The Faculty of Science

Department of Earth Sciences

COURSE OPTIONS FOR VISITING STUDENTS

ABOUT THE DEPARTMENT

The Department of Earth Sciences is internationally-renowned for the quality of its teaching and research activities. It provides a stimulating and supportive environment for students and staff to study and research a wide range of earth sciences. Strong collaborative links with international petroleum geosciences industries, environmental consultancies and engineers, and local authorities, provide valuable support for postgraduate research projects, employment for graduates, and work experience for undergraduates. We were ranked 6th in the United Kingdom in the 2008 *National Student Survey* with an 'Overall Student Satisfaction' rating of 97%, and in the 2008 Research Assessment Exercise we were ranked equal 6th in the UK with 70% of our research rated as world-leading or internationally excellent in terms of originality, significance and rigour.

ENTRY REQUIREMENTS

Courses in Earth Sciences are open to all Study Abroad, International Exchange, and Erasmus students, provided previous experience in and knowledge of relevant aspects of knowledge can be evidenced.

Term 1 = Autumn Term
Term 2 = Spring Term

The information contained in the course outlines on the following pages is correct at the time of publication but may be subject to change as part of our policy of continuous improvement and development.

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Note: Courses that run for the full year cannot be taken for one term only

Level One:

GL1100	Global Tectonics	½ unit	Term 2

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 2. It begins in January.

GL1200	Introductory Sedimentology	½ unit	Term 1

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 1 only. It cannot be started in January.

GL1300	Environmental Issues	½ unit	Term 1

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 1 only. It cannot be started in January.

GL1460	Igneous and Metamorphic Geology	½ unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

GL1500	Physics and Chemistry of the Earth	½ unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

GL1600	Earth Structures	½ unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

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GL1650	Earth Materials	½ unit	Term 1

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 1 only. It cannot be started in January.

GL1700	Mathematics for Geologists	½ unit	Term 1

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 1 only. It cannot be started in January.

GL1750	Introduction to Petroleum Geology	½ unit	Term 1

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 1 only. It cannot be started in January.

GL1800	Introductory Palaeontology	½ unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

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Level Two:

GL2200	Stratigraphy and the History of Life	½ unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

GL2210	Regional Geology	½ unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

GL2320	Geohazards	½ unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

GL2400	Igneous and Metamorphic Geology	½ unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

GL2410	Geochemistry	½ unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

GL2500	Applied Geophysics	½ unit	Term 2

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 2. It begins in January.

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GL2600	Structural Analysis and Remote Sensing	½ unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

Level Three and Four:

GL3001	Advanced Concepts and Techniques in Geology	1 unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

GL3210	Advanced Topics in Sedimentology	½ unit	Term 1

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 1 only. It begins in September.

GL3250	Sedimentary Basin Analysis	½ unit	Term 2

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 2. It begins in January.

GL3300	Aqueous Geology	½ unit	Term 2

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 2. It begins in January.

GL3340	GIS and Remote Sensing	½ unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

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GL3460	Volcanology	½ unit	Term 2

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 2. It begins in January.

GL3510	Planetary Geology and Geophysics	½ unit	Term 1

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 1 only. It begins in September.

GL3600	Advanced Techniques in Tectonic and Structural Interpetation	½ unit	Term 2

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 2. It begins in January.

GL3700	The Geology of Petroleum	½ unit	Term 2

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 2. It begins in January.

GL3750	Mineral Resources	½ unit	Full Year

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs for the full year. It cannot be started in January.

GL3800	Advanced Palaeontology	½ unit	Term 1

- This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students
- This course runs in Term 1 only. It begins in September.

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Masters Level Courses

Please contact studyabroad@rhul.ac.uk if you are interested in applying for any of these courses.

GL4100	Research Proposal and Critical Review	½ unit	
• This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students			

GL4111	Independent Geoscience Project	1 unit	
• This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students			

GL4200	Applied Stratigraphy and Sedimentology	½ unit	
• This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students			

GL4210	Analysis of Depositional Environments	½ unit	
• This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students			

GL4300	Water Quality	½ unit	
• This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students			

GL4310	Air Pollution	½ unit	
• This course is available to **all** ERASMUS, INTERNATIONAL EXCHANGE and STUDY ABROAD students			

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BS1030 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013/14**
Course Title:	Principles of Molecular Bioscience	**Course Value:**	1 unit
Course Code:	BS1030	**Course JACS Code:**	C700 & B990
Availability:	1st term	**Status:**	Core
Pre-requisites:	A2 Chemistry	**Co-requisites:**	none
Co-ordinator:	Dr. J McEvoy (JMcE)		
Course Staff:	Dr. J McEvoy (JMcE)		
Aims:	Students should achieve a sound knowledge of fundamental chemistry essential to the proper understanding of life processes and laboratory experiments.		
Learning Outcomes:	By the end of the course students should: 1. Understand bonding and intermolecular interactions in a biological context; 2. Understand and quantify energy changes and equilibrium in biochemistry; 3. Understand and quantify the rates of reactions; 4. Understand acid-base phenomena in aqueous solutions; 5. Know the key structural features of proteins, carbohydrates, lipids and nucleic acids; 6. Appreciate relationship between structure and function in biology, notably in myoglobin and hemoglobin; 7. Understand the principles of biological reaction mechanisms; 8. Understand the principles of spectroscopy including mass, IR, NMR; 9. Be able to make careful, quantitative measurements in the biochemical lab and carry out consequent calculations; 10. Be able to carry out, record and interpret basic manipulations of organic substances.		
Course Content:	See detailed Course Outline, attached		
Teaching & Learning Methods:	Formal lectures with formative clicker questions; laboratory classes; regular assessment and feedback on Moodle.		
Details of teaching resources on Moodle:	The slides of the lectures as well as the handouts will be available minimum 1 day before the lecture. Students will attempt a Moodle quiz before each lecture and lab. Feedback will be delivered in class and on-line.		
Key Bibliography:	Required Course textbooks: 1) *Chemistry for the Biosciences* (2nd ed.) by Crowe and Bradshaw; OUP. 2) *Biochemistry* (7th ed.) by Berg, Tymoczko and Stryer; Freeman. (Also required for BS1090) 3) *Practicals for BS1030*; (Available free from the Department) Other optional support: *Chemical Principles* (5th ed.) by Atkins and Jones; Freeman. *Maths for Chemistry* (2nd ed.) by Monk; OUP. *Chemistry for the Life Sciences* (2nd ed.) by Sutton; CRC Press. *Essentials of Organic Chemistry* by Dewick; Wiley.		
Formative Assessment & Feedback:	Feedback on Moodle quizzes posted within a few days. Lab reports marked and returned in class within 2 weeks, with personal feedback. Formative mid-term test.		
Summative Assessment:	**In-class assessment (exam):** 70% - MCQ and short answer questions in departmental test, first week of Term 2 (15/1/14). **Practical work** 25% - 8 sessions of 6 hours each, pre-lab quizzes and reports handed in after lab. **Pre-lecture quizzes:** 5% weekly multiple-choice quizzes submitted on Moodle **Deadlines:** Each laboratory report to be handed in 1 week after practical; Moodle quizzes to be completed before lab or lecture.		

Course Descriptions can also be found in the Undergraduate Handbook here:
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BS1040 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013/14**
Course Title:	THE DIVERSITY OF LIFE	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	1 unit
Course Code:	BS1040	**Course JACS Code:** (Please contact Data Management for advice)	C181; C182
Availability: (Please state which teaching terms)	1st Term and 2nd Term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Core
Pre-requisites:	A level Biology or equivalent	**Co-requisites:**	None
Co-ordinator:	DR DAVID MORRITT		
Course Staff:	Dr D Morritt (DM); Dr D McGregor (DMcG); Dr E. Lopez-Juez (EL-J); Dr A D Stead (ADS); Dr L Bindshedler (LBi).		
Aims:	This course will explain the diversity and structure of the major Kingdoms of living organisms. Major aims of the course are to show the importance of evolution and natural selection; to demonstrate the principles of evolutionary development with reference to functional anatomy and life-cycles and to explore the wider concept of biodiversity. The course will also provide practical illustrations of key concepts and the diversity of living organisms discussed in the lectures. The course provides material relevant to some second year courses in Zoology and Plant Biology.		
Learning Outcomes:	By the end of the course the student should:- 1. know, in outline, the structure of the main Kingdoms of living organisms; 2. appreciate the diversity within these Kingdoms and the relationships between them; 3. understand the basic principles of evolution, natural selection and why these are important in understanding zoological and botanical classification; 4. understand the principles of functional anatomy and evolutionary development; 5. understand relationships between life-cycles and their evolutionary significance; 6. understand the broader concepts of biodiversity; 7. know how to use microscopes and have practiced practical skills with botanical and zoological specimens; 8. have learned observational techniques and drawing skills; 9. have acquired skills in data handling and presentation, electronic data retrieval and report writing.		
Course Content:	The course provides an introduction to the five Kingdoms of living organisms. A broad introduction to evolution and natural selection will lead into an evolutionary approach to the classification of organisms, and an introduction to bioinformatics. The development of life cycles and evolution of reproductive strategies and transport systems will provide a common theme throughout the course. The special features of the main groups will be examined, particularly with respect to functional anatomy, ecological success and species diversity. A number of themes will be explored in groups of lectures, including relevance of groups of organisms to man and the influence of man on biodiversity. Practicals will include handling and observation of preserved (and live) specimens, preparation of taxonomic keys, drawing, data analysis and presentation. Demonstrations will be used to illustrate the diversity of different groups.		
Teaching & Learning Methods:	Lectures; practical sessions; self-test facilities using website for recommended textbook (linked to ebook) and test questions associated with some electronic handouts (feedback on Moodle). Moodle quizzes.		

Course Descriptions can also be found in the Undergraduate Handbook here:
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Details of teaching resources on Moodle:	All lecture handouts, key PowerPoint slides and selected resources will be made available on Moodle.
Key Bibliography:	Main recommendation: D. Sadava, DM Hillis , HC Heller & M.R. Berenbaum (2013). *Life: The Science of Biology*, 10th Edition, Sinauer Macmillan. ISBN 978-1-4641-3639-9. **Classification: 574 LIF** Additional reading: PH Raven, RF Evert & SE Eichhorn. *Biology of Plants*, 6th Edition, Worth. ISBN 1-57259-041-6. **Classification: 581 RAV** EE Ruppert & RD Barnes *Invertebrate Zoology*, 7th Edition, Thomson, Brooks/Cole. ISBN 0-03-025982-7. **Classification: 592 BAR** **or** RC Brusca & GJ Brusca *Invertebrates*, 2nd Edition, Sinauer, ISBN 0-87893-097-3 **Classification: 592 BRU** FH Pough, CM Janis & JB Heiser *Vertebrate Life*, 6th Edition, Prentice Hall. ISBN 0-13-041248-1. **Classification: 596 VER**
Formative Assessment & Feedback:	First two practical reports are used for formative assessment only. Practical write-ups will be marked and handed back during the course with generic feedback for each practical session provided via Moodle. Short answer / MCQ tests at the end of some teaching sessions.
Summative Assessment:	**Exam** 70% Section A: MCQ (30 questions – answer all) Section B: 2 essay questions from a choice of 6 (Sections A and B count equally towards the exam mark) - 2 hours **Coursework** 25% (based on eight pieces of work: 2 write-ups and 6 proformas) **Moodle quizzes** 5% (10 quizzes throughout the year worth 0.5% each) **Deadlines:** See practical lab book for details.

BS 1050 COURSE SPECIFICATION FORM

Department/School:	**Biological Sciences**	**Academic Session:**	**2013/14**
Course Title:	Ecology: animal behaviour to environmental conservation	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	1 unit
Course Code:	BS1050	**Course JACS Code:** (Please contact Data Management for advice)	C180; C150; C100; C200; C300
Availability: (Please state which teaching terms)	1st Term and 2nd Term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Core
Pre-requisites:	A level Biology or equivalent	**Co-requisites:**	
Co-ordinator:	**Prof. Julia Koricheva**		
Course Staff:	**Prof I Barnes (IB); Dr B Ferry (BF); Prof J Koricheva (JK); Dr D McGregor (DMcG); Dr D Morritt (DM).**		
Aims:	This course provides an introductory understanding of some of the principles of ecology, ranging from biodiversity conservation to animal behaviour. Through a combination of lectures, practical laboratory classes and field trips students are introduced to key UK habitats, the adaptations of organisms to the problems of living in such environments and the interactions between the organisms themselves, as well as fostering an understanding of ecological methods. Practical skills related to sampling techniques, biostatistical analyses and experimental design are taught as part of the major ecological themes.		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Learning Outcomes:	By the end of the course, students should: 1. understand the major principles of ecological and behavioural science; 2. have gained personal experience of ecological sampling techniques; 3. know how to apply and interpret elementary statistical tests; 4. be familiar with the key features of UK ecosystems; 5. understand in outline current ecological issues.
Course Content:	The course applies a "top-down" approach, from biomes to individuals, covering seven major themes: biogeochemical processes; British ecosystems; community ecology; population and molecular ecology; palaeoecology; current ecological issues; behavioural ecology.
Teaching & Learning Methods:	Lectures; laboratory practicals and field days with direct interaction with staff and postgraduate students; lecturer assessed practical reports with written feedback.
Details of teaching resources on Moodle:	Selected supporting information will be placed on Moodle, e.g. lecture handouts, additional reading suggestions, links to textbook tutorials and exercises, as well as quizzes on different parts of the course.
Key Bibliography:	**Main recommendation:** *Sadava D et al. (2013)*. *Life: The Science of Biology*, 10th Edition, Sinauer/Macmillan, ISBN 978-1-4641-3639-9 **Classification:** 574 LIF **Additional reading:** Townsend, CR, Begon M & Harper, JL (2008) *Essentials of Ecology*. 3rd Ed. Blackwell Science. ISBN: 9781405156585 **Classification:** 574.5 TOW Begon, M, Townsend CR & Harper, JL (2006) *Ecology*. 4th Ed. Blackwell Science. (for students intending to take ecology courses in 2nd & 3rd year) ISBN: 9781405111171 **Classification:** 574.5 BEG
Formative Assessment & Feedback:	Advice and feedback on writing practical reports are given through Moodle and the individual feedback forms attached to the marked practical reports. Moodle quizzes on different parts of the course and electronic voting clickers used at the lectures also provide immediate formative assessment and feedback.
Summative Assessment:	**Exam** 65% Section A: MCQ (30 questions – answer all) Section B: 2 essay questions from a choice of 6 (Sections A and B count equally towards the exam mark). **Coursework** 35% (9 pro forma practical reports) (3-4 pages) **Deadlines:** Laboratory reports for each practical to be handed in within one week

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

BS1060 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013/14**
Course Title:	**Living Systems: Animal and Plant Physiology**	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	1 unit
Course Code:	BS1060	**Course JACS Code:** (Please contact Data Management for advice)	
Availability: (Please state which teaching terms)	2nd Term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Core
Pre-requisites:	A level Biology or equivalent	**Co-requisites:**	
Co-ordinator:	**Dr Tony Stead**		
Course Staff:	**Dr A D Stead (ADS); Dr J Beauchamp (JB); Dr R Yáñez (RY); Prof RSB Williams (RSW).**		
Aims:	This course will set in context the internal mechanisms by which animals and plants thrive in their chosen environment and maintain their integrity. The aim of the course is to show how molecular, cellular and organ systems integrate in living organisms to support life.		
Learning Outcomes:	By the end of the course students should: 1. understand the principal methods by which cells and organs communicate with each other; 2. appreciate how changes in internal and external environments are assessed by animals and plants; 3. appreciate the different ways in which plants and animals obtain oxygen, carbon dioxide, water and energy, distribute nutrients and rid themselves of waste materials; 4. understand key properties of those organ systems which support mobility; 5. have experience of carrying out a range of practical exercises which illustrate lecture material; 6. have experience of completing accurate and analytical reports of laboratory exercises; have experience of assessing practical data critically;		
Course Content:	This course focuses on the structure, organisation and function of cells and tissues and how these are integrated into organs that support life. The course considers how cells communicate with each other and the different signalling systems involved in plants and animals. In animals, particularly mammals, the main physiological mechanisms involved in obtaining and using energy are discussed, and the consequences of potentially disruptive changes are considered. *(JB to add a sentence?)* The growth and development of plants is discussed as they form the principal source of energy and nutrients for many animals, including humans. This section of the course focuses on photosynthesis, in particular the fixation of carbon dioxide using solar energy, the transport of material within the plant and how growth regulators control plant development. Man's influence on the improvement of plant quality and yield will be considered. Practicals complement lecture-topics and provide experience of modern laboratory techniques. Regular assessed on-line tests will allow participants to assess their knowledge and level of understanding.		
Teaching & Learning Methods:	Lectures and laboratory practicals; regular assessment and feedback on Moodle. Tutorials with Personal Advisors to help acquire study skills.		
Details of teaching resources on Moodle:	Selected supporting information will be placed on Moodle, e.g. lecture handouts, additional reading suggestions, links to textbook tutorials and exercises, as well as quizzes on different parts of the course.		
Key Bibliography:	**Main recommendations:** *Life: The Science of Biology 9th Ed*, Sadava et al Classification: 574 LIF **Additional reading:** *Animal Physiology*, *Mechanisms and Adaptations.* Randall, et al Classification: 591.1 ECK		

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	Biology of Plants, Raven, et al 7th Ed. Classification: 581 RAV Quarto *Human Physiology*, Pocock and Richard Classification: 612 POC *The Molecular Life of Plants.* Jones et al. 2012 TBA
Formative Assessment & Feedback:	Practical reports will be returned during the course. Students will also complete a compulsory, but non-assessed, MCQ exercise, and three essay practice sessions. There will be a feedback session after each exercise.
Summative Assessment:	**Exam** 70% **Practical reports** 20% **Moodle assessments** 5% **Tutorial assignments** 5% **Format of Exam Paper:** Section A: MCQ (30 questions) Section B: 1 essay question from a choice of 3 (Animal) Section C: 1 essay question from a choice of 3 (Plant) Sections A weighted 50%; B & C weighted 25% each towards the exam mark. **Attendance of Study Skills Tutorials with Personal Advisors is a requirement for this course, and successful completion of tutorial assignments counts as marks towards this course.** **Deadlines:** Proforma assessed practicals will be submitted in the lab on the day of the practical or assessed via Moodle, at times to be advised. Full practical write-ups must be submitted 6 days after the practical unless stated otherwise. For Tuesday practicals: report to be handed in by 4.45 pm on following Monday For Friday practicals: report to be handed in by 4.45 pm on following Thursday

BS1070 COURSE SPECIFICATION

Department/School	Biological Sciences	**Academic Session:**	2013-14
Course Title:	Cell Biology and Genetics	**Course Value:**	1 unit
Course Code:	BS1070	**Course JACS Code(s):**	C400, C500
Availability:	1st Term	**Status:**	Core
Pre-requisites:	A2-level Biology or equivalent	**Co-requisites:**	
Co-ordinator:	Dr Paul Devlin		
Course Staff:	**Module 1: Cell Biology:** Dr S Dissanayeke (SD); Dr D McGregor (DMcG); Dr AD Stead (ADS) **Module 2: Genetics:** Dr PF Devlin (PFD); Dr E Leadbeater (EL)		
Aims:	**Module 1: Cell Biology** To provide an introduction to prokaryotic and eukaryotic cell biology, including subcellular organisation and the basic features of different microbes. To give a good foundation in numerical skills for biological sciences. To provide a foundation in microscopy techniques. **Module 2: Genetics** To provide a basic understanding of genes that spans their behaviour in individual organisms, in populations, and at the molecular level within the cell.		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Learning Outcomes:	By the end of the course students should: 1. Understand the basic features of different microbes and the diversity of microorganisms; 2. describe the subcellular features of prokaryotic and eukaryotic cells and understand the key functions of these structures and organelles; 3. understand cellular genetics with respect to mitosis, meiosis, inheritance and recombination; 4. understand the fundamentals of gene expression and its control, and of DNA replication; 5. understand the fundamentals of genome organisation, and of transcription and translation; 6. experience practical techniques involved in microscopy including slide preparation for the observation of chromosomes; and fixation techniques for the analysis of cell ultrastructure as well as aseptic techniques for bacterial culture 7. be competent in the design and analysis of simple genetic crosses and in the manipulation of numerical data.
Course Content:	**Module 1: Cell biology** focuses on the structure and function of prokaryotic and eukaryotic cells. The origin of life is considered, and the diversity of microbes is investigated. The course explores cell subcellular organisation and the relationship between the structure and function of the main organelles. This course also incorporates essential numeracy skills for biological scientists which includes consideration of hypothesis testing, experimental design and basic statistical comparisons. **Module 2: Genetics** covers the structure and organisation of: chromosomes, mitosis, meiosis and recombination, the structure and inheritance of DNA, transcription, translation, regulation of gene expression, the organisation of prokaryotic and eukaryotic genomes, and techniques and applications of recombinant DNA technology.
Teaching & Learning Methods:	Lectures supplemented by additional material on the Moodle website, practicals with opportunity for lecturer interaction, practical reports with lecturer assessment.
Details of teaching resources on Moodle:	All lecture slides and handouts are available for download from Moodle along with extra animated study aids. Weekly assessed multiple choice quizzes submitted on Moodle, supporting the lectures The practical assessment for Genetics practical 3 is Moodle-based.
Key Bibliography:	Sadava *et al* (2010) *Life: The Science of Biology* 10th Ed. (International Ed.) (published by Macmillan/Sinauer /W.H. Freeman).
Formative Assessment & Feedback:	Return of marked coursework (practical reports); web-based feedback. Assessment through Moodle multiple choice quizzes.

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Summative Assessment:	**Exam** 70% A two-hour paper comprising 30 MCQs (15 Genetics and 15 Cell Biology) and two essay-type questions (one Genetics from a choice of three Genetics questions and one Cell Biology from a choice of three Cell Biology questions) **Coursework** 25% Proforma-based lab practical reports completed after individual lab sessions; except Genetics practical 3: Moodle-based lab practical report completed online. **Moodle quizzes** 5% Weekly multiple choice quizzes submitted on Moodle. **Deadlines:** Proforma-based lab practical reports completed and handed in by 4.45 pm on the week after the lab; (Moodle-based Genetics lab 3 practical report completed online by 4.45 pm one week after the lab). See Course Outlines for Modules 1 and 2 below for specific lab dates.

BS1090 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013/14**
Course Title:	Biochemistry: The Molecular basis of Life	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	1 unit
Course Code:	BS1090	**Course JACS Code:** (Please contact Data Management for advice)	C700, C720, C730, C741
Availability: (Please state which teaching terms)	2nd Term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Core
Pre-requisites:	A level Chemistry	**Co-requisites:**	
Co-ordinator:	Prof G Leubner		
Course Staff:	*Dr A Devoto, Prof G Dickson (GD), Prof G Leubner (GL), Dr J McEvoy (JMcE), Dr C C Rider (CCR), Dr C J Wilkinson (CJW) and Prof R S Williams (RSW)*		
Aims:	To provide: - ♦ an understanding of the basic concepts of biochemistry, including the relationship between the chemical structures and the biological activities of biomolecules; ♦ an appreciation of the different levels of structural complexity of proteins and their functions; ♦ a knowledge and understanding of enzyme catalysis including selected reaction mechanisms, simple kinetics and the regulation of enzyme catalysed reactions; ♦ knowledge and understanding of the key metabolic pathways including and amino acid metabolism, photosynthesis and starch and sucrose metabolism; ♦ a knowledge of techniques for protein purification and analysis; ♦ competence in elementary practical biochemistry for the analysis of cellular metabolites. ♦ a knowledge of the metabolic strategies and the energy currencies of the living cells, and metabolic pathways including oxidative phosphorylation; glycolysis and gluconeogenesis; the citric acid cycle; lipid biosynthesis and oxidation. ♦ a full understanding of the levels of protein structure; ♦ an understanding of the mechanisms involved in the regulation of metabolism including a basic knowledge of hormonal signal transduction; ♦ the ability to evaluate experimental methods used in the study of biochemical function; ♦ the basic practical skills required for the further study of the subject.		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Learning Outcomes:	By the end of the course, students should be able to:- ♦ possess a knowledge and understanding of the structure and function of the various types of biomolecule; ♦ appreciate the different levels of structural complexity of proteins, and the relationship between their structure and function; ♦ understand enzyme catalysis and the kinetics of enzyme-catalysed reactions; ♦ understand metabolic strategies for the dynamic interconversions of biomolecules; ♦ understand the theory underlying a variety of methods for protein purification and for studying metabolism. ♦ understand metabolic pathways by which CO_2 is converted into starch and sucrose in chloroplasts, and their regulation. ♦ understand the generation of metabolic energy via glycolysis, citric acid cycle, lipid metabolism and oxidative phosphorylation. ♦ understand the relationships between the molecules essential for the functioning of the cell; ♦ understand the structure of proteins; ♦ understand the function of other key metabolic pathways and their regulation, including the pentose phosphate pathway, glyoxylate cycle, nitrogen fixation, urea cycle, amino acid biosynthesis ♦ understand the principles of metabolic integration and signal transduction mechanisms by which certain hormones regulate carbohydrate metabolism. On completing the practical classes, students should be able to: ♦ apply several chromatographic, spectroscopic and electrophoretic procedures to the separation and quantitation of various biomolecules. ♦ plan experiments and interpret experimental data to address specific questions about metabolism.
Course Content:	See detailed contents of course outline.
Teaching & Learning Methods:	Lectures and practical classes with opportunity for lecturer interaction. Teaching is based on a set textbook, which has an interactive website. A self-assessment computer-based test is available via Moodle.
Details of teaching resources on Moodle:	A Moodle Quiz covering for formative feeback, including textbook references. Other resources are currently under development.
Key Bibliography:	*Biochemistry* 7th edition (2010) by Berg, Tymoczko & Stryer Published by Freeman and Co.
Formative Assessment & Feedback:	Moodle-based MCQ style review questions with feedback. Marked and returned practical assessments. Practical feedback sessions.
Summative Assessment:	**Exam** 65% (2 hours) Section A: MCQ (30 questions – answer all) Section B: 2 essay questions from a choice of 5 (Sections A and B count equally towards the exam mark). **Practical work** 25% **Problem solving** 10% **Deadlines:** All laboratory write-ups and completed pro-formas to be handed in on the Monday/Tuesday after the Lab. See Course Outline.

Level Two Courses

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

BS2020 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013/14**
Course Title:	**Plant Life: From Genes to Environment**	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	**0.5 unit**
Course Code:	**BS2020**	**Course JACS Code:** (Please contact Data Management for advice)	**C240**
Availability: (Please state which teaching terms)	**2nd Term**	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	**Core (Biology), optional (others)**
Pre-requisites:	**BS1070 or BS1080**	**Co-requisites:**	
Co-ordinator:	**Dr E. López-Juez**		
Course Staff:	**Dr E. López-Juez, Dr J. Koricheva**		
Aims:	The course intends to deepen the cellular, molecular and developmental understanding of plants for organismal biologists, and to provide an evolutionary, ecological and adaptive angle on cellular processes for students with a molecular interest. Expanding on knowledge gained, particularly, on function, in year one, the course aims to examine higher plant evolution, how plants are built from single cells into complex multicellular organisms, how they perceive and adapt their development and physiology to environmental circumstances, how they interact with microbes, their importance in the light of global change and how we have come to exploit them as crop plants.		
Learning Outcomes:	By the end of the course students should: 1. be familiar with some of the diversity and the basic life cycle of flowering plants. 2. understand the structure and building through developmental process of a plant multicellular body, particularly the role and biology of meristems 3. be aware of the need for tuning of the photosynthetic apparatus to the prevailing conditions, and of mechanisms evolved to achieve this in extreme cases. 4. understand, through case studies, the roles and mode of action of some plant hormones, coordinating development. 5. be familiar with the range of environmental abiotic and biotic factors affecting plants (including light, time of day, temperature, drought, and other organisms), and how plants respond to the challenges they pose. 6. be acquainted with issues relating plant biology and humans, including examples and mechanisms of plant domestication, and climate change, how it affects plants or the role plants can play in its amelioration.		
Course Content:	The course examines primarily the most advanced (flowering) plants, their evolution, developmental and functional biology. In part one, the origin and diversification of flowering plants is discussed, as it is reflected in their reproductive biology. In the second part the 'building' of a plant is analysed, with reference to the meristems, pools of 'stem cells' in which it primarily takes place. Part three reviews mechanisms by which the photosynthetic apparatus adapts to current light conditions or to water/CO_2 availability. Part four examines some case studies of the role and mode of action of plant hormones. Part five reviews plant environmental sensors of abiotic and biotic factors, key to adapt plant development and behaviour to the prevailing conditions. The mode of action of such sensors, and the responses that they evoke, are discussed. Part six touches upon plants in the context of their domestication ("accelerated evolution") in the hands of humans and in relation to global environmental change, the impact it has on plants and of the role plants can play in reducing it.		
Teaching & Learning Methods:	The principal methods of delivery will be: 1. The series of 20 lectures, two weekly. 2. Three practicals, two of them taking place over two sessions (for methodological reasons). 3. A visit to the Royal Botanic Gardens Kew, to examine evidence for the evolution of land plants, and the adaptation of plants to diverse environments.		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Details of teaching resources on Moodle	At least one video lecture from a world-class scientist (available from Gatsby-Plants and UCSD TV) provided per lecture module
Key Bibliography:	Basic text: Smith A.M. et al. Plant Biology. Garland Science 2009. 580 PLA. Additional text: Taiz L. and Zeiger E. Plant Physiology. Sinauer 2010 or 2006. 581.1 TAI (recommended for lectures 11-13)
Formative Assessment & Feedback:	Feedback will be provided (1) during discussion in the course of the practical sessions and (2) automatically by course-topic quizzes available through Moodle. The lecturer will be further available during predetermined hours. The laboratory report for practical 1 will be handed in first and returned marked with comments of use for the write-up of other practical reports.
Summative Assessment:	**Exam** 70% (hours) The exam paper will contain one compulsory question requiring several short answers, and two further essay questions to choose from five. **Coursework** 30% From the report on the labs described above. **Deadlines:** Laboratory report for practical 1 (Flower evolution and development) to be handed in on Thursday 30th January 2014. Rest of laboratory reports to be handed in on Thursday 20th March 2014. Essay on Kew visit to be handed in on Monday 24th March 2014 by 4.45pm in the appropriate locked box.

BS2040 COURSE SPECIFICATION

Department/School:	**School of Biological Sciences**	**Academic Session:**	**2013/14**
Course Title:	Cell Biology	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	0.5
Course Code:	BS2040	**Course JACS Code:** (Please contact Data Management for advice)	C130
Availability: (Please state which teaching terms)	2nd term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Core: Mol.Biol, optional, Medical Science, Medical Biochemistry, biology/biochem. degrees
Pre-requisites:	BS1060	**Co-requisites:**	None
Attendance & Assessment requirements:	Lectures and practical classes are essential elements of this course and **full attendance is required to maximize academic achievement**. To complete the course and therefore qualify for overall assessment a minimum 80% of lectures and of practical classes must be attended. In addition, at least 2 of the 3 coursework assignments must be submitted to qualify for assessment of the course as a whole. Please note however that these minimum requirements may be insufficient to reach your full potential and therefore **full attendance and participation in all learning activities is strongly recommended.**		
Co-ordinator:	Prof Laszlo Bogre (LB)		
Course Staff:	Prof Laszlo Bogre (LB), Dr Christopher Wilkinson (CJW), Dr Enrique Lopez-Juez (EL-J)		
Aims:	a. To introduce key concepts in modern cell biology, and some of the historical milestones in this field of research. b. To give solid background on key methodologies used in cell biology research, including light, fluorescence and confocal microscopy. Use of fluorescent proteins in live cell imaging, FRET, FLIM, FRAP, FLIP. c. To explain the mechanisms responsible for key areas of cell function, including cell division, differentiation, organelle biogenesis, regulation of cell shape and motility. d. Highlight how cell biology is interlinked with biochemistry, molecular, developmental and evolutionary biology.		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Learning Outcomes:	By the end of the course students should: 1. have gained a sound knowledge of several key areas of modern cell biology; 2. have gained an overview of key methodologies used in cell biology; 3. have become familiar with modern microscopy techniques; 4. understand the basic methodologies in live cell imaging studies; 5. understand the basic mechanisms that regulate the cell cycle and the regulatory mechanisms for DNA synthesis and mitosis; 6. understand how meiosis differ from mitotic cell cycle; 7. understand mitochondria and chloroplast organelle functions, evolutionary origin. 8. understand the principles of how cells become polar, the mechanisms of asymmetric cell division; 9. understand the basic mechanisms underlying cell shape and motility; 10. understand the evolutionary constrains of cellular functions; 11. have acquired practical skills relevant to studies of the topics listed above; 12. have extended their ability to analyse, interpret and report experimental data; 13. be able to read, understand and explain original scientific research papers on the topics covered.
Course Content:	The course will focus on the following key areas of modern cell biology: cell cycle, cell growth and differentiation, apoptosis, cell senescence, cell polarity, cell shape and cell motility, organelle origin and functions. Will give theoretical knowledge in modern cell biology methods, including microscopy and live cell imaging. Will introduce basic concepts on evolutionary constrains in cellular functions and links between cellular functions and development.
Teaching & Learning Methods:	The principle methods of delivery will be; 1), by a series of 20 lectures 2) 1 study session.) 3) by two lab-based experiments of 3 h durations covering cell cycle measurements and flow cytometry techniques, and organelle biology. 4) write up explaining the methods used in a chosen scientific paper.
Details of teaching resources on course website	Lecture notes, reading materials, online learning resources, online lectures will be provided through moodle
Key Bibliography:	Lodish *et al* (2007) *Molecular Cell Biology*, 6th edn. **Classification: 9781429203142** Morgan, O.D. The Cell Cycle 1st edn Online lectures, learning resources on moodle. This will be supplemented by short reviews from journals such as Current Biology, Current Opinion in Cell Biology, Nature Reviews and Trends in Cell Biology and some original research papers.
Formative Assessment & Feedback:	Reports from the 2 laboratory assignments and the write up of methods from a selective research paper will be marked and returned with detailed comments and the mark awarded.
Summative Assessment:	**Exam** (70%) (2 hours) **Coursework** (30%) (2x lab report) (max 1500 words each) and a write up on methods used in a chosen scientific paper. Each 3 elements (2 lab reports plus write up on methods) will count equally (3x10%) **Hand in Dates** **All work to be put in the locked box by 4.45pm on the dates shown**: Practical 1 (LB) 13th February, Thursday, 2014 Practical 2 (LB) 6th March, Thursday, 2014 Practical 2 Student group A (ELJ) 13th March, Thursday, 2014 Practical 2 Student group B (ELJ) 20th March 2013, Thursday, 2014

BS2090 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013/14**

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Course Title:	**INSECTS, PLANTS AND FUNGI: ECOLOGY AND APPLICATIONS**	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	**0.5 Unit**
Course Code:	**BS2090**	**Course JACS Code:** (Please contact Data Management for advice)	
Availability: (Please state which teaching terms)	**2nd Term**	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	**Option**
Pre-requisites:	**None**	**Co-requisites:**	
Co-ordinator:	**Prof. A C GANGE**		
Course Staff:	**Prof. A C Gange (ACG); Prof J. Koricheva (JK)**		
Aims:	The main aim of this course is to demonstrate the beneficial and detrimental effects of insects and fungi on their plant hosts. A second aim is to demonstrate that plants are not discrete entities, but instead are dynamic ecosystems in which fungi and insects interact with each other to influence plant performance. A particular aspect will be the illustration of how these interactions are important in applied situations, such as biological pest and weed control, agronomy and crop science. Emphasis will be placed on practical work that will teach a range of transferable skills.		
Learning Outcomes:	By the end of the course, students should: 1. have acquired knowledge of how insects and fungi can be beneficial and detrimental to plants; 2. have experience of handling a range of plant and insect material; 3. understand the importance of using ecological principles in applied situations; 4. know how to investigate an ecological problem with an experiment of their own design; 5. have personal experience of teamwork, within-group communication and the problems involved in field sampling; 6. know how to apply appropriate statistical analysis to data and use a statistics package; 7. be fully conversant with word processing and graphics software and be able to integrate the two.		
Course Content:	The course will cover the effects of herbivorous insects on plants and the ways in which plants defend themselves against attack. Beneficial effects such as pollination will also be addressed. The ecology of fungi pathogenic on insects and plants will be covered as well as fungi that are beneficial to plants (endophytes and mycorrhizas).		
Teaching & Learning Methods:	20 lectures and 4 practicals. Parts of some practicals will be field based, using campus facilities.		
Details of teaching resources on Moodle:	Weekly handouts and coursework details, links to web sites and journal reference resources (PDFs) are in Moodle.		
Key Bibliography:	Insect-Plant Biology by L.M. Schoonhoven, T. Jermy & J.J.A. van Loon. Chapman & Hall. **Classification: 595.70524 SCH** During the course, students will be introduced to a range of current references from the literature and will be encouraged to use the Web of Knowledge to locate information on particular topics.		
Formative Assessment & Feedback:	Practicals will be marked and handed back within one week of hand in. There is also a series of post-lecture feedback quizzes for students to measure the extent of their learning in Moodle.		
Summative Assessment:	**Exam** 70% (one two hour examination) **Coursework** 30%, of which practicals 1, 2 and 4 constitute 6% each and practical 3, 12% **Deadlines:** Hand-ins to be put in the appropriate locked box **by 4.45 pm** on the following dates: Practical 1: 30th January 2014 (Week 3) Practical 2: 13th February 2014 (Week 5) Practical 3: 13th March 2014 (Week 9) Practical 4: 20th March 2014 (Week 10)		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

BS2140 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013/14**
Course Title:	ANIMAL BEHAVIOUR	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	0.5
Course Code:	BS2140	**Course JACS Code:** (Please contact Data Management for advice)	
Availability: (Please state which teaching terms)	2nd term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Core/ Optional
Pre-requisites:	None	**Co-requisites:**	
Co-ordinator:	Dr N E Raine (NER).		
Course Staff:	Dr N E Raine (NER)		
Aims:	The aim of this course is to introduce students to animal behaviour and the variety of different methods used to study it**.**		
Learning Outcomes:	By the end of the course each student should: 1. have gained an understanding of the causation, development, function and evolution of animal behaviour; 2. be familiar with the different methods of study used, including observation, experiment and the comparative approach.		
Course Content:	The course demonstrates the great variety of behaviour occurring across the range of animal taxa and in different ecological situations. The course outlines the major theories that seek to explain animal behaviour, such as kin selection, optimal foraging and game theory. In depth case studies will be used to illustrate the advantages of the main methods used to study behaviour, and how they can be applied to studying different types of behavioural questions.		
Teaching & Learning Methods:	Lectures (20), laboratory practical (1), and behaviour videos (3)		
Details of teaching resources on Moodle:	Selected powerpoint slides (from lectures), relevant video clips and supplementary reading will be available on Moodle.		
Key Bibliography:	Alcock, J. (2013) *Animal Behaviour: an Evolutionary Approach*. 10th Edition. **Classification: 591.5 ALC** Dugatkin, L. A. (2009) *Principles of Animal Behavior.* 2nd Edition. **Classification: 591.5 DUG**		
Formative Assessment & Feedback:	Students have opportunities to ask questions during all teaching sessions. MCQ answer sheets and lab practical reports will be marked as soon as possible after hand in to provide in course feedback on progress.		
Summative Assessment:	**Exam** 75% (2 hours): includes a compulsory, negatively marked multiple choice question (MCQ) section and essay questions (2 answers out of 5). **Coursework** 25% (lab practical report 15%, 2 x MCQ sessions – each 5%). **Deadlines:** lab practical report to be put in the appropriate locked box by 4.45 pm on the following date: 14/3/14 (Week 9)		

BS2530 COURSE SPECIFICATION

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Department/School	Biological Sciences	Academic Session:	2013/14
Course Title:	**MOLECULAR BIOLOGY**	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	0.5 Units
Course Code:	BS2530	**Course JACS Code:** (Please contact Data Management for advice)	C700; C741(C721); C701; B790; C7P4
Availability: (Please state which teaching terms)	2nd Term only	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Compulsory
Pre-requisites:	**BS1070 or BS1090**	**Co-requisites:**	None
Co-ordinator:	**Dr Christopher Wilkinson**		
Course Staff:	**Prof L Bogre (LB), Dr C J Wilkinson (CJW), Dr A Devoto (AD), Dr S Khan (SK)**		
Aims:	To provide a sequential treatment of aspects of molecular biology leading from the structure and manipulation of DNA and gene expression, to RNA and protein synthesis.		
Learning Outcomes:	This course will enable the student to appreciate: 1. the structural complexity of DNA and genome organisation; 2. the basis of gene characterisation using recombinant DNA technology; 3. the process of DNA replication; 4. DNA as a template for RNA synthesis; 5. Some models of regulated gene expression. 6. Practical techniques that form the basis of molecular cloning, involving the preparation and handling of purified DNA, restriction enzyme digestions and polymerase chain reaction.		
Course Content:	The physical and chemical structure of DNA. Recombinant DNA technology. DNA replication. Gene organisation and structure. RNA and protein synthesis. Regulation of gene expression in prokaryotes; operon model. The laboratory experiments cover a range of molecular biology techniques based on the theme of gene characterisation.		
Teaching & Learning Methods:	This is mainly a lecture-based course. However, the practical work is meant to give hands-on experience of methods discussed theoretically in the lectures. Revision sessions are organised to integrate knowledge gained from both teaching modes.		
Details of teaching resources on Moodle:	As directed by individual staff		
Key Bibliography:	Compulsory: 1. *Molecular Biology of the Gene* (2008)- 6th edition. Watson et al. Pearson. **Classmark:** 575.122 WAT Suggested: *Recombinant DNA: A Short Course (2007)* -3rd edition. Watson et al. Palgrave Macmillan		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Formative Assessment & Feedback:	Lectures, practical classes and revision session with opportunity for interaction with teaching staff
Summative Assessment:	**Theory Exam:** **75%** (two hour examination) **Practical Work:** **25%** **Deadlines:** A laboratory report covering the three-day practical is written during the class and is handed in at the end of the last practical session directly to the academic taking the class.

BS2560 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013/14**
Course Title:	**Pharmacology and Toxicology**	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	**0.5 Units**
Course Code:	**BS2560**	**Course JACS Code:** (Please contact Data Management for advice)	B200
Availability: (Please state which teaching terms)	**2nd Term**	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	
Pre-requisites:	**BS1060 and BS1030**	**Co-requisites:**	
Co-ordinator:	**Dr P E CHEN**		
Course Staff:	**Dr P E Chen**		
Aims:	To explain the chemical, physiological and biochemical factors which influence the efficacy of drugs. To consider the mechanism of action of selected major classes of drug and the toxicity of selected groups of chemicals		
Learning Outcomes:	On completion of the course students should: 1. have a sound knowledge of the interactions of drugs with receptors and of methods for analysing drug-receptor interactions; 2. understand the concepts of drug absorption, distribution, metabolism and excretion; 3. have a sound knowledge of the principles of pharmacokinetics and its relationship with the physico-chemical nature of the drug, and drug action; 4. understand the mechanism of actions of major groups of drugs that influence the activity of the central and peripheral nervous systems, including analgesics and anti-depressants 5. understand the mechanisms of drug toxicity and chemical carcinogenesis 6. have a sound knowledge of the process of drug discovery and commercial development 7. have experience of a range of practical techniques relevant to the lecture material and of analysing, interpreting and reporting experimental data.		
Course Content:	Drug-receptor interactions and the principal methods for receptor identification, and characterisation. Routes of administration of drugs. Physico-chemical and physiological aspects of drug absorption and distribution. Pathways of drug metabolism and excretion. Renal clearance and ultra-filtration. Mechanism of action of the major classes of analgesic and anti-depressant drugs. Principles of toxicology and major mechanisms of free radical induced tissue damage. Pharmacology of the automonic nervous system and the neuromuscular junction. General and local anaesthetic agents.		
Teaching & Learning Methods:	Lectures; laboratory classes; revision session (optional).		
Details of teaching resources on Moodle:	http://moodle.rhul.ac.uk/course/view.php?id=10412		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Key Bibliography:	*Introduction to Drug Metabolism* by Gibson G G and Skett P, 3rd edition 2001 Nelson Thornes (ISBN 0748760113) **Classification: 615.7 GIB** *Pharmacology* by Rang H P, Dale, M M Ritter J M, Flower R J and Henderson G, 7th edition 2011 Churchill Livingstone (ISBN 9780702034718) **Classification:615. RAN**
Formative Assessment & Feedback:	Revision session (if requested). Feedback on laboratory reports. Formative multiple choice quiz with online feedback.
Summative Assessment:	**Theory Exam:** 75% (two hour examination) **Practical work/reports:** 25% **Form of examination paper:** One short answer compulsory question. Two further questions from a choice of five. All questions count equally. **Deadlines:** See Practical lab book

BS3060 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013/2014**
Course Title:	**Conservation Biology**	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	0.5 Units
Course Code:	**BS3060**	**Course JACS Code:** (Please contact Data Management for advice)	C100, C120, C150, C110
Availability: (Please state which teaching terms)	2nd Term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Optional
Pre-requisites:		**Co-requisites:**	BS3120
Co-ordinator:	**PROF M J F BROWN**		
Course Staff:	**Prof M J F Brown (MJFB); Dr D McGregor (DMcG)**		
Aims:	To build upon principles learnt in earlier ecological, behavioural, population and techniques courses and provide students with a current understanding of the *biology* of biodiversity conservation (including the very active research on conservation biology in the School).		
Learning Outcomes:	By the end of the course students should: 1. understand the biology of the great threats to biodiversity, including habitat loss, climate change, alien species, over harvesting; 2. be able to understand and be able to critically evaluate the population and ecological processes that lead to species and habitat decline; 3. understand in detail how conservation biology can be applied to reverse the decline of species and habitats; 4. appreciate some current areas of research in conservation biology, and their ethical implications; 5. be able to develop a Species Action Plan.		
Course Content:	The course covers the biological basis of the great threats to biodiversity – habitat loss and fragmentation, alien species, global climate change, intensive agriculture, pollution, over-harvesting – and the approaches developed by conservation biologists to overcome them. The emphasis is on the population biology, behaviour and ecology that leads to decline and holds the key to its redress. The crucial importance of science-based conservation is stressed. Practical work is part of the assessment and involves analysing population data to determine why a species has declined, identifying conservation policies that could reverse decline and writing a Species Action Plan.		
Teaching & Learning Methods:	Lectures, critical analysis of scientific literature, web		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Details of teaching resources on Moodle:	The Powerpoint presentations used in the lectures, links to primary literature, links to relevant conservation sites, updates recommending recent relevant studies.
Key Bibliography:	Key and current papers in the following journals: *Biological Conservation*, *Conservation Biology*, *Animal Conservation*, *Journal of Applied Ecology*, *Journal of Animal Ecology*. Background reference: 1. Pullin, A.S. (2002) *Conservation Biology*. Cambridge University Press, Cambridge. 2. Hambler, C. (2004) *Conservation*. Cambridge University Press. 3. Sutherland, W. J. (2000) *The Conservation Handbook: research, management and policy*. Blackwell Science, Oxford.
Formative Assessment & Feedback:	Group discussion of the requirements of a Species Action Plan and written feedback on the same.
Summative Assessment:	**Exam** **80%** (three hour examination) **Coursework** **20%** **Deadline:** The Species Action Plan to be submitted by *Turn It In* by 4.45pm on: Friday 28th February 2014 (Week 7)

BS3060 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013/2014**
Course Title:	**Conservation Biology**	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	0.5 Units
Course Code:	**BS3060**	**Course JACS Code:** (Please contact Data Management for advice)	C100, C120, C150, C110
Availability: (Please state which teaching terms)	2nd Term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Optional
Pre-requisites:		**Co-requisites:**	BS3120
Co-ordinator:	**PROF M J F BROWN**		
Course Staff:	**Prof M J F Brown (MJFB); Dr D McGregor (DMcG)**		
Aims:	To build upon principles learnt in earlier ecological, behavioural, population and techniques courses and provide students with a current understanding of the *biology* of biodiversity conservation (including the very active research on conservation biology in the School).		
Learning Outcomes:	By the end of the course students should: 6. understand the biology of the great threats to biodiversity, including habitat loss, climate change, alien species, over harvesting; 7. be able to understand and be able to critically evaluate the population and ecological processes that lead to species and habitat decline; 8. understand in detail how conservation biology can be applied to reverse the decline of species and habitats; 9. appreciate some current areas of research in conservation biology, and their ethical implications; 10. be able to develop a Species Action Plan.		
Course Content:	The course covers the biological basis of the great threats to biodiversity – habitat loss and fragmentation, alien species, global climate change, intensive agriculture, pollution, over-harvesting – and the approaches developed by conservation biologists to overcome them. The emphasis is on the population biology, behaviour and ecology that leads to decline and holds the key to its redress. The crucial importance of science-based conservation is stressed. Practical work is part of the assessment and involves analysing population data to determine why a species has declined, identifying conservation policies that could reverse decline and writing a Species Action Plan.		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Teaching & Learning Methods:	Lectures, critical analysis of scientific literature, web
Details of teaching resources on Moodle:	The Powerpoint presentations used in the lectures, links to primary literature, links to relevant conservation sites, updates recommending recent relevant studies.
Key Bibliography:	Key and current papers in the following journals: *Biological Conservation, Conservation Biology, Animal Conservation, Journal of Applied Ecology, Journal of Animal Ecology.* Background reference: 4. Pullin, A.S. (2002) *Conservation Biology*. Cambridge University Press, Cambridge. 5. Hambler, C. (2004) *Conservation*. Cambridge University Press. 6. Sutherland, W. J. (2000) *The Conservation Handbook: research, management and policy*. Blackwell Science, Oxford.
Formative Assessment & Feedback:	Group discussion of the requirements of a Species Action Plan and written feedback on the same.
Summative Assessment:	**Exam** **80%** (three hour examination) **Coursework** **20%** **Deadline:** The Species Action Plan to be submitted by *Turn It In* by 4.45pm on: Friday 28th February 2014 (Week 7)

BS3140 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013-2014**
Course Title:	**EVOLUTION**	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	0.5 Units
Course Code:	**BS3140**	**Course JACS Code:** (Please contact Data Management for advice)	C182
Availability: (Please state which teaching terms)	2nd Term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Core
Pre-requisites:		**Co-requisites:**	
Co-ordinator:	Dr F Ubeda		
Course Staff:	**Prof I Barnes (IB); Dr F Ubeda (FU); Dr Prof C Stringer (NHM).**		
Aims:	To understand the theory of biological evolution.		
Learning Outcomes:	By the conclusion of the course students should be able to: 1. understand what is meant by 'biological evolution'; 2. describe Darwin's contribution to the development of evolutionary theory and how perception of his ideas has changed; 3. explain what is meant by adaptation, natural selection and fitness; 4. understand what is meant by phylogenetics and how we use it to study evolution 5. understand the species concept and what is meant by speciation; 6. explain what the distribution of species and populations can tell us about their evolutionary history; 7. outline human evolution.		
Course Content:	Evolution is the study of how organisms have changed through time. This course covers the evidence for evolution and the processes that have shaped faunas and floras. Darwinism and its development, the origin and maintenance of variation, adaptation and selection are covered initially. These topics lead to a consideration of how we can study evolution using phylogenetic methods, the mechanisms of speciation and the special topic of human evolution.		
Teaching & Learning Methods:	Lectures and a guided reading programme.		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Details of teaching resources on Moodle:	
Key Bibliography:	Futuyma, D.J. (2009). Evolution. Second edition (ISBN**:** 978-0878932238), Sinauer. **Library classification: 575.FUT** ***OR*** Freeman, S., Herron, J.C. (2007). Evolutionary analysis. 4th Edition (ISBN: 0132397897), Pearson International Edn, Prentice Hall. **Library classification: 575.FRE**
Formative Assessment & Feedback:	If students would like feedback on essays, they are welcome to attempt answers to any question from Section B in previous examination papers. Up to two essays attempts will be marked and returned to each student.
Summative Assessment:	**Exam:** **100%** (three hour examination) Section A will include TWO questions of which you will receive prior notification and ONE of which must be attempted; note change from last year. Section B will include FOUR questions of which TWO must be attempted.

BS3160 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013/14**
Course Title:	BEHAVIOURAL ECOLOGY	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	0.5
Course Code:	BS3160	**Course JACS Code:** (Please contact Data Management for advice)	
Availability: (Please state which teaching terms)	2nd term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Optional
Pre-requisites:	BS2140 (Animal Behaviour)	**Co-requisites:**	
Co-ordinator:	Dr N E Raine (NER).		
Course Staff:	Dr N E Raine (NER), Dr F Ubeda de Torres (FUT), Dr D McGregor (DMcG)		
Aims:	Building upon material from BS2140 (Animal Behaviour), this course introduces a range of advanced topics in behaviour. Behavioural ecologists investigate the adaptive value (function) of behaviour because the way in which behaviour contributes to survival and reproduction depends on ecology.		
Learning Outcomes:	By the conclusion of the course students should: 1. understand theories concerning the causation and function of behaviour in an ecological and evolutionary framework; 2. be able to construct simple models to explain behaviour (e.g. game theory), test their predictions and relate their findings to existing knowledge of behavioural ecology; 3. have detailed knowledge of a range of recent advances in behavioural ecology research		
Course Content:	The course demonstrates how the behaviour of animals can be explained in an ecological and evolutionary framework. The emphasis is upon functional and evolutionary hypotheses and testing models that seek to explain how animals find and use key resources (such as food, breeding territories, mates etc).		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Teaching & Learning Methods:	Lectures (20) and MCQ sessions (3)
Details of teaching resources on Moodle:	Selected powerpoint slides (from lectures), relevant video clips and supplementary reading will be available on Moodle.
Key Bibliography:	Davies NB, Krebs JR, West SA (2012) *An Introduction to Behavioural Ecology*. 4th Edition, Wiley-Blackwell. **Classification: 591.51 DAV / ebook online** Alcock J (2013) *Animal Behaviour: an Evolutionary Approach*. 10th Edition, Sinauer Associates. **Classification: 591.5 ALC** Danchin E, Giraldeau L-A, Cezilly F (2008) *Behavioural Ecology*. Oxford University Press. **Classification: 591.5 BEH**
Formative Assessment & Feedback:	Students will have opportunities to ask questions during all teaching sessions. MCQ answer sheets will be marked as soon as possible after hand in to provide in course feedback on progress.
Summative Assessment:	**Exam**: 85% (3 hours) Exam includes a compulsory modelling question (section A) and essay questions (choice of one answer from 3 (section B) + one answer from 3 (section C)). **Coursework:** 15% Three multiple choice question sessions (each worth 5%) – during weeks 4, 8 and 11

BS3180 COURSE SPECIFICATION

Department/School:	**Biological Sciences**	**Academic Session:**	**2013-14**
Course Title:	MARINE ECOLOGY AND BIODIVERSITY	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	0.5
Course Code:	BS3180	**Course JACS Code:** (Please contact Data Management for advice)	C161; C181; C182
Availability: (Please state which teaching terms)	2nd term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Optional
Pre-requisites:	Recommended: BS2001X	**Co-requisites:**	None
Co-ordinator:	**Dr D Morritt (DM)**		
Course Staff:	**Dr D Morritt (DM)**		
Aims:	This course will provide a brief introduction to ecological processes in the marine environment, and will explain some recent advances in this rapidly changing and multidisciplinary field of science. The main aim is to identify and discuss topical areas and a series of "key concepts" in marine biological research within the framework of marine ecology and biodiversity. The course also aims to demonstrate similarities/differences of functionality within the marine environment, as compared with the terrestrial systems that most students are familiar with. The course will develop themes included in BS1040 Diversity of Life and BS1050 Ecology, BS2010 Invertebrate Zoology, BX2001 Marine Biology and BS2140 Animal Behaviour ensuring logical progression. The course will also include topics related to BS3140 Evolution, BS3120 Population and Community Ecology and BS3060 Conservation Biology thus providing horizontal linkage of concepts.		
Learning Outcomes:	By the end of the course students should: 1. be able to discuss the diversity of habitats in the marine environment and the range of responses seen in marine biota; 2. know, in outline, the diversity of organisms and some of the key processes operating in coral reefs, the deep ocean and hydrothermal vent systems; 3. have an understanding of some of the key technological advances in deep ocean biology and be able to discuss their application in a number of case studies; 4. be familiar with current issues affecting biodiversity in the marine environment, particularly pollution (eutrophication, ocean acidification and plastics pollution) and global climate change;		

Course Descriptions can also be found in the Undergraduate Handbook here:
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	5. be able to discuss the adaptations of mammals to marine life
Course Content:	The course will begin with a brief introduction to the marine environment and oceanography. Following on from this a number of topical subjects will be used to illustrate recent developments in the field of marine ecology. The biodiversity and biogeography in the marine environment will be illustrated with reference to selected habitats, namely coral reefs and the deep ocean. The biology of the deep ocean, in particular the biology of mid-water and hydrothermal vent communities, will include consideration of technological advances in deep ocean exploration. This theme will be developed further in lectures on tracking studies, behaviour and conservation of marine megafauna, e.g sharks, sea birds and marine mammals. The topical issues of marine pollution (including plastics pollution), ocean acidification and global climate change will be considered with respect to effects on marine biodiversity. Topicality is also maintained during coursework: pairs of students prepare a poster based on a recently published paper from a highly rated marine biological journal.
Teaching & Learning Methods:	Lectures (20); Small group project (each pair to do a poster presentation on a selected published paper); interactive poster session; video/discussion session.
Details of teaching resources on Moodle:	Selected supporting information will be placed on Moodle, e.g. Powerpoint slides, links to websites, reading lists.
Key Bibliography:	Main recommendation: Levington, J.S. (2013) Marine biology: function, biodiversity and ecology, 4th Edition, O.U.P., ISBN: 0780199857128 **Classification: 574.52636 LEV** Additional reading: Nybakken, J.W. & Bertness, M.D (2005) *Marine Biology: An ecological approach*, 6th Edition, Pearson / Benjamin Cummings, ISBN: 0-321-30669-4 (out of print but in the library) **Classification: 574.52636 NYB** Herring, P.J. (2002) *The Biology of the Deep Ocean*, O.U.P., ISBN 0-19-854955-5 **Classification: 574.52636 HER** Clark, R.B. (2001) *Marine Pollution*, 5th Edition, O.U.P., ISBN 0-19-850069-6 **Classification : 574.52636 CLA** Hoelzel, A.R. (Ed). (2002) *Marine mammal biology: an evolutionary approach*, Blackwell, ISBN: 0-632-05232-5. **Classification: 599.092 MAR** Sheppard, C.R.C., Day, S.K. & Pilling, G.M. (2009) *The biology of coral reefs*, O.U.P., ISBN: 978-0-19-856636-6 **Classification: 574.526367 COR**
Formative Assessment & Feedback:	Advice and feedback on poster design given during the first two weeks of the course. In course assessment marks and summary comments returned at the end of course. Revision session at the end of the course including discussion of selected questions from a previous exam paper and question and answer session.
Summative Assessment:	**Exam** (80%) (3 hours) students will be required to answer 3 questions from 6 **Coursework** (20%) Poster - assessed by course staff (15%) and peer group (5%) **Deadlines: 4.45 pm on Wednesday 5th March 2014 (Week 8) to the School Office 502.**

BS3190 COURSE SPECIFICATION

Department/School:	**School of Biological Sciences**	**Academic Session:**	**2013-14**
Course Title:	**Climate change: plants and the environment**	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	0.5
Course Code:	**BS3190**	**Course JACS Code:** (Please contact Data Management for advice)	C150, C181; C240;C460;D411 ;J710
Availability: (Please state which teaching terms)	**2nd term**	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Optional

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Pre-requisites:	BS 1060	**Co-requisites:**	None
Co-ordinator:	Dr A Devoto		
Course Staff	Dr A. Devoto (AD); Prof Alan C Gange (ACG); Prof Julia Koricheva (JK); Dr E Lopez Juez (ELJ)		
Aims:	1. Discuss ecological, physiological and molecular perspectives of adaptations of plants to different environments and to environmental change; 2. describe interactions of plants with humans and conservation; 3. illustrate current methodologies for crop improvements as well as conservation programmes.		
Learning Outcomes:	At the end of the course, the students will: 1. have gained in depth of understanding of the basis of plants' adaptation to the changing environment; 2. be able to discuss and critically evaluate the application of novel technologies to crop improvement; 3. have an understanding of the relationship, between growth and responses to the environment; 4. be able to discuss and critically evaluate issues about human uses of plants and conservation.		
Course Content:	The course will give an advanced treatment of the effect of global climate change on the interaction between plants and the environment and will provide new opportunities to consider at various levels (ecological, physiological and molecular) the reaction of plants to environmental changes. Topics include a historical perspective on plants and humanity, microbial science and crop improvement.		
Teaching & Learning Methods:	20 x 1hr lectures plus coursework which consists of an extended essay on the methodology for crop improvements or conservation programmes.		
Key Bibliography:	A selection of appropriate recent journal articles as advised by lecturers		
Formative Assessment & Feedback:	Two to three self-assessed exercise sheets (answers given in the subsequent week)		
Summative Assessment:	**Exam** (80 %) three hour examination; three questions out of six **Coursework** (20%) essay, 2000-2500 words **Deadlines:** 4.45pm on Thursday 27th March 2014		

BS3595 COURSE SPECIFICATION

Department/School:	Biological Sciences	**Academic Session:**	2013/14
Course Title:	Clinical Physiology and Medicine	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	0.5 units
Course Code:	BS3595	**Course JACS Code:** (Please contact Data Management for advice)	B100/B121

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Availability: (Please state which teaching terms)	2nd Term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Optional
Pre-requisites:	BS2050	**Co-requisites:**	BS3600
Co-ordinator:	Dr Jenny Murdoch		
Course Staff:	Dr Jenny Murdoch; Dr Phil Bearn, Dr Mike Irani, Dr Arshad Khaleel, Dr Shazeen Khazali		
Aims:	To gain an understanding of the normal physiology of smooth muscle, connective tissue and bone, along with knowledge of the common disorders in these tissues and clinical approaches for treatment. To understand the physiological effects of shock. To appreciate the processes involved in testing sports people for banned substances. To gain an appreciation of the evaluation of medical treatments with rigorous scientific assessment.		
Learning Outcomes:	1. Understand the physiology of smooth muscle and the function of the intestine; appreciate anorectal physiology, disorders of the pelvic floor and complications of childbirth; appreciate some of the causes and treatment of colon cancer. 2. Be able to describe the normal physiology of bone including its formation and function, and appreciate bone disorders in terms of calcium homeostasis, metabolic defects, fractures and healing. 3. Understand the normal structure and function of soft tissues, including muscles, tendons, ligaments and cartilage, and appreciate the effects of injury, repair, ageing, training and exercise. 4. Understand the physiological effects of shock. 5. Appreciate the area of sports medicine, including the physiology of exercise and the processes involved in testing athletes for drug use. 6. Appreciate the processes needed for rigorous evaluation of new medical treatments, including alternative medicines, and understand the significance of the placebo effect. 7. Be able to critically evaluate whether medical and pharmaceutical “facts” are supported with scientific evidence, and to present this to an audience.		
Course Content:	This course will be taught by clinicians from Ashford and St Peter’s Hospital, who are experts in their field and working at the patient interface. Lectures will therefore be given from the clinical perspective, providing both background information on a topic but taking it through to consider common disorders, their causes and the medical treatments. The course will consider the clinical physiology of selected systems, including smooth muscle, bone and soft tissues, and will set these tissues into context in terms of intestinal function, anorectal physiology, and the formation and function of bone and soft tissues. The lectures will consider common diseases and disorders, including pelvic floor defects, complications of child birth and colon cancer. Clinical problems with bone and soft tissue will be discussed, including disorders of calcium homeostasis, metabolic defects, and the effects of exercise, ageing and injury. The course will address the physiological effects of shock, and also how to test sports people for illicit drug taking. This course will discuss how to rigorously scientifically evaluate new interventions and new drug treatments, and students will learn how to critically appraise treatment evaluation data. **Please note varied lecture times**, which are necessary to fit into the clinicians’ schedules.		
Teaching & Learning Methods:	Lectures and group discussions.		
Details of teaching resources on Moodle:	Lecture slides will be uploaded to Moodle as soon as provided by external lecturers, and additional material may include relevant review articles, quizzes for self-assessment, and links to external websites and videos.		

Course Descriptions can also be found in the Undergraduate Handbook here:
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Key Bibliography:	Primarily published articles.
Formative Assessment & Feedback:	Discussion with clinicians can take place after lectures. Moodle quizzes on different parts of the course may be used to help promote learning and to provide formative assessment and feedback.
Summative Assessment:	**Exam:** 80% (3 hours) **Coursework:** 20% - attend discussion sessions on evidence-based medicine, then give a presentation with an example of "bad science" in the evalution of a medical treatment.
	Deadline: **Assessed presentations will take place on 11th March, Week 9.** .

BS3600 COURSE SPECIFICATION

Department/School:	Biological Sciences	**Academic Session:**	2013/14
Course Title:	CLINICAL DIAGNOSIS OF DISEASE	**Course Value:** (UG courses = unit value, PG courses = notional learning hours)	0.5 units
Course Code:	BS3600	**Course JACS Code:** (Please contact Data Management for advice)	C740/B130
Availability: (Please state which teaching terms)	2nd Term	**Status:** (i.e.: Core, Core PR, Compulsory, Optional)	Core
Pre-requisites:	1st + 2nd year Medical Biochemistry or Biomedical Sciences Programmes only	**Co-requisites:**	
Co-ordinator:	Prof George Dickson		
Course Staff:	Prof George Dickson (GD); Dr D Cartwright (DC); Dr Katy Heaney (KH); Dr Riyaz Kaba (RK), Dr G Wark (GW); Prof Matthew Walker (MW)		
Aims:	The main aim of this course is to provide an understanding of the ways in which biochemistry can be applied to both the diagnosis of disease and the monitoring of treatment.		
Learning Outcomes:	This course will enable students to: 8. understand how physiology, biochemistry and biochemical methodologies can be applied to the investigation of disease and monitoring of treatment; 9. understand the process of investigation of disease and the importance of clinical biochemistry and other pathology tests within the overall investigative process; 10. present clinical and biochemical information in a clear, methodical manner; 11. interpret and evaluate critically clinical and biochemical information and draw relevant conclusions from that information; 12. further develop their scientific essay writing (exams).		
Course Content:	The course will cover the clinical application of biochemistry and physiology. The chemical pathology of a range of physiological systems will be studied, including kidney, liver, heart, thyroid and bone. In addition clinical biochemical aspects of cancer diagnosis and infertility and epilepsy investigation will be covered. Lectures will concern the rationale behind the analyses used in the biochemical investigation of disease, and the clinical aspects of disorders affecting the various organs/systems. The lectures will be followed by tutorials based on individual clinical cases and their investigation. Students will be required to produce clinical case reports with relevant investigations, findings, recommended treatments, prognoses and conclusions.		

Course Descriptions can also be found in the Undergraduate Handbook here:
http://www.rhul.ac.uk/earthsciences/informationforcurrentstudents/home.aspx

Teaching & Learning Methods:	Lectures Tutorials Case Study presentations
Details of teaching resources on Moodle:	Moodle lectures will be uploaded when provided by external lecturers
Key Bibliography:	*Marshall et al.2012, Clinical Chemistry, 7th Edition published by Mosby Elsevier, ISBN 9780723437031* *Tietz 2012, Clinical Chemistry and Molecular Diagnostics, 5th Edition published by Saunders Elsevier, ISBN 9781416061649*
Formative Assessment & Feedback:	Feedback to course work to be provided during assessment. Marks to be returned to students within one month of the hand-in date.
Summative Assessment:	**Exam:** 80% (3 hours) **Written case study presentations:** 20%
	Deadline: Coursework hand-in to be put into the appropriate locked box by 4.45 pm on Friday 28th March 2014, Term 2. Please note that standard penalties for late hand-in will be applied.