims:

Discuss pathological changes in cells and tissues at the molecular and cellular level, and relate these changes to the pathology of tumours and selected diseases. evaluate how cellular and molecular pathology contributes to the investigation, diagnosis, management and treatment of selected diseases. discuss the application and delivery of a range of core and specialised cellular and molecular methods/techniques and understand their importance in the clinical investigation of selected diseases. discuss genetic mutations and polymorphisms and their influence in development of disease

### Intended Learning Outcomes:

Successful students will typically: evaluate the transmission genetics of selected diseases. explain the rationale and application of cytogenetics. explain the molecular, biochemical, cellular and physiological changes associated with selected diseases. critically discuss, and explain with examples, cellular and molecular pathology methods to support the diagnosis, management and treatment of common clinical disorders. Successful students will typically: identify pathological tissues based on changes at the morphological, biochemical and molecular level. apply cellular and molecular methods and illustrate their value/role in diagnosis, treatment and management of selected diseases/clinical outcome. demonstrate a logical and systematic approach to problem solving. manipulate, analyse and present clinical data appropriately demonstrate good communication skills, supported by the appropriate presentation of data. demonstrate critical appraisal skills in the assessment of the quality of scientific and clinical data.

### Module Content:

Collection, preparation and analysis of biological specimens. Clinical application of cellular pathology methods and techniques in diagnosis, treatment and management of cancer. Pathophysiology of tumours. Carcinogenesis and metastasis. Definitions and classification. Genetic and biological basis of cancer development. Treatment and patient management. Cancer prevention and screening programmes. Pathogenesis, clinical presentation, diagnosis, treatment and management of common solid tumours and haematological malignancies. Microbes as etiological agents of cancer and selected clinical disorders; clinical presentation and diagnostic methods. Clinical genetic. Identification of genetic mutations and polymorphisms and their influence on disease processes, genetic mapping of Mendelian diseases, applications of cytogenetic. Overview of tests that assess the molecular basis of cancer and selected diseases. Molecular techniques for disease investigation, diagnosis, screening and treatment. Topics will be supported by examples from a range of molecular, cellular pathology, microbiology and haematology methods for the diagnosis, management and treatment of selected clinical conditions. The outcomes will be achieved by a combination of lectures, workshops and directed learning activities with assessments.



Pre and Co requisites:

**none**

Total hours: 300

Assessment:

Coursework Weighting: 50% Exam Weighting: 50% Assessment for this module comprises a seminar (25%) and a progress test (25%) Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Clinical Biochemistry and Immunology

Module code: 6LMS0004

Semester: A

Credits: 30

### Module Aims:

Discuss the biochemical principles underlying disease and develop a knowledge of the biochemical methods used in the investigation, treatment and monitoring of disease relate biochemical markers of disease to disease pathophysiology discuss quality management in the context of the clinical biochemistry laboratory discuss the immunological processes involved in autoimmune diseases, hypersensitivity, tissue typing and organ transplantation reactions how immune-mediated disorders are diagnosed, treated and monitored evaluate the scientific and clinical rationale behind the use of immunosuppressive agents.

### Intended Learning Outcomes:

Successful students will typically: critically discuss the basis of biochemical methods used in investigating disease explain the biochemical principles underlying the study of disease relate the biochemical evidence for disease to the pathophysiology and clinical presentation of disease critically discuss the immunopathology and laboratory diagnoses of autoimmune diseases. demonstrate knowledge of graft rejection and anti-rejection therapies. Successful students will typically: discuss the relationship between biochemical markers and disease pathophysiology apply quality management principles to the determination and interpretation of biochemical data show awareness of the techniques employed in the laboratory diagnosis of selected autoimmune diseases. interpret data related to tissue typing and discuss its significance in organ transplantation. critically evaluate scientific data relevant to the diagnosis of disease

### Module Content:

The aim of the module is to enable to student to relate the measurement of biochemical parameters in bodily fluids to the diagnosis, treatment and monitoring of disease. Markers reflecting the pathophysiology in selected diseases including cardiac, renal, hepatic, bone and endocrine will be considered. The importance of quality management will be addressed. Tumour markers, therapeutic drug monitoring and detection of substances of abuse will also be covered. Immune-mediated disorders: mechanisms of autoimmunity with specific examples of diseases, hypersensitivity reactions (types I-IV) with examples of specific clinical disorders. Immunological markers of disease, serum immunoglobulins, cytokines and related proteins. Transplantation immunology: HLA polymorphism, HLA function, mechanisms of host versus graft disease and graft versus host disease, anti-rejection therapy The outcomes will be achieved by lectures, workshops, problem-based learning and case studies. On-line directed study will also be used

### Pre and Co requisites:

Blood Sciences and Principles of Immunology

Total hours: 300

Assessment:

Coursework 50% Weighting: Exam 50% Weighting: Assessment will be by a report on a case-study (25%), an in-course test (25%). Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Clinical Microbiology

Module code: 6LMS0005

Semester: A

Credits: 15

### Module Aims:

apply their knowledge of microbiology to the study of microbial diseases; their diagnoses; treatment and control.

### Intended Learning Outcomes:

Successful students will typically: compare and contrast the mechanisms of infection of a range of different bacterial, viral, fungal and parasitic pathogens. critically evaluate the tests used for identification of a range of different bacterial and viral pathogens. explain the issues associated with the laboratory investigation of parasitic and fungal diseases. assess the problems associated antibiotic resistance and its spread within microbial populations. Successful students will typically: identify microbial pathogens to species level and to individual strains where appropriate. discuss the problems associated with laboratory diagnosis of infectious diseases.

### Module Content:

The aim of the module is to provide a more detailed and applied understanding of the problems associated with microbial diseases, their diagnoses and their control. The key areas covered will be: Bacterial pathogenicity: infections, disease and virulence factors; colonisation and invasion of host surfaces, evasion of the immune system; the mechanism of action of toxins and enzymes in the disease process; and the regulation of virulence. Students will have a detailed understanding of the pathogenicity of a range of bacteria that infect different sites on the body and the differences between how they survive inside a host and cause diseases. Viral pathogenicity: mechanisms of infection and virulence of a number of key infectious viruses. Prions will also be covered. Fungal and parasite pathogenicity: mechanisms of infection and virulence of a number of key infectious viruses. Design of diagnostic tests for pathogens including a comparison of traditional, seriological and molecular techniques such as PCR and MS MALDI-TOF. Issues regarding emerging infectious diseases, viable but nonculturable organisms (VBNC) and any current microbial problems (eg SARS or bird flu). Antibiotic susceptibility and resistance: the mechanisms of spread of antibiotic resistance and the problems associated with hospital and community-acquired antibiotic-resistant infections. Future antibiotic targets. The outcomes will be achieved by a combination of lectures, workshops, computer based exercises and directed study. Assessment of coursework will be of a portfolio of three tasks, based around the lecture material and will include a diagnostic case-study

### Pre and Co requisites:

Microbiology of Disease 5LMS0005

Total hours: 150

Assessment:

Coursework % Weighting: 50 Exam % Weighting: 50 Coursework A portfolio which will include a synopsis of primary literature and analysis and interpretation of data (50%). Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Pharmaceutical Synthesis Production and Analysis

Module code: 6LMS0025

Semester: AB

Credits: 30

### Module Aims:

Develop an in-depth understanding of the application of analytical and synthetic organic chemistry to pharmaceutical science. understand the principles of aseptic and sterile manufacture of pharmaceuticals. appreciate the health, safety, environmental and economic aspects of pharmaceutical manufacture.

### Intended Learning Outcomes:

Successful students will typically: demonstrate an understanding of analytical techniques relevant to the synthesis and analysis of pharmaceutical compounds. critically evaluate the techniques and principles of pharmaceutical synthesis. critically discuss selected aspects of pharmaceutical production. Successful students will typically: apply relevant analytical procedures and interpret analytical data relevant to pharmaceutical analysis. use selected modern chemical synthetic techniques. demonstrate an appreciation of aseptic and sterile production. evaluate and communicate scientific data

### Module Content:

Students following this module will gain an understanding and appreciation of the analysis of pharmaceutical compounds together with an ability to interpret the data thus generated. An understanding of modern organic synthetic techniques will be communicated and students will participate in the organic synthesis of selected organic compounds. Students will also gain an appreciation of the relevance of process technology and process control together with the health, safety, economic and environmental implications of pharmaceutical manufacture. Students studying the module will gain an appreciation, both theoretical and practical, of pharmaceutical synthesis including combinatorial and solid phase synthesis, retrosynthesis, asymmetric synthesis and modern synthetic techniques. Students will be able to comprehend the principles of pharmaceutical manufacture together with gaining a broader understanding of factors impacting on manufacturing processes. In addition an understanding of analysis applied to pharmaceuticals will be communicated.

### Pre and Co requisites:

Dosage Form Design and Manufacture (L5) and Chemistry and Analytical Science (L5)

Total hours: 300

### Assessment:

Coursework 50% Weighting: 50% Exam 50% Weighting: 50% Examination: 3 hour unseen exam  
Coursework: 1 x Seminar and Summary (25%); 1 x practical logbook (5%); 1 x class test (20%). Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Drug Discovery Design Formulation and Delivery

Module code: 6LMS0026

Semester: A

Credits: 30

### Module Aims:

Demonstrate an understanding of the principles and practice of drug discovery and design. comprehend how drugs are formulated and delivered. develop an appreciation of how QSAR, pharmacognosy and pharmacogenetics influence drug discovery, design and development.

### Intended Learning Outcomes:

Successful students will typically: explain how drugs are discovered and designed. appreciate how drugs are formulated and how route of delivery influences formulation. critically discuss the inherent difficulties in the processes of drug development. Successful students will typically: research and conduct a multi-stage synthesis of a pharmaceutically active compound. demonstrate the skills to enable effective group work. evaluate and communicate scientific data related to drug discovery.

### Module Content:

Students following this module will gain an understanding and appreciation of how drugs are discovered and designed including techniques such as Quantitative Structure-Activity Relationships (QSAR). Examples of drug development will be discussed for a range of drug groups together with a consideration of side effects in drug development, pharmacognosy and pharmacogenetics. Students will gain an understanding of how drugs are formulated for a range of drug delivery routes. In small groups, students will research the synthesis and formulation of a pharmaceutically active compound, conduct the small scale synthesis of this compound and analyse purity of their product. The lecture programme will consider methods of drug discovery, drug design (including computational methods), the development of specific drug groups and how drugs are then formulated for effective delivery. In groups students will research the synthesis of a drug entity. They will design, develop and conduct an appropriate small scale synthesis and report their results both as a group and individually.

### Pre and Co requisites:

Dosage Form Design and Manufacture (L5) and Chemistry and Analytical Science (L5)

Total hours: 300

### Assessment:

Coursework 50% Weighting: 50% Exam 50% Weighting: 50% Examination: 3 hour unseen exam (50%) Coursework: Progress test (25%). Problem based group exercise to research, develop and synthesise a pharmaceutically active compound (25%) Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%

Exam	Coursework	Practical
50%	50%	0%



Biosciences

## Module name: Applied and Integrated Pharmacological Science

Module code: 6LMS0027

Semester: B

Credits: 15

### Module Aims:

Analyse how, in clinical drug development, basic research translates into new medicines and to appreciate the need for an integrative approach when developing and testing novel therapies.

### Intended Learning Outcomes:

Successful students will typically: relate outcomes from basic research to the design and analysis of clinical trials in the development of modern medicines critically discuss ethical issues and regulatory requirements which impact upon clinical research explain why a range of scientific evidence is important in interpretation of clinical data. Successful students will typically: design pharmacological experiments and clinical studies relevant to the testing of new therapies interpret data from pharmacological experiments and clinical data to conclude drug development based case studies. critically appraise the ethical issues and constraints of regulatory requirements on clinical phases of drug development Use effective and professional written and oral communication.

### Module Content:

This module focuses on the manner in which clinical research and basic research impact each other particularly in pharmaceutical development i.e. 'bench to bedside' . An advanced understanding of clinical trial design, safety testing and toxicology and pharmacogenomics will be related to the testing of medicines in human clinical trials and the area of pharmacovigilance. Ethical questions arising from clinical trials design will be addressed. The influence of regulatory requirements on the pharmaceutical industry will also be highlighted. Students will apply problem based learning approaches to interpret data from preclinical and clinical studies in case studies of drug development. They will also gain an appreciation of the factors leading to the withdrawal of a drug from the market. Role play scenarios will be provided relevant to drug discovery and development where students will engage in group work.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Coursework % Weighting: 100% Exam % Weighting: Practical % Weighting: Coursework will include: A substantial report showing experimental planning and method development as well as data interpretation and discussion (50%) A viva on a case study (50%)

Exam	Coursework	Practical
0%	100%	0%

Biosciences

## Module name: Translation of Science into Medicine

Module code: 6LMS0030

Semester: A

Credits: 15

### Module Aims:

Integrate and analyse how, in drug discovery, basic research translates into clinical drug development.

### Intended Learning Outcomes:

Successful students will typically: critically discuss basic research techniques that are necessary to evaluate the structure activity relationship of new chemical entities for translation into clinical drug development. demonstrate their ability to draw upon advanced knowledge of pharmacokinetics, drug metabolism, preclinical safety testing to characterise modern drug discovery and apply these principles to evaluate approaches to the translation of new drugs. Successful students will typically: design, model and interpret data from pharmacological experiments demonstrate an appreciation of the ethics relevant to pre-clinical safety testing critically appraise factors leading to selection of a drug for clinical development

### Module Content:

Students will study drug discovery i.e. how basic research translates into pharmaceutical clinical drug development . This will include basic research techniques that are essential for the evaluation of structureactivity relationships of new chemical entities for translation into clinical drug development including drug design, drug screening (using in vitro and in vivo methods), pharmacokinetics/pharmacodynamics and biomarkers. An advanced understanding of the basic science areas of pharmacokinetics, drug efficacy screening, drug metabolism and preclinical safety testing and toxicology will be covered. Ethical issues arising from pre-clinical testing and experimental design will be addressed. The module will apply the fundamental principles to evaluate approaches to the translation of new drugs as illustrated in case studies drawn from recent history in the pharmaceutical industry. Case studies will be presented by invited speakers with industrial experience relevant to each stage of drug discovery.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Coursework % Weighting: 50% Exam % Weighting: 50% Practical % Weighting: Students will develop a portfolio based on lecture and case study material for the coursework component. The examination will be 2 hours. Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%. The module has an attendance requirement of at least 50% of the practical sessions. Failure to attend the required proportion of sessions will normally result in the award of an FREN (Fail, re-enrol) grade.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Molecular Medicine

Module code: 6LMS0032

Semester: A

Credits: 15

### Module Aims:

Build on their studies at Level 5 to apply the disciplines of biochemistry and molecular biology to selected disease states and therapeutic technologies.

### Intended Learning Outcomes:

Successful students will typically: apply the principles of biochemistry and molecular biology to the production of heterologous proteins and the use of gene therapy including the role of siRNAs critically discuss the molecular basis of selected diseases explain the potential impact of stem cells on medicine critically discuss the impact of pharmacogenetics and genomics on personalised medicine Successful students will typically: retrieve, interpret and manipulate biological data relating to the molecular biology and biochemistry of disease

### Module Content:

The use of various host organisms and gene modifications for the production of heterologous proteins - expression systems in bacteria, fungi and animal cell culture systems, gene re-engineering for purification and expression; antibody engineering, monoclonal and polyclonal antibodies, Fab, Fv, humanisation of mouse antibodies, recombinant phage antibody (phage display) for the production of ScFv antibodies and applications. The molecular basis of selected diseases will include diseases such as AIDS, metabolic syndrome, cardiovascular disease. Embryonic induced pluripotent stem cells and tissue specific stem cells will be discussed. The module will be delivered via lectures and workshops with the use of case studies to support the material taught.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Where a module is assessed by both coursework and examination, an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%.

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Cellular Differentiation and Development

Module code: 6LMS0033

Semester: A

Credits: 30

### Module Aims:

Develop a systematic understanding and knowledge of the organisation and expression of genetic material in cells develop an understanding of the principles involved in cellular communication, differentiation and development.

### Intended Learning Outcomes:

Successful students will typically: critically discuss the application of genetic, biochemical and molecular techniques to the study of gene structure and function and cellular development understand the biochemical and molecular biological mechanisms that underpin cellular communication, differentiation and development critically discuss the use of model organisms in studying differentiation and development apply this knowledge to the understanding of human disease Successful students will typically: interpret and communicate relevant molecular biological and biochemical data apply bioinformatics to the analysis of molecular biological data analyse gene expression during cell development.

### Module Content:

This module will provide an advanced understanding of the biochemical/molecular basis of cellular differentiation and development. Genetic, molecular and biochemical techniques of investigation will be considered in relation to studying gene regulation and discovering new genes, proteins & signalling pathways involved in aspects of development. Mechanisms of gene expression and control will be considered. Differentiation and development in microbial cells (e.g. *B. subtilis* and yeast) is considered including extrapolations from yeasts to understanding aspects of human cell molecular biology. *C. elegans* as a model for microbial pathogenesis (innate immunity) will be covered. Differentiation & development in multicellular organisms will be covered including a discussion of the role of stem cells, body plans (dorsal/ventral; anterior/posterior; left/right axis formation) cell fate determination, cell polarity mechanisms and cell-cell communication. The major ligand-receptor systems involved in development will be considered including a discussion of their role in embryology and human disease. The module will be delivered via lectures and workshops supported by case studies and problem based learning.

### Pre and Co requisites:

Metabolic Biochemistry , Regulatory Biochemistry and Molecular Cell Biology

Total hours: 300

### Assessment:

Coursework 50% Weighting: 50% Exam 50% Weighting: 50% Practical % Weighting: Coursework: 25% for an in-course test and 25% for an assignment that is based on a practical, case-study or problem based learning exercise. Where a module is assessed by both coursework and examination,

an overall average module grade of at least 40% must be achieved in order to pass the module, with no element of assessment (examination or coursework) being below 35%

Exam	Coursework	Practical
50%	50%	0%

Biosciences

## Module name: Applied and Integrated Molecular Science

Module code: 6LMS0053

Semester: B

Credits: 15

### Module Aims:

Apply the principles of biochemistry and molecular biology to a range of applications appropriate to industry and medicine.

### Intended Learning Outcomes:

Successful students will typically: select and apply appropriate techniques for the isolation, purification and characterisation of selected proteins apply their knowledge and understanding of enzyme-catalysed reactions to industrial processes critically discuss the contribution of biochemical techniques to the diagnosis of selected diseases Successful students will typically: design experiments to answer scientific questions relating to the disciplines within molecular science evaluate data from their own experiments and those published in primary literature use effective and professional oral and written communication

### Module Content:

The module will bring together theory and practice in molecular biology and biochemistry equipping students to apply an integrative approach to areas such as enzyme technology, clinical diagnostics, and protein synthesis and purification. The practical work will typically include analysis of nucleic acids, protein analysis and immunochemical techniques. Applications of bioinformatics will also be included. The students will have the opportunity to design and implement experiments to answer a scientific question. Skills in the evaluation, interpretation and communication of data will also be developed. A "case study" and problem-based learning approach will be adopted that will include the planning and implementation of experiments. This will be supported by lectures and workshops.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Coursework 100% Weighting: Exam % Weighting: Practical % Weighting: Coursework will include: A substantial laboratory report showing experimental design and method development as well as the results and discussion (50%) A viva on a case study (50%) The module has an attendance requirement of at least 50% of the practical sessions. Failure to attend the required proportion of sessions will normally result in the award of an FREN (Fail, re-enrol) grade.

Exam	Coursework	Practical
0%	100%	0%

Geography and Environmental Sciences

## Module name: Exploring Planet Earth

Module code: 4LFS1023

Semester: A

Credits: 15

### Module Aims:

Develop an understanding of how environmental systems function/inter-relate and change over time

### Intended Learning Outcomes:

Successful students will typically: be able to identify the basic features and processes of major systems of the Earth be able to explain the nature, rate and implications of selected aspects of environmental change be able to identify the main ways in which the different Earth systems interact and interrelate outline techniques used in the collection, analysis and interpretation of environmental data Successful students will typically: research topics independently using academic sources develop and outline arguments use dichotomous keys for the identification of organisms undertake basic environmental fieldwork techniques and analyse and interpret environmental and field data

### Module Content:

This module provides students with an opportunity to explore the Earth's systems. The module provides an account of the history of the Earth, and then considers each of the major environmental systems in turn, focussing on the features and processes that define each system. Students will be able to develop an understanding of how the different systems interact and the importance of these interactions for shaping the surface of the Earth and its biological communities. The implication of environmental change on human activities is a central theme throughout the module. Learning outcomes are achieved through a combination of lecture based tutor-led contact time, guided and student-led private study. In particular, skills and attributes will be developed through workshops and practical work. These are compulsory and viewed as an essential part of the module. Deeper learning will be fostered by supporting materials such as module handouts and directed reading. Appropriate references and further reading will be signposted to students including books, journal articles and web resources. Both knowledge and understanding and skills and attributes will be assessed through coursework and an in-class test.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Two pieces of coursework with equal weightings of 50% (Written skills ~1000-2000 words) and 50% (In class test) This module requires students to achieve an overall pass grade of 40% based on the average mark of both pieces of assessment. Compulsory sessions are used at times to ensure that all the intended learning outcomes of a module are achieved. Each time a student misses a compulsory session without significant circumstances beyond a student's control a 5% mark deduction may be applied. The cumulative number of deductions applied to the overall coursework grade at the end of



the module may result in an overall failure to the module even when the initial marks indicate a pass.

Exam	Coursework	Practical
0%	100%	0%

Geography and Environmental Sciences

Module name: Sustainable Futures

Module code: 4LFS0045

Semester: A

Credits: 15

Module Aims:

Understand the societal and environmental issues that have given rise to concern for the environment and the emergence of the environmental movement. develop a knowledge and understanding of the concept of sustainable development in a range of settings

Intended Learning Outcomes:

Successful students will typically: \* explain and exemplify the key societal issues that have given rise to concern for the environment and the emergence of the environmental movement \* describe and exemplify the concept and principles of sustainable development \* illustrate and discuss the complexities of interpreting and applying the concept of sustainable development to environmental and societal problems Successful students will typically: \*discuss and articulate weakness in the arguments of others \*apply ideas to new situations \*develop a sustained and reasoned argument and be able to communicate it effectively \*synthesise and recognise information of relevance in a written form \*articulate and communicate views about environmental issues \*develop their team working skills as a team member and leader.

Module Content:

Topics that may be covered include: environmental concern and the green movement; the environmental spectrum; concepts of sustainable development; environmental footprints; industrial development and sustainability, sustainable development and waste, sustainable development and water; sustainable development and energy; sustainable development and agriculture; sustainable development and the developing World; effective methods of promoting environmental change and the cost of going green. Learning outcomes are achieved through a combination of lectures and workshops (tutor facilitated), tutor guided private study and independent study. Skills and attributes will be particularly developed in workshops and group work sessions.

Pre and Co requisites:

none

Total hours: 150

Assessment:

Two elements of coursework including an in-class Test (50%) and Group Assignment (50%) This module requires students to achieve an overall pass grade of 40%. Compulsory sessions are scheduled at times to ensure that all the intended learning outcomes of a module are achieved. Each time a student misses a compulsory session without significant circumstances beyond a student's control a 5% mark deduction may be applied. The cumulative number of deductions applied to the overall coursework grade at the end of the module may result in an overall failure to the module even when the initial marks indicate a pass.

Exam	Coursework	Practical
0%	100%	0%

Geography and Environmental Sciences

## Module name: Mapping Human Geographies

Module code: 4LMS0009

Semester: A

Credits: 15

### Module Aims:

Explore the development of geographic and cartographic thought and philosophy. develop an awareness of the scope and range of geography from a variety of spatial scales and perspectives. become familiar with Geographical Information Systems, their usage and application.

### Intended Learning Outcomes:

Successful students will typically: gain an understanding of the development of geographical thought, theory and application. grasp foundational geographical methods, ideas and concepts from a variety of spatial and theoretical perspectives. understand cartographic thought and practice and develop an understanding of basic principles of GIS. Successful students will typically: make some use of geographical theory to explain historical and contemporary spatial issues. enhance their skills performance in graphicacy, visual presentation, groupwork, verbal and written communication. develop an ability for using journal articles and other references. develop observational skills in the field and interpret contemporary and historic urban topography and landscapes.

### Module Content:

Students will receive an introduction to the scope of the geographical enquiry at degree level. This will necessarily include an introduction to the philosophical and historical development of geography as an academic discipline and an introduction to the key ideas and concepts. An introduction to cartographic thought and techniques, landscape assessment, observational skills and Geographical Information Systems will be provided as the module covers various spatial perspectives, both historical and contemporary within geography. Learning outcomes will be achieved through a combination of workshop- and lecture-based tutor-led contact time and student-led private study. In particular, the 'skills and attributes' outcomes will be developed in a programme of the workshops and field visit. Both sets of 'knowledge and understanding' and 'skills and attributes' outcomes will be assessed in three coursework assignments relating to lecture, practical and reading material. 42 hours of the directed learning are allocated to the coursework assignments, which include mapwork, numeracy and field observational skills

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Two elements of coursework including a field observation exercise (50%) and an in Class Test (50%)  
This module requires students to achieve an overall pass grade in the coursework. Compulsory sessions are used at times to ensure that all the intended learning outcomes of a module are achieved. Each time a student misses a compulsory session without significant circumstances

beyond a student's control a 5% mark deduction may be applied. The cumulative number of deductions applied to the overall coursework grade at the end of the module may result in an overall failure to the module even when the initial marks indicate a pass.

Exam	Coursework	Practical
0%	100%	0%

Geography and Environmental Sciences

## Module name: Living in a changing and contested world

Module code: 5LMS0013

Semester: AB

Credits: 30

### Module Aims:

Develop an awareness and understanding of: global change from a variety of social and environmental perspectives, the types, causes and contested natures of global change and how global change can be conceptualised and responded to.

### Intended Learning Outcomes:

Successful students will typically: the key ways in which the world is changing and being shaped. the contested nature of global change. how a changing world can be conceptualised and subsequently understood. Successful students will typically: demonstrate awareness of contrasting approaches and explanations to global change. use theoretical and practical conceptualisations to further their understanding of a changing and contested world. make more informed evaluations of key issues of relevance to living in a changing and contested world.

### Module Content:

The module focuses on understanding how the world around us is changing and how such change can be conceptualised and subsequently responded to, and why such change is contested. An understanding of how the world is changing and how such change is contested is developed by focusing on a wide range of topical issues that include: globalisation, trade, water resources, migration, indigenous peoples and cultures, air pollution, tourism, climate change, agriculture, population and food security, species invasion and deforestation. Attention is also paid to exploring and understanding change in the non-human world. Learning outcomes will be achieved through tutor-led teaching sessions, the assessed coursework and examination and student-led private study. Learning outcomes will be summatively assessed during coursework assignments and formatively assessed during teaching sessions. There will be one 3-hour unseen examination paper at the end of Semester B. Links will be given on the module guide to both hard copy and internet-based reference material held in the University's Learning Resources Centre.

### Pre and Co requisites:

none

Total hours: 300

### Assessment:

Three hour examination. Coursework consists of two pieces. 1) Essay 50% 2000 words 2) Reflective piece 50% 1000 words Where a module is assessed by both coursework and examination, an average of at least 40% must be achieved in order to pass the module, with no element of assessment (exam/coursework) being below 35%. A pass may be awarded by the Board of Examiners where either exam or coursework assessment attains 35- 39%, as long as the overall module grade is at least 40%. Compulsory sessions are used at times to ensure that all the intended learning

outcomes of a module are achieved. Each time a student misses a compulsory session without significant circumstances beyond a student's control a 5% mark deduction may be applied. The cumulative number of deductions applied to the overall coursework grade at the end of the module may result in an overall failure to the module even when the initial marks indicate a pass

Exam	Coursework	Practical
50%	50%	0%

Geography and Environmental Sciences

Module name: Changing rural Britain: people, places and policy

Module code: 5LMS0014

Semester: AB

Credits: 30

Module Aims:

Develop knowledge of how the British landscape has evolved and explore key issues related to contemporary rural policies.

Intended Learning Outcomes:

Successful students will typically: be able to explain the role of humans in shaping the British countryside through time. demonstrate an understanding of relevant policy and legislation as it relates to rural environments, agriculture and conservation in Britain. explain the significant issues relating to changes to the rural environment in Britain. Successful students will typically: evaluate the relative importance attached to different anthropogenic changes to the British landscape over time. collect, interpret and analyse different sources of data relating to contemporary rural issues and conservation in Britain.

Module Content:

This module has three key components. 1. The historic development of the British landscape. This sets a timeline for change and students explore the types of evidence used to date the past, including an assessed practical exercise in pollen analysis held at the Bayfordbury field station. 2. The role of agriculture: past, present and future and 3. rural policy and people. These aspects are reinforced by a field visit to the Peak District and the opportunity to visit a working farm and explore local rural community issues. All three elements are supported by relevant field and day visits, practicals and workshops and there is an emphasis on links to practice. The module also deals with pertinent legislation, policy, designation and planning issues as they relate to rural environments. Students explore the roles of agriculture and conservation in the UK and the implications of these factors on driving landscape change and managing different rural environments. This module also investigates topical issues as and when they arise that relate to rural environments and the livelihoods of people living in those environments and on rural futures. Learning outcomes will be achieved through a combination of lecture-based tutor-led contact time, practicals and field visits. Both knowledge and understanding outcomes and skills and attributes outcomes will be assessed in coursework assignments and examination. Directed reading and use of learning resources including module handouts, and independent learning will promote deeper learning. Students will be directed to sources of information during lectures and workshops and recommended reading will be available on the Module Guide which refers students to hard copy reference material in the University Learning Resources Centre, as well as to StudyNet and web based material.

Pre and Co requisites:

none



Total hours: 300

Assessment:

Three hour examination 50%. Two pieces of coursework consisting of: 1) Report 2000 words 25%. 2) Report 2000 words 25%. Where a module is assessed by both coursework and examination, an average of at least 40% must be achieved in order to pass the module, with no element of assessment (exam/coursework) being below 35%. A pass may be awarded by the Board of Examiners where either exam or coursework assessment attains 35- 39%, as long as the overall module grade is at least 40%. Compulsory sessions are used at times to ensure that all the intended learning outcomes of a module are achieved. Each time a student misses a compulsory session without significant circumstances beyond a student's control a 5% mark deduction may be applied. The cumulative number of deductions applied to the overall coursework grade at the end of the module may result in an overall failure to the module even when the initial marks indicate a pass.

Exam	Coursework	Practical
50%	50%	0%

Geography and Environmental Sciences

## Module name: Ecosystems and Environmental Change

Module code: 4LFS0075

Semester: B

Credits: 15

### Module Aims:

Develop an understanding of the basic structure and functioning of ecosystems and the impacts of selected anthropogenic activities of ecosystems

### Intended Learning Outcomes:

Successful students will typically: explain major structural and functional aspects of selected ecosystems explain and illustrate the processes influencing the major biogeochemical cycles recognise the ways in which ecosystems respond to natural and human-induced environmental change recognise the major elements of environmental impact assessment list the key UK and EU laws that influence the management of threatened habitats Successful students will typically: collect, analyse and present ecological data in an appropriate way execute a practical investigation to test an hypothesis

### Module Content:

Includes an introduction to: \* biogeography, climate/vegetation patterns and ecological processes \* role of major biogeochemical cycles \* structure and functioning of major ecosystem types (UK focus) e.g. woodlands, grasslands, agroecosystems, aquatic ecosystems \* human influences on ecosystems, including examples of management \* climate change and air pollutants: impacts of ecosystems \* environmental impact assessments \* the key UK and EU laws that influence the management of threatened habitats \* ecological data handling and descriptive statistics Learning outcomes will be achieved through a combination of workshop and lecture based tutor-led contact time and student-led private study. In particular the skills and attributes outcomes will be developed in a programme of compulsory fieldwork sessions and workshops. Use is made of facilities at both Hertford campus and the Bayfordbury Field Station. Workshops will be used to support skills development in preparation for the coursework. Deeper learning and teaching will be fostered by supporting directed reading, module hand outs and materials on Studynet.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Two hour examination 50% Coursework consists of: 1) In-class test 10% 2) Report 40% Where a module is assessed by both coursework and examination, an average of at least 40% must be achieved in order to pass the module, with the exam assessment not being below 30%. A pass may be awarded by the Board of Examiners where the exam assessment attains 30-39%, as long as the overall module grade is at least 40%. Compulsory sessions are used at times to ensure that all the intended learning outcomes of a module are achieved. Each time a student misses a compulsory

session without significant circumstances beyond a student's control a 5% mark deduction may be applied. The cumulative number of deductions applied to the overall coursework grade at the end of the module may result in an overall failure to the module even when the initial marks indicate a pass.

Exam	Coursework	Practical
50%	50%	0%

Geography and Environmental Sciences  
Module name: Dynamic Earth

Module code: 4LFS1024

Semester: B

Credits: 15

Module Aims:

Develop an understanding of the geological evolution and characteristics of the Earth and the operation and interaction of atmospheric, exogenic and endogenic processes

Intended Learning Outcomes:

Successful students will typically: be able to outline the geological history of the Earth and explain the importance of plate tectonics in the formation of Earth surface features and in causing geohazards be able to explain the formation of rocks and geological structures be able to recognise the mineralogical and petrological characteristics of key mineral and rock types understand the operation of key exogenic processes that weather, erode, transport and deposit Earth surface materials be able to describe the key meteorological processes in the Earth's atmosphere Successful students will typically: be able to describe and indentify common rocks and minerals be able to read and interpret simple geological maps be able to practice a range of other relevant discipline-specific skills source and read appropriate scientific literature record and report scientific observations

Module Content:

The aims of this module are to enable students to understand the dynamic processes that produce rocks and geological structures, and be able to recognise them in the laboratory and in the field. The geological evolution of the Earth and the importance of plate tectonics in the formation of rocks and geological structures will be studied, together with introductory igneous, sedimentary and metamorphic petrology. The module will also consider weathering, erosion, transport and deposition of Earth surface materials and the dynamic endogenic and exogenic processes that impact on anthropogenic activities and cause geohazards. Learning outcomes will be achieved through a combination of lecture and practical based tutor-led contact time and student-led private study. Both knowledge and understanding and skills and attributes outcomes will be assessed by two assessments. Directed reading and use of a range of learning resources will achieve deeper learning.

Pre and Co requisites:  
none

Total hours: 150

Assessment:

Two hour examination 50% One piece of coursework 50% Where a module is assessed by both coursework and examination, an average of at least 40% must be achieved in order to pass the module, with the exam assessment not being below 30%. A pass may be awarded by the Board of Examiners where the exam assessment attains 30-39%, as long as the overall module grade is at least 40%. Compulsory sessions are used at times to ensure that all the intended learning outcomes of a module are achieved. Each time a student misses a compulsory session without significant

circumstances beyond a student's control a 5% mark deduction may be applied. The cumulative number of deductions applied to the overall coursework grade at the end of the module may result in an overall failure to the module even when the initial marks indicate a pass

Exam	Coursework	Practical
50%	50%	0%

Geography and Environmental Sciences

## Module name: Geographies of Governance

Module code: 4LMS0008

Semester: B

Credits: 15

### Module Aims:

Understand how human space and society is organised, planned, governed and changes at different scales in relation to our lives.

### Intended Learning Outcomes:

Successful students will typically: demonstrate their understanding of the inter relationships of people with their environment at a variety of scales and times. evaluate the processes involved in local and national planning. appraise international and supra-national initiatives to better govern space. illustrate a range of social issues, conflicts and opportunities relating to the use of human space. Successful students will typically: demonstrate enhanced writing skills using journal articles and other references. practice problem based learning techniques. reflect on and be reflexive to their ability to communicate effectively and work in groups.

### Module Content:

The module provides an introduction to the framework of society with a particular relationship between people and their environment (human space at a range of geographical scales from local to global) helping you to place Hertfordshire and the UK within broader geographical spaces and tiers of governance. Through lectures, a field visit, workshops and problem based group learning students explore the interaction of people with the environment and will develop an understanding of the approaches adopted by geographers towards governing and planning human space and society and managing conflict within these spaces. Lectures will introduce the political and legal framework of England, consider the UK planning system and issues around this. They will also look at Britain's changing relationship with Europe and developments in terms of global governance and development. A mix of classroom based lectures and workshops supported by field work and problem based learning. A directed reading list will be provided and students will receive school guidelines on referencing and learning plus learning support from the Buxton Resource Centre.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Two hour examination. Coursework consists of one piece that tests group and presentation skills. Where a module is assessed by both coursework and examination, an average of at least 40% must be achieved in order to pass the module, with the exam assessment not being below 30%. A pass may be awarded by the Board of Examiners where the exam assessment attains 30-39%, as long as the overall module grade is at least 40%. Compulsory sessions are used at times to ensure that all the intended learning outcomes of a module are achieved. Each time a student misses a compulsory

session without significant circumstances beyond a student's control a 5% mark deduction may be applied. The cumulative number of deductions applied to the overall coursework grade at the end of the module may result in an overall failure to the module even when the initial marks indicate a pass.

Exam	Coursework	Practical
50%	50%	0%

Geography and Environmental Sciences

## Module name: Investigative skills and techniques

Module code: 4LFS1006

Semester: B

Credits: 15

### Module Aims:

Acquire skills in the collection, analysis and presentation of geographical and environmental data, providing a foundation in research skills

### Intended Learning Outcomes:

Successful students will typically: develop knowledge and understanding of research methodologies and techniques in geographical and environmental data collection, analysis and presentation. gain experience in applying statistical and some other quantitative methods, as well as qualitative methods, in real geographical and environmental contexts and interpreting the results. develop approaches to problem-solving within a geographical/environmental context. Successful students will typically: develop knowledge and understanding of research methodologies and techniques in geographical and environmental data collection, analysis and presentation. gain experience in applying statistical and some other quantitative methods, as well as qualitative methods, in real geographical and environmental contexts and interpreting the results. develop approaches to problem-solving within a geographical/environmental context.

### Module Content:

This course is designed to provide an introduction and overview of some to the basic analytical methods employed by geographers and environmental managers when undertaking their research work. The application of appropriate statistical techniques is an important research skill and students will develop their skills in statistical analysis from a combination of lectures and workshops. Students will also gain some appreciation for the special issues and problems raised by the use of geographical and environmental data. The course includes the essentials of data collection and entry, questionnaire design and administration, spatial sampling design and presenting research results. Students will develop skills in presenting research results in a meaningful way through producing a short research report. Learning outcomes will be achieved through a combination of workshop -and lecture -based tutor-led contact time and student-led private study. In particular, the 'skills and attributes' outcomes will be developed in a programme of appropriate workshops.

### Pre and Co requisites:

none

Total hours: 150

### Assessment:

Two coursework assignments: 1) In-class test 70%. 2) A written numeric exercise 30%. This module requires students to achieve an overall pass grade of 40%. Compulsory sessions are used at times to ensure that all the intended learning outcomes of a module are achieved. Each time a student misses a compulsory session without significant circumstances beyond a student's control a 5% mark



deduction may be applied. The cumulative number of deductions applied to the overall coursework grade at the end of the module may result in an overall failure to the module even when the initial marks indicate a pass.

Exam	Coursework	Practical
%	100%	0%