

# School of Biological Sciences Degrees

## Undergraduate Student Handbook

### 2019/20

**This Handbook is for the use of full-time and part-time undergraduates enrolled on the following programmes:**

- BSc Biology
- BSc Ecology & Conservation
- BSc Zoology
- BSc Biochemistry
- BSc Biomedical Sciences
- BSc Pharmacology
- BSc Biology, Ecology & Conservation or Zoology with Foundation Year
- BSc Biochemistry, Biomedical Sciences, or Pharmacology with Foundation Year
- Integrated Master of Biomedical Sciences (MBiomed Sci)
- Integrated Master of Biochemistry (MBiochem)
- Integrated Master of Neuroscience (MNeurosci)
- Integrated Master of Biology (MSci Biology)
- Integrated Master of Ecology & Conservation (MSci Ecology & Conservation)
- Integrated Master of Zoology (MSci Zoology)

**Disclaimer**

This information is issued on the condition that it does not form part of any contract between the University of Southampton and any student. The information given has been made as accurate as possible at the time of publication, but the University reserves the right to modify or alter, without any prior notice, any of the contents advertised. It should therefore be noted that it may not be possible to offer all modules or components of a programme in each academic session. This handbook is available in alternative formats on request.

## WELCOME FROM THE ASSOCIATE DEAN – FACULTY OF ENVIRONMENTAL AND LIFE SCIENCES

Dear Students,

Congratulations on what must have been a great last year for all of you. For our Freshers, we want you to know that we already think you are brilliant – you have beaten off perhaps 10 to 12 people for your place to study at Southampton and that, in our eyes, means that you are a star. For our Continuing Students, you have not only won your place here, but you have progressed through your initial studies and are well on the way to achieving your degree now. For all of you, welcome (back) to Southampton.

Whilst many of you will be focussed on your own discipline, seeing this as your ‘academic home’, each of your disciplines sits within the Faculty of Environmental and Life Sciences. We are one of the largest and the most diverse of the Faculties, and this brings you great opportunity. You can choose from a broad set of ‘minor’ subjects, many of which sit within our own Faculty. Alternatively, you can choose from a long list of broadening modules and option modules to complement your own discipline, many of which also sit within our Faculty. This means that we actively support you in gaining a broad education to suit your interests, and we are sure that there is something for everyone.

Within the Faculty, you may also like to know that there are numerous staff who have chosen the role of ensuring the quality and vision behind your experience at Southampton. My role, as Associate Dean, is to provide leadership to this group of staff, developing educational strategy and a forum for energetic and imaginative discussions about the education we deliver. I have a commitment to ensuring the best possible student experience and, if it is working well, I will be like the duck on the pond – calm on the surface but paddling hard underwater.

In all of our endeavours, we aim to provide a distinctive flavour to our education, both when bringing students from all over the world to Southampton, and when taking Southampton to the world. It is our hope and intention that you too will experience our innovative way of doing things, and that you will thrive and succeed in your studies and in all that University can offer you. Most of all, we hope that you will be happy during your time with us. Our staff are ready and willing to help you on your journey and we will be delighted to hear from you.

For now though, welcome (back) to what we hope will be a ‘home from home’, and good luck for your year to come.

With best wishes,



Sarah Stevenage  
Associate Dean (Education)  
Professor of Cognitive Psychology  
[S.V.Stevenage@soton.ac.uk](mailto:S.V.Stevenage@soton.ac.uk)

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## IMPORTANT DATES

### *Standard Dates for teaching Academic Year 2019/20*

Future Term Dates can be found in the [University of Southampton Term Dates pdf](#)

#### **Semester and term dates**

- **Semester 1:** Monday 30 September 2019 to Saturday 25 January 2020
- **Semester 2:** Monday 27 January 2020 to Saturday 13 June 2020
- **Autumn Term :** Monday 30 September 2019 to Saturday 14 December 2020
- **Spring Term:** Monday 6 January 2020 to Saturday 21 March 2020
- **Summer Term:** Monday 20 April 2020 to Saturday 13 June 2020

#### **Vacation dates**

- **Christmas vacation:** Saturday 14 December 2019 - Sunday 5 January 2020
- **Easter vacation:** Saturday 21 March 2020 - Sunday 19 April 2020

In addition to the regular public holidays, the University will also be closed on the following days:

Monday 26 August 2019 (PH)

Wednesday 25 December 2019 (PH)

Thursday 26 December 2019 (PH)

Wednesday 1 January 2020 (PH)

Thursday 9 April 2020 (CD)

Friday 10 April 2020 (PH)

Monday 13 April 2020 (PH)

Tuesday 14 April 2020 (CD)

Friday 8 May 2020 (PH)

Monday 25 May 2020 (PH)

Monday 31 August 2020 (PH)

Friday 25 December 2020 (PH)

Saturday 26 December 2020 (PH)

Monday 28 December 2020 (PH)

Friday 1 January 2021 (PH)

Friday 2 April 2021 (PH)

Monday 5 April 2021 (PH)

Monday 3 May 2021 (PH)

Monday 31 May 2021 (PH)

Monday 30 August 2021 (PH)

*CD = University closure day; PH = Bank/public holiday.*

### **Graduation 2019**

Winter graduation: Tuesday 10 - Thursday 12 December 2019

### **Graduation 2020**

Summer graduation 2020: Thursday 16 July - Thursday 23 July



## ACADEMIC STAFF

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# LSB: Life Sciences Building 85, SGH: Southampton General Hospital,

### ***Contacting Academic Staff***

Staff are expected to respond to emails from you between 9 am - 6 pm weekdays, and within **3 working days** (i.e. not including a weekend, University closure bank holiday) during term time. This also applies to responses on Piazza, posting Panopto recordings, and so forth. Of course, many staff will respond to you sooner, often the same day, and it may be outside of these work hours that you receive a response. There will be exceptions to this rule, as staff may be away from the University with limited access to their email. On such occasions staff will post an out-of-office reply in their email system so that you are aware of the likely delay. You should only use your **University of Southampton** email account to avoid problems associated with spam filters.

In a crisis situation the First Support team are available during office hours and provide support for students who may be facing difficulties in their life or dealing with a crisis; to contact the team call 023 8059 7488 or email [firstsup@soton.ac.uk](mailto:firstsup@soton.ac.uk) If you need urgent support between 6 pm and 8 am, Student Services, in conjunction with University Security, provide an Out of Hours service. Please contact 023 8059 2811.

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**Curriculum & Quality Assurance Team Leader**

Tracy Barnes Phone 023 8025261, email [tb6@soton.ac.uk](mailto:tb6@soton.ac.uk)

**Student Office Team (Administration and Assessment)**

For general enquiries and notification of absence

Phone 023 8059 4206

Email: [sobs-studentoffice@soton.ac.uk](mailto:sobs-studentoffice@soton.ac.uk)

## IMPORTANT INFORMATION

### ***Feedback, From you to us:***

**We value your feedback.** It is our way of improving what we do. Please provide us with feedback by:

- (1) Completing Module Evaluation Questionnaires. These are questionnaires that ask you how you have enjoyed the module. Emails will be sent to you at the end of the module to remind you to do this.
- (2) Giving feedback to your student representatives. These are voted in by you for all our degree programmes. If you do not know who they are, ask!
- (3) Using [biofeedback@soton.ac.uk](mailto:biofeedback@soton.ac.uk) for any issues you want to make us aware of.

### ***Feedback, From us to you:***

You will receive feedback on your academic performance in a range of different ways. Details on how and when will be provided at a module level. General feedback on exam results and how to improve your exam technique can be obtained from your personal academic tutor. If you are not satisfied with the feedback you receive during a module, you should contact the module coordinator and/or specific lecturer(s) in the first instance. For more specific feedback on individual module marks you should make an appointment with the appropriate module co-ordinator who may disclose the marks for individual questions on a paper and also pass on any relevant comments made on a script by the marker. After the semester one exams second and third year students are allowed to view their exam scripts and third year students may see the comments made about their work by the supervisor of their first semester project (where relevant), or comments about intermediate pieces of work such as progress reports or presentations.

**For any unresolved issues please email [biofeedback@soton.ac.uk](mailto:biofeedback@soton.ac.uk)**

### ***Additional Costs***

Information on generic additional costs associated with your programme e.g. calculators can be found via [SUSSED](#) 'Programme Specific Information', these cover all modules. Any other additional costs associated with a particular module will be clearly identified via the [Module Descriptions](#) within the Biological Sciences web pages. The modules identified as having other additional costs are:

BIOL1001 Experimental and Field Biology  
BIOL2041 New Forest Field Course  
BIOL3061 Field Research Project  
BIOL3062 Short Field Research Project  
BIOL3070 Tropical Ecology Field Course  
BIOL6069 Advanced Field Research Project

Please read this section carefully. If you have any uncertainties, please contact the Student Office for advice.

### ***International Students***

If English is a foreign language for you and you are experiencing difficulty with comprehension or communication then you should contact the Centre for Language Study, If you need it, you can get help with English language and how to prepare for written assessments from sessions run for students by the Centre for Language Study [www.soton.ac.uk/cls/](http://www.soton.ac.uk/cls/). Other advice can be obtained from The Advice Centre within the Students Union [SUSU Support](#).

### ***Lost Property***

If you have lost property in Building 85, make enquiries at Reception; if you have lost property elsewhere in the University you can enquire at the reception desk in the Student Services Centre.

If you lose your ID card you must report this to the Student Office. You will only be eligible for a free replacement card if you have a police crime reference number; otherwise you have to pay £10.

### ***Biological Sciences Careers site***

You can access information about the careers service for Biological Sciences by going to the [Faculty of Environmental and Life Sciences Student HUB](#)

Also see the [Careers and Employability Services](#) website.

## **GET INVOLVED!**

### ***Module Survey***

The Faculty/School aims to consult with and to provide opportunities for all students and staff to make their views known. You are encouraged to offer your comments/suggestions to members of staff and feedback is requested for each module undertaken.

### ***Module Reports***

Your feedback to module surveys will be reflected upon by the module leader and will be included in the Module Report. Modules reports are available via SUSSED under the “programme specific information’ tab.

### ***Staff Student Liaison Committees***

Staff-Student Liaison Committees (SSLC) have representatives from across each programme. These committees have the role of monitoring the organisation and management of the student programmes, to note any difficulties that students may be encountering, and to take advice about ways of improving the programmes.

See the [Faculty of Environmental and Life Sciences Student HUB](#) site for your student reps and further information.

### ***Student Representation***

Through the [Students’ Union](#) you will be invited to elect your Faculty/School representatives who co-ordinate the student voice on Faculty/School committees to enable your voice to be heard.

More information on the Students’ Union officers and their roles is available on the [Students’ Union Representation webpages](#)

### ***BioSoc***

BioSoc is run by students primarily, but not exclusively, for Biological Sciences students and arranges educational, social and sporting events. [BioSoc](#) information is found via the [SUSU](#) (Southampton University Students Union) also on Blackboard; email [biosoc@soton.ac.uk](mailto:biosoc@soton.ac.uk)

## HEALTH AND SAFETY

Internal Emergency number      999 or 3311  
Public Emergency Services      91-999 or 91-112

### Fire Safety

- Weekly fire bell test every Monday in B85 between 11.15-11.45
- Building 85 fire alarm is a continuous sounder
- At all other times, evacuate immediately if fire alarm sounds via the nearest fire escape
- Walk, do not run, do not use lifts
- B85 assembly point- location Library Square
- Await further instruction – do not re-enter the building or leave assembly point until told to do so by either the senior fire wardens or Hampshire Fire and Rescue

### *Safety in the Laboratory*

Special personal consideration: If you suffer any medical condition that may affect your own safety or that of others in the laboratory then it is your duty to inform the Student Office. This information will be treated in the strictest confidence and will only be divulged to others with your agreement.

Talks on H&S: New students will be given an introductory talk on Health and Safety. Other Safety talks for undergraduates include Safety in Field Work and Lone Working, and will be given in the Spring to all second year undergraduates who wish to carry out field work over the summer for their third year projects. Third year lab project students will receive one before beginning their lab work (so will depend on the timing of the project). Fourth year students who carry out laboratory work as part of their practical project will undergo a further briefing on health and safety in research labs in October, prior to beginning the laboratory project.

H&S in Practicals: All Biological Sciences (BIOL) modules are risk-assessed and every module booklet has general safety advice. The person taking a particular class is responsible for the safety of the class content and emergency actions. You will be given advice about any precautions which have to be taken for any particular procedure at the beginning of the practical class.

Please note during practical classes:

- DO wear a laboratory coat for all practical work.
- DO report all injuries suffered in the lab.
- DO report any hazards that you see.

- DO NOT EAT OR DRINK in the lab.
- DO NOT wear open-toed sandals or flip flops to lab classes.
- DO NOT use personal music players while in the lab.

### **Mobile Phone use policy.**

The use of mobile devices in laboratories is not permitted apart from specific instances as detailed below. The following rules will be applied and you should familiarise yourself with these regulations and adhere to them throughout your degree.

1. Students are not allowed to take mobile phones or similar devices capable of taking a photograph into the undergraduate laboratories. You must place any such devices in the secure lockers outside the teaching laboratories prior to entering the laboratory. The only exception to this rule is for practicals where a risk assessment has been written and approved that specifies the use of mobile phones or similar devices. You

- will be told if you are allowed to bring a mobile device into a laboratory by the academic running the practical.
2. In exceptional cases a student may be allowed to have a phone in their possession in the laboratory but it may not be used. If an urgent call needs to be taken, the student must leave the laboratory before answering. Permission must be sought from the academic in charge prior to the start of the practical with a valid reason being provided. Valid reasons may include expecting an important call from a hospital or ill relative for example.
  3. If you are found to have taken a mobile phone or similar device into the laboratory, then you will be asked to immediately place it in one of the secure lockers outside the laboratory before being allowed to return and continue the practical.
  4. If you refuse to place your mobile device in a locker or you are found to have brought it back into the laboratory then you will be told to leave the practical. In this case you will not be allowed to return to the laboratory and you will not be able to submit work for that practical resulting in a mark of zero being awarded. A formal warning will be issued.

In cases where a student is found to have taken or is in the process of taking pictures of sensitive material in the laboratory such as animal dissections then this will result in an immediate request to leave the laboratory. The student will be told that any images or videos taken in the laboratory must be fully deleted from the device and any cloud-linked storage or image sharing accounts prior to leaving the laboratory. A formal warning will be issued.

**If you are uncertain about any procedure, PLEASE ASK A MEMBER OF STAFF**

If you need further advice please contact Phil Dargie (P.G.Dargie@soton.ac.uk), the Biological Sciences Safety Officer in the first instance. Full details are contained in the Biological Sciences Safety Policy available in the teaching laboratories.

### ***Access to Building 85 and First Aid***

As a general rule, you only have access in Building 85 to levels 1, 2 and the meeting rooms on level 6 for tutorials. There are trained First-Aiders in Building 85. Their contact details are located at key points in the Building. Familiarise yourself with identifying these notices and be aware of their location.

## YOUR DEGREE PROGRAMME

Your degree programme specifications can be viewed via [SUSSED](#) under 'Programme Specific Information'.

### *How much work will I be doing?*

Each degree is made up of individual modules. The amount of work associated with a module is given a value in ECTS points (European Credit Transfer Scheme). ECTS points are based on a notional study time of 20hrs per point at the appropriate level of study. Most modules are worth 7.5 ECTS, and hence have an expectation of 150hrs of total study per module. 60 ECTS points (i.e. eight 7.5 ECTS modules) are taken in each year of study and normally, four modules are taken in each of the two semesters of the academic year. This means that by the end of your degree you will have taken a total of 180 ECTS required for a 3 year programme and 240 ECTS for a 4 year programme. This is normally made up as follows: Part 1 60 ECTS, Part 2 60 ECTS, Part 3 60 ECTS and Part 4 60 ECTS.

Formal teaching takes place between 9.00 am and 6.00 pm on Monday, Tuesday, Thursday and Friday. On Wednesdays, formal teaching is between 9.00 am and 1.00 pm. On top of formal contact hours you are expected to undertake independent study. Thus for a 7.5 ECTS module, you should spend a total of 150 hours, made up of contact and non-contact time. This means if you are taking 4 modules a week, you should be spending approximately 40 hours on academic study each week.

### *Special considerations and extension requests*

If you feel your studies are affected by circumstances beyond your control (e.g. accident or illness, whether physical or mental; bereavement of a family member or close friend; significant adverse personal circumstances), there are two options open to you, plan A and plan B.

**Plan A.** For coursework and other continuous assessment (e.g. dissertations), you can request an extension. An extension request form is available from the student office or via the [Faculty of Environmental and Life Sciences Hub](#). You need to request an extension prior to the original deadline if at all possible, give specifics of the work you're asking an extension for, **the length of extension being requested** and add evidence to support your request. **If you cannot provide evidence, you need to discuss your circumstances with your personal tutor or the senior tutor, and get them to sign off the form.**

**Plan B.** If an extension request is not possible (e.g. for an exam), or does not sufficiently deal with your circumstances, you can claim for special considerations.

If you believe that illness or other circumstances have adversely affected your academic performance, this is known as [Special Considerations](#). If you wish for these to be considered you must complete a [Special Considerations Form](#). It is important that you submit this in a timely manner and prior to the Board of Examiners. Please submit to the Student Office reception in building 85 or via email to [sobs-studentoffice@soton.ac.uk](mailto:sobs-studentoffice@soton.ac.uk).

On this form, you need to detail your circumstances, specify the assessment(s) affected, and provide relevant evidence. All claims must be substantiated by written documentary evidence, for example a medical certificate or GP/consultant letter, self-certification which needs to be signed by your Personal Academic Tutor or a statement from your Personal Academic Tutor. If you cannot provide evidence, you need to discuss your circumstances with your personal tutor or the senior tutor, and get them to sign off the form. The purpose of asking for supporting documentation is for you to be able to corroborate the facts of your submission.



All claims will be reviewed by the Special Considerations Board which meets after each exam period. The Student Office will contact you via your University email account to let you know once approval has been made. Special considerations claims where an extension was possible but wasn't requested are less likely to be granted so you should follow plan A rather than plan B whenever possible. When an extension request is approved, the issue is considered to have been dealt with, so a further extension request for the same piece of work needs to provide new evidence. Special considerations do not automatically roll over from one semester to another, so if circumstances persist into the next semester **or into the next academic year**, special considerations have to be applied for again for that semester (with new evidence).

Further general information can be found on the [Faculty of Environmental and Life Sciences Student HUB](#) under the [How To Guides and Forms](#) tab and more specific information under [Extension Requests & Special Considerations](#) in the Biological Sciences section..

## REGULATORY ISSUES

We hope that you will be satisfied with your experience during your time as a student at the University of Southampton but we do recognise that, on occasion, things can go wrong. If you have a concern about any aspect of your experience at the University we encourage you to raise it as soon as the concern arises.

It is always better to let us know that you feel there is a problem as soon as possible so that the matter may be resolved quickly. You may alternatively wish to consult with your student academic president if it is an issue in common with other students. Please be reassured that you will not suffer any disadvantage or recrimination as a result of raising a genuine concern, student complaint or academic appeal.

### ***Academic appeals***

Provided you have grounds, you may appeal against any academic decision made by the University. There are some exceptions and you should note you cannot appeal against a decision that has been made in the proper exercise of academic judgment. The [Regulations Governing Academic Appeals by Students](#) outlines the regulations and procedure that should be followed should you wish to make an academic appeal.

The Students' Union Advice Centre has developed a [Guide](#) for students.

### ***Student complaints***

The [Regulations Governing Student Complaints](#) sets out the process that should be followed should you wish to raise a complaint about a matter relating to either the facilities and services provided by the University, its academic programmes, and the conduct of University staff, and which has materially affected you.

### ***Dignity at work and study***

The [University's Dignity at Work and Study Policy](#) applies to the conduct of staff and students, in the context of their University work of study, or which otherwise affects the working, learning or social environment of the University. Fair criticism of staff or student performance or conduct will not

be considered to be bullying or harassment provided that those involved are treated with dignity, courtesy and respect. Any allegation of harassment, bullying or victimisation will be treated seriously, regardless of the seniority of those involved, and anyone found to have behaved unacceptably may be the subject of disciplinary action up to and including dismissal or expulsion.

### ***Student Discipline***

As members of the University community, all students are expected to conduct themselves with due regard for its good name and reputation and are required to comply with the University's Regulations at all times. Any allegation of misconduct will be considered within the [Student Discipline Regulations](#), in accordance with the evidence and circumstances presented. Information for students on discipline is available from the [Student Services website](#).

### ***Suspending your studies***

Should you feel that you need to take some time out from your studies, known as [suspending your studies](#), you should first discuss this with your Personal Academic Tutor. A Suspension Request form should be obtained, completed and returned to the Student Office. Please note that, if you wish, you can suspend your studies in order to undertake an internship or period of industrial training outside of normal vacation time.

### ***Withdrawing from your studies***

If you no longer wish to continue with your studies, a Withdrawal Notification form should be obtained, completed and returned to the Student Office. Further information can be found in the [General Regulations - Transfer, Suspension, Withdrawal and Termination](#)

### ***Year One Marks Matter***

Your performance in the first year is important because:

- (1) The second year study abroad module requires good performance in Year 1 modules
- (2) Your final year projects may be allocated on ranking in year 1 performance.
- (3) Detailed marks for all three years are provided on your transcript when you graduate and potential employers will see them.
- (4) Staff writing your references for employment will refer to your performance across all years.

### ***Back Tracking***

Back tracking and forward tracking by one level are allowed for up to 15 ECTS per year, with the authorisation of your personal academic tutor.

### **Language Modules**

You may take [Language modules](#) run by the Centre for Language Study within the Faculty of Humanities, up to a maximum of 15 ECTS per year (7.5 ECTS in the third year of Biochemistry, Biomedical Sciences, Neuroscience and Pharmacology degrees). Language modules are offered at stages 1-7 depending on your prior knowledge, whether it is as a complete novice or near-native speaking level. Students in years 1 and 2 can select language modules at stages 1-7 but **students in year 3 cannot select modules below stage 4**

### **UOSM modules – Flexible Learning**

UOSM (University of Southampton Modules) coded modules are specifically designed to allow students to broaden their degree, often assuming no prior knowledge. Generally, students can only take a maximum of one UOSM module per year. For more information, see the [Flexible Learning at Southampton](#) website.

### **Part-time Study**

If you wish to study part-time you must meet with your personal academic tutor in the first instance for advice. The regulations for part-time study are found via the [University Calendar](#). If you require any further information please contact the Student Office for advice.

### **Year in Employment**

At the end of your second year it is possible to spend a year in employment. Students normally apply for this during semester one of their second year. This provides an opportunity for you to gain employability skills. We usually start organising these placements at the start of your second year. For further details contact Dr David Tumbarello, email: [D.A.Tumbarello@soton.ac.uk](mailto:D.A.Tumbarello@soton.ac.uk)

### **Practicals and Third Year project choices**

Practical sessions will help to develop your understanding of a topic. Attendance is essential, both for mastering module-specific knowledge and techniques, but also as preparation for research projects in later years. In some modules, attendance may be required for you to get practical marks. Practical sessions are narrowly focused on just one subject area and are supervised by a specialist member of the teaching staff, with assistance from technicians and demonstrators (postgraduate students) who will be glad to help with any queries relating to the topic in question

Some practical topics will continue for several weeks, as 'mini projects'. It is in your third year, however, that you will undertake your most substantial piece of research under the supervision of a member of staff (for Integrated Masters students there will be an additional research project in your fourth year). Third year projects can be taken in a number of ways including laboratory, field, or *in-silico* research projects. Non-practical based literature research projects, Bioscience Education, Science Communication, Bioscience Business and Bioscience Ethics projects are also available. Around the Easter break in your second year we provide you with a list of preferred options for your research project(s). The final decision on which project you will do will be taken by the module coordinators. Decisions on project allocation are taken on the basis of your previous exam marks, with higher scoring students given a higher ranking.

### **Data-sharing policy**

During practicals you will normally collect relevant data either on your own or as part of a pair or small group. These data are then used for the practical write-up. If for whatever reason you cannot use the data you have collected yourselves (i.e. alone or as part of their pair or group), you can only use data collected by others if this is explicitly allowed by the module coordinator. In some cases, the module coordinator will upload (e.g. to Blackboard) data to be used with the explicit instruction to use these if

necessary. In all other cases, you need to contact the module coordinator for permission to use data collected by other students. If data from other students are used, this needs to be stated explicitly in the practical write-up. Unauthorised and/or uncredited use of other students' data is regarded as a breach of academic integrity.

## ***Tutors***

At the start of term, you will be allocated to an academic member of staff, who will act as your personal academic tutor. Your personal academic tutor will remain in that role until you graduate, and is your first point of call for academic or pastoral issues. Dr Lex Kraaijeveld will be the senior tutor for Biological Sciences, for issues that cannot be resolved with your personal academic tutor. In addition, Prof Lindy Holden-Dye and Dr Hannah Siddle will act as senior tutor in situations where a student would prefer to talk to a female academic and Dr Alan Marchant will act as a further back-up or alternative.

## ***Tutorials – First Year***

During your first year you will attend tutorials run by your personal academic tutor. The main aim of these tutorials is to reinforce the lecture material, learn workplace skills and provide some academic training. You may be set essays or problem-based questions that have to be handed in prior to the tutorial; discussion of your essay and of the subject area may form the basis for the tutorial.

Tutorials are a key component of the learning experience and attendance is expected. Tutorial marks are included in the BIOL1020 (Core Skills in the Life Sciences) module grades. Being a small forum, the tutorial will help you to develop a thorough understanding of your subject. It is also a place where you can discuss issues raised in lectures and practicals; perhaps points that you did not fully grasp or that seemed interesting but were not pursued by the lecturers. The idea is that by talking over a topic with a tutor and a number of other students who have also been to the lectures, and bringing into the discussion the additional reading that everyone has done, you should as a group be able to develop deeper understanding of the subject matter. It will also, give you opportunities to practice transferable skills, such as stating a point of view and presenting a reasoned justification for it. Although we have guidelines, tutorial work when it is a requirement of a module is partly determined by your personal academic tutor, so what is done, and how it will be done, will vary between tutors. We encourage you to submit your tutorial work as word-processed copy, but at least one piece of work must be handwritten, so that we can judge the standard of legibility.

## ***Tutorials (Years 2 and above)***

You will be required to attend tutorials in your second year with a range of tutors. These tutorials are independent of any module, but the content of them will help in your understanding of the modules you are undertaking, as you will be able to select tutorials that cover topics that align with lecture courses. A record of attendance and performance in second year tutorials will be kept.

In Year 2 and above you will continue with the same personal academic tutor. However, timetabled group tutorials will no longer take place. Instead you will be encouraged to have one-to-one meetings with your tutor. There will be three major themes to discuss:

- (i) Careers. You may want to discuss topics such as vacation scholarships and the Year in Employment- both of which can aid future employability following your graduation. You may want also to discuss career paths following graduation.
- (ii) Module Choices. You should use your tutor to help you in deciding what modules are right for you.
- (iii) Academic Performance. You should discuss with your tutor how you are performing in modules, and get advice over how to improve particular skills you think you need help with. Tutors can be a good source of feedback as to how to improve your marks.

Your responsibilities

- (i) It is your responsibility to make tutor contact to request a meeting at all times in the academic year.
- (ii) If your tutor fails to respond to your request after 3 working days, then resend your email copying your email to Dr Alan Marchant (Director of Programmes) at [A.Marchant@soton.ac.uk](mailto:A.Marchant@soton.ac.uk).

### Timetable

Here is a *recommended* timetable. It is your choice as to when to have a meeting, and this will vary dependent on your needs. If you need to discuss a particular issue with your tutor, then do approach her/him immediately- do not feel constrained by this timetable. Equally do not feel compelled to have a meeting if you do not want one. However, we recommend having them. If you decide not to have a meeting, then please do drop your tutor an email to let them know you are okay.

All 3 year BSc Degrees		
Tutorial	When	Suggested discussion
<b>Year 2</b>		
Tutorial 1	Semester 1 Start	Year ahead: Semester 1 module choices, Semester 1 exams. Career ideas and plans. <i>Year in Employment, Study Abroad module; Summer vacation scholarships (if applicable).</i>
Tutorial 2	Semester 2 Start	Semester 1 exam results. Semester 2 module progress.
Tutorial 3	Semester 2 Mid	Year 3 module choices when options become available.
Tutorial 4	Semester 2 End	Review academic progress. Semester 2 performance review (if held after exams) or revision strategy (if held before exams). Summer plans.
<b>Year 3</b>		
Tutorial 5	Semester 1 Start	Year ahead. Career ideas and plans.
Tutorial 6	Semester 2 Start	Semester 1 exam results.
Tutorial 7	End of Year	Career plans.

All 4 year integrated Masters Degrees		
Tutorial	When	Suggested discussion
<b>Year 2</b>		
Tutorial 1	Semester 1 Start	Year ahead: Semester 1 module choices, Semester 1 exams. Career ideas and plans. <i>Year in Employment, Study Abroad module; Summer vacation scholarships (if applicable).</i>
Tutorial 2	Semester 2 Start	Semester 1 exam results. Semester 2 module progress.
Tutorial 3	Semester 2-mid	Year 3 module choices when options become available.
Tutorial 4	Semester 2	Review academic progress. Semester 2 performance review (if held after exams) or revision strategy (if held before exams). Summer plans.
<b>Year 3</b>		
Tutorial 5	Semester 1	Year ahead: Semester 1 module choices, Semester 1

	Start	exams. Career ideas and plans. Year in employment (if applicable), Study Abroad module (if applicable). Summer vacation scholarships (if applicable).
<b>Tutorial 6</b>	Semester 2 Start	Semester 1 exam results. Semester 2 module progress.
<b>Tutorial 7</b>	Semester 2-mid	Year 4 module choices when options become available
<b>Tutorial 8</b>	Semester 2	Review academic progress over the year. Performance in Semester 2 exams (if held after exams) or revision strategy (if held before exams). Plans for summer.
<b>Year 4</b>		
<b>Tutorial 9</b>	Semester 1 Start	Year ahead. Career ideas and plans.
<b>Tutorial 10</b>	Semester 2 Start	Semester 1 exam results.
<b>Tutorial 11</b>	End Year	Career plans.

### **Senior tutor**

In addition to your personal tutor, you have access to Dr Lex Kraaijeveld as the senior tutor for the School of Biological Sciences. The Senior Tutor can be approached if you want to talk to someone other than your personal tutor, for whatever reason. In addition, in cases where you would prefer to talk to a female member of staff in the role of Senior Tutor, Prof. Lindy Holden-Dye or Dr Hannah Siddle can also be approached., and their contact details are given in the table below.

<u>Name</u>	<u>Telephone</u>	<u>Email</u>
Lex Kraaijeveld	023 8059 3436	<a href="mailto:A.R.Kraaijeveld@soton.ac.uk">A.R.Kraaijeveld@soton.ac.uk</a>
Lindy Holden-Dye	023 8059 9006	<a href="mailto:L.M.Holden-Dye@soton.ac.uk">L.M.Holden-Dye@soton.ac.uk</a>
Hannah Siddle	023 8059 4202	<a href="mailto:H.V.Siddle@soton.ac.uk">H.V.Siddle@soton.ac.uk</a>

### **Lecture Recordings**

Lectures in all modules run by staff in Biological Sciences will normally be recorded via the University's Panopto system. These recordings can be played back via the module's Blackboard site. Panopto recordings are a revision aid and should not be treated as an alternative for attending a lecture. A lack of a lecture recording (e.g. as a result of a technical failure) CANNOT be used as grounds for extenuating circumstances. Recordings are for your use only, and must not be distributed or shared.

### **Transferable Skills**

Over your three or four years at University you will develop a number of transferable skills which will be of benefit to you and your future employers. These include:

- Safety Awareness
- Laboratory Skills
- Analysis and Problem Solving. These skills are essential in all aspects of your life after University.
- IT Skills

- Written Communication. Although much of modern communication is digitally based, the skills required to write clearly and concisely are very important.
- Oral Communication. The ability to present ideas and to participate in group discussions is a skill highly sought after by employers.
- Planning Skills. Time and data planning skills are essential for use in all activities, benefitting employers and employees.
- Teamwork. Throughout your time at University you will develop team working skills that will transfer into whichever career you pursue.

### ***How to Pass***

Firstly, **all CORE** modules must be passed (this is a minimum mark of 40%)

Then, you will progress to the next academic year (or graduate) if your overall average for the year is 40% or over, but only if:

- 1) All non-core modules have a mark of 25% or above (this is termed the Qualifying Mark)
- 2) At least **six** of the eight modules are above 40%. If you have two non-core modules between 25 and 40% you can “compensate” and progress.

Any module less than 25% will have to be retaken. Unless there are extenuating circumstances the marks for any resit will be capped at 40%

### ***Weighting of Parts and Degree Classification***

Part I (your first year) work is excluded from the final degree classification. A weighting of 0:1:2 is used for the three Parts of an Honours degree programme, and a weighting of 0:1:2:2 for the four Parts of an integrated Masters programme. This is in addition to weighting by credit points (for example, where Parts III and IV do not contain the same number of credit points).

At the end of your final year you will receive your degree, which will be classified based on your weighted marks according to the [University Algorithm](#), the ranges are:

First class:	70% or above
Upper second class:	60% - 69%
Lower second class:	50% - 59%
Third class:	40% - 49%
Fail:	0% - 39%

### ***Classification Algorithm***

The class of degree awarded will be that within which the average falls. OR it can be one class higher **IF** the average mark is within 2% of the higher class, **AND** at least 50% of the credit points, weighted by Part, is derived from module marks in the higher class or above.

## ***The Marking Scheme***

In Biological Sciences there are common ranges and class boundaries used for:

- Marking individual answers
- Marking whole written examination papers
- Marking modules where practical or coursework forms part or the whole of the assessment

Where work is not quantifiably marked, we use the following % scheme:

First	100, 95, 90, 85, 80, 75, 72
Upper second	68, 65, 62
Lower second	58, 55, 52
Third	48, 45, 42
Fail	38, 35, 32, 25, 15, 5, 0

The marking criteria as given on the next page include:

- Knowledge & Accuracy (relevant to question set)
- Critical understanding (evidence based arguments, concepts and/or data handling)
- Evidence of reading (text book, research papers etc.)
- Presentation (structure, ability to communicate)

We use this same marking scheme for all examinations and coursework in each year of your degree programme. The marks reflect the skills that must be displayed within each range of the scheme and will help you evaluate your progress and level of attainment at various stages of your degree programme.

## ***Past exam papers***

Copies of past examination papers are available through [SUSSED](#) and the library. Please be aware that exam formats can be significantly different from one year to the next. Module coordinators will advise on any changes.

## ***Late submission penalties***

The University penalty for submission of late work is

<b>University Working Days late</b>	<b>Mark</b>
1	(final agreed mark) * 0.9
2	(final agreed mark) * 0.8
3	(final agreed mark) * 0.7
4	(final agreed mark) * 0.6
5	(final agreed mark) * 0.5
More than 5	Zero



### Marking Criteria

Class	%	Marking criteria
Upper 1 <sup>st</sup>	90, 95, 100	<i>Outstanding work</i> Outstanding, accurate and wide-ranging <b>knowledge and understanding</b> of the topic covering all relevant aspects; <b>evidence of substantial outside reading</b> ; superb <b>organisation and presentation</b> ; outstanding <b>analysis and/or problem-solving</b> ; outstanding evidence of <b>insight and critical evaluation</b>
Middle 1 <sup>st</sup>	80, 85	<i>Excellent work</i> Excellent, accurate and wide-ranging <b>knowledge and understanding</b> of the topic; <b>evidence of a significant level of outside reading</b> ; excellent <b>organisation and presentation</b> ; excellent <b>analysis and/or problem-solving</b> ; good evidence of <b>insight and critical evaluation</b>
Lower 1 <sup>st</sup>	72, 75	<i>Very good work</i> Very good accurate and wide-ranging <b>knowledge and understanding</b> of the topic; evidence of some <b>outside reading</b> ; very good <b>organisation and presentation</b> ; very good <b>analysis and/or problem-solving</b> ; some evidence of <b>insight and critical evaluation</b>
2.1	62, 65, 68	<i>Good work</i> Good, accurate and reasonably detailed <b>knowledge and understanding</b> of the topic, may have some omissions but with <b>few errors</b> ; limited evidence of <b>outside reading</b> ; well <b>organised and presented</b> ; good <b>analysis and/or problem-solving</b> ; limited evidence of <b>insight and critical evaluation</b>
2.2	52, 55, 58	<i>Satisfactory work</i> Satisfactory <b>knowledge and understanding</b> of the topic, covering at least half of the major topics, but with <b>some errors and/or omissions</b> ; little or no evidence of <b>outside reading</b> ; satisfactory <b>organisation and presentation</b> ; satisfactory <b>analysis and/or problem-solving</b> ; little or no evidence of <b>insight and critical evaluation</b>
3 <sup>rd</sup>	42, 45, 48	<i>Adequate work</i> Basic <b>knowledge and understanding</b> , with <b>significant errors and/or omissions</b> ; no evidence of <b>outside reading</b> ; basic <b>organisation and presentation</b> ; passable <b>analysis and/or problem-solving</b>
Marginal fail	32, 35, 38	<i>Inadequate work</i> Inadequate level of relevant <b>knowledge and understanding</b> , with <b>major inaccuracies</b> ; no evidence of <b>outside reading</b> ; not sufficient <b>organisation and presentation</b> ; inadequate <b>analysis and/or problem-solving</b> ; <b>partial focus</b> on the topic
Fail	10, 15, 25	<i>Very inadequate work</i> Information <b>mostly irrelevant</b> , few correct or relevant facts present; no evidence of <b>outside reading</b> ; badly <b>organised and presented</b> ; widespread <b>confusion and incoherence</b> ; <b>very little focus</b> on the topic
Extreme fail	0, 5	<i>Extremely inadequate work</i> Information almost all <b>incorrect and/or irrelevant</b> ; no evidence of <b>outside reading</b> ; very <b>disorganised</b> and showing <b>confusion and incoherence</b> ; very little <b>recognition</b> of the topic

The aspects of your work given in bold are expected to show progress across your years of study.

## ***Principles Governing Assessment***

The examination and assessment procedures at all universities in the UK are designed to allow you to demonstrate how well you understand the subject and how well you can deploy relevant information. Examiners are not interested in seeing whether they can catch you out or make life difficult for you. They want the various assessment and examination procedures to produce fair and objective evidence of your abilities.

Our procedures are designed to provide as fair an evaluation of your work as is possible. In accordance with standard University practice your scripts are anonymous when we mark them. In your second year, a sample of all coursework and exam scripts is moderated by a second examiner and in your final year, all coursework and exam scripts are moderated by a second examiner. We take considerable pains to try to ensure that the assessment process is fair, but it is also expected that students approach assessment in the same spirit. In particular, there is the expectation that all assessed work will be the unaided work of the candidate concerned and that the candidate will have respected not only the regulations governing examinations but also the spirit of the examination process. Examining is something that requires trust between examiner and examinee: trust on the part of the examinee that the exams themselves are fair and that the process of evaluation is fair and unprejudiced; trust on the part of the examiners that the examinee has not attempted to secure unfair advantage or to misrepresent his or her work. In consequence, any breach of such trust is treated with extreme seriousness and may result in the Board of Examiners recommending that penalties be imposed on offenders.

## ***Prizes***

*The Pauline Thomas Prize* is given in memory of a former student who graduated in 1970 and is awarded annually for outstanding performance by a final year student on the MSci Biomedical Sciences, Biochemistry or Neuroscience.

*The Society of Physiology Prize* is awarded to the student with the best physiological MSci project.

Three *Gerald Kerkut Prizes* are awarded in memory of Professor Kerkut for outstanding performance in year three in Physiology and Biochemistry:

*The Biomedical Sciences Prize* is awarded to the best student graduating with a BSc in Biomedical Sciences.

*The Biochemistry Prize* is awarded to the best student graduating with a BSc in Biochemistry.

*The Pharmacology Prize* is awarded to the best student graduating with a BSc in Pharmacology.

*The Biology Prize* is awarded to the best student graduating with a BSc in Biology.

*The Ecology Prize* is awarded to the best student graduating with a BSc in Ecology & Conservation.

*The Zoology Prize* is awarded to the best student graduating with a BSc in Zoology.

*The Royal Society of Biology Prize* is awarded to the best student graduating with a MSci in Biology, Ecology & Conservation, or Zoology .

## FINAL YEAR

### *Working Out-of-hours*

Please note that there are strict rules for out-of-hours working (before 8 am and after 6 pm Monday-Friday and at any time on weekends or University closure days).

Third and fourth year projects should normally be designed to avoid you having to work out-of-hours. However, if your project supervisor can make a case for it being absolutely necessary for you to be in any non-public area (laboratories, glasshouses, etc) out-of-hours, your supervisor will need to:

- a) Identify someone to supervise you in person. On no account will you be allowed to work without close supervision
- b) Prepare a Risk Assessment, to include the extra risks of working out-of-hours
- c) Arrange for the Biological Sciences Health & Safety Officer, to check and sign off the Risk Assessment
- d) Submit a B85 Access Request Form to arrange for your access rights to be amended to Mark Dixon (M.S.Dixon@soton.ac.uk). This requires a minimum two days notice so that the University database can be updated. You should not ask Security personnel to let you into any areas out-of-hours. It is a serious breach of University regulations to loan your ID card to any other person.

### *Sign Off Form*

This applies to all those students undertaking lab projects. When you leave you must complete a form to say that you have left your working area in the lab in good order. You will find this form in the project module miniguide and separately on the module Blackboard site.

## PROGRAMME PATHWAYS AND MODULE CHOICES

### *Biology, Ecology & Conservation, Zoology*

#### **BSc Biology**

##### Part 1 (FHEQ Level 4)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students will take seven *compulsory* modules (BIOL1001, BIOL1003, BIOL1004, BIOL1005, BIOL1010, BIOL1012 and BIOL1020).

In addition one optional module must be chosen. Students without a pass in 'A-level Chemistry will be enrolled on CHEM1012 as an additional ninth module but may decide whether to take the module or not. If the exam is taken, the outcome will be included on your degree transcript. If you choose not to take the exam this will not prevent you from progressing, but it may limit your choice of module options in subsequent years.

##### Part 2 (FHEQ Level 5)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students must take three *compulsory* modules (BIOL2008, BIOL2001 and BIOL2007)

An additional five elective modules (see tables on page 39-43 generally these are from within Biological Sciences and are described at the end in Section 1 of this handbook. Please note certain modules are prerequisites for specific year three modules. Students have the option of taking a maximum of TWO elective modules (15 ECTS) from another academic unit (not labelled as BIOL). Not more than one UOSM, interdisciplinary elective module can be taken in Part 2. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the BSc Biology degree course, (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

Part 3 (FHEQ Level 6)

Students must take 60 ECTS which includes 15ECTS of project module(s).

A total of 15ECTS-worth of project modules must be taken from the available options

Either ONE of the following 15 ECTS modules

BIOL3034 (Laboratory Research Project) or BIOL3058 (Bioscience Business) or BIOL3059 (Bioscience Education) or BIOL3061 (Field Research project), BIOL3069 (*In-silico* Research Project) or BIOL3071 (External Research project),

OR

TWO of the following 7.5ECTS modules with one being taken in each semester

Semester 1	Semester 2
BIOL3062 (Short Field Research Project)	BIOL3073 (Bioethics Research Project)
BIOL3060 (Science Communication)*	BIOL3066 (Extended Science Communication)*
BIOL3031 (Literature project)**	BIOL3032 (Literature project)**

Note - \* BIOL3060 is an essential prerequisite in order to take BIOL3066. \*\* It is not permitted to take both BIOL3031 and BIOL3032

A further six modules must be selected of which at least four must be BIOL modules which will usually be from those listed in the table on page 39-43. Please note certain modules have prerequisites of specific year two modules which should have been taken.

Students have the option of taking up to two elective modules (7.5 ECTS) produced by another academic unit (not labelled as BIOL) or an external UOSM module. Please note that elective modules may be subject to timetabling and other regulations limiting their availability as part of the BSc Biology degree course, (for details see departmental web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options. The pathways within the degree programmes are merely advisory. They are to help students and tutors to plan sensible combinations of modules

## **BSc Zoology**

### Part 1 (FHEQ Level 4)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students will take seven *compulsory* modules (BIOL1001, BIOL1003, BIOL1004, BIOL1005, BIOL1010, BIOL1012 and BIOL1020).

In addition one optional module must be chosen. Students without a pass in 'A-level Chemistry will be enrolled on CHEM1012 as an additional ninth module but may decide whether to take the module or not. If the exam is taken, the outcome will be included on your degree transcript. If you choose not to take the exam this will not prevent you from progressing, but it may limit your choice of module options in subsequent years.

### Part 2 (FHEQ Level 5)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students must take five *compulsory* modules (BIOL2008, BIOL2039, SOES2011, BIOL2001 and BIOL2045) and a minimum of 1 module from BIOL2018 and BIOL2040.

An additional two or three elective modules must be taken to give a total of 60ECTS (see tables on page 39-43), generally these are from within Biological Sciences and are described at the end in Section 1 of this handbook. Please note certain modules are prerequisites for specific year three modules. Students have the option of taking a maximum of TWO elective modules (15 ECTS) produced by another academic unit (not labelled as BIOL). Not more than one UOSM, interdisciplinary elective module can be taken in Part 2. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the BSc Zoology degree course, (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

### Part 3 (FHEQ Level 6)

Students must take 60 ECTS in total during the year.

Either ONE of the following 15 ECTS modules

BIOL3034 (Laboratory Research Project) or BIOL3058 (Bioscience Business) or BIOL3059 (Bioscience Education) or BIOL3061 (Field Research project), BIOL3069 (*In-silico* Research Project) or BIOL3071 (External Research project),

OR

TWO of the following 7.5ECTS modules with one being taken in each semester

Semester 1	Semester 2
BIOL3062 (Short Field Research Project)	BIOL3073 (Bioethics Research Project)
BIOL3060 (Science Communication)*	BIOL3066 (Extended Science Communication)*
BIOL3031 (Literature project)**	BIOL3032 (Literature project)**

Note - \* BIOL3060 is an essential prerequisite in order to take BIOL3066. \*\* It is not permitted to take both BIOL3031 and BIOL3032

A further six modules must be selected of which at least four must be BIOL modules which will usually be from those listed in the table on page 39-43. At least 6 'Z' designated Zoology options must be taken during the year. Please note certain modules have prerequisites of specific year two modules which should have been taken.

Students have the option of taking up to two elective modules (7.5 ECTS) produced by another academic unit (not labelled as BIOL) or an external UOSM module. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the BSc Biology degree course, (for details see departmental web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options. The pathways within the degree programmes are merely advisory. They are to help students and tutors to plan sensible combinations of modules

### **BSc Ecology & Conservation**

#### Part 1 (FHEQ Level 4)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students will take seven *compulsory* modules (BIOL1001, BIOL1003, BIOL1004, BIOL1005, BIOL1010, BIOL1012 and BIOL1020).

In addition one optional module must be chosen. Students without a pass in 'A-level Chemistry will be enrolled on CHEM1012 as an additional ninth module but may decide whether to take the module or not. If the exam is taken, the outcome will be included on your degree transcript. If you choose not to take the exam this will not prevent you from progressing, but it may limit your choice of module options in subsequent years.

### Part 2 (FHEQ Level 5)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students must take five *compulsory* modules (BIOL2001, BIOL2004, BIOL2008, BIOL2041 and BIOL2047)

An additional three elective modules must be chosen (see tables on page 39-43, generally these are from within SoBS and are described at the end in Section 1 of this handbook. Please note certain modules are prerequisites for specific year three modules. Students have the option of taking a maximum of TWO elective modules (15 ECTS) produced by another academic unit (not labelled as BIOL). Not more than one UOSM, interdisciplinary elective module can be taken in Part 2. Please note that elective modules may be subject to timetabling and other regulations limiting their availability as part of the BSc Ecology & Conservation degree course, (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

### Part 3 (FHEQ Level 6)

Students must take 60 ECTS in total during the year.

Either ONE of the following 15 ECTS modules

BIOL3034 (Laboratory Research Project) or BIOL3058 (Bioscience Business) or BIOL3059 (Bioscience Education) or BIOL3061 (Field Research project), BIOL3069 (*In-silico* Research Project) or BIOL3071 (External Research project),

OR

TWO of the following 7.5ECTS modules with one being taken in each semester

Semester 1	Semester 2
BIOL3062 (Short Field Research Project)	BIOL3073 (Bioethics Research Project)
BIOL3060 (Science Communication)*	BIOL3066 (Extended Science Communication)*
BIOL3031 (Literature project)**	BIOL3032 (Literature project)**

Note - \* BIOL3060 is an essential prerequisite in order to take BIOL3066. \*\* It is not permitted to take both BIOL3031 and BIOL3032



## **MSci Biology**

### **Part 1 (FHEQ Level 4)**

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students will take seven *compulsory* modules (BIOL1001, BIOL1003, BIOL1004, BIOL1005, BIOL1010, BIOL1012 and BIOL1020).

In addition one optional module must be chosen. Students without a pass in 'A-level Chemistry will be enrolled on CHEM1012 as an additional ninth module but may decide whether to take the module or not. If the exam is taken, the outcome will be included on your degree transcript. If you choose not to take the exam this will not prevent you from progressing, but it may limit your choice of module options in subsequent years.

### **Part 2 (FHEQ Level 5)**

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students must take three *compulsory* modules (BIOL2008, BIOL2001 and BIOL2007)

An additional five elective modules (see tables on page 39-43, generally these are from within Biological Sciences and are described at the end in Section 1 of this handbook. Please note certain modules are prerequisites for specific year three modules. Students have the option of taking at most TWO elective modules (15 ECTS) produced by another academic unit (not labelled as BIOL). Not more than one UOSM, interdisciplinary elective module can be taken in Part 2. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the MSci Biology degree course, (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

### **Part 3 (FHEQ Level 6)**

**To enter part 3 of the MSci Biology degree, students must have achieved an average part mark of  $\geq 60\%$  at the end of Part 2**

Students must take 60 ECTS in total during the year.

A total of 15ECTS-worth of project modules must be taken in the from the available options

Either BIOL3034 (15ECTS), BIOL3061 (15ECTS), BIOL3071 (15ECTS) or BIOL3069 (15ECTS)

A further six modules must be selected of which at least four must be BIOL modules which will usually be from those listed in the table on page 39-43. Please note certain modules have prerequisites of specific year two modules which should have been taken.

Students have the option of taking up to two elective modules (7.5 ECTS) offered by another academic unit (not labelled as BIOL) or an external UOSM module. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the MSci Biology degree course, (for details see departmental web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options. The pathways within the degree programmes are merely advisory. They are to help students and tutors to plan sensible combinations of modules

#### Part 4 (FHEQ Level 7)

In Part 4 you will undertake a compulsory research project (30ECTS) from the options below.

BIOL6013 or BIOL6069

The following modules are compulsory

BIOL6053 (7.5ECTS) and BIOL6073 (3.75ECTS) plus one further 3.75ECTS module that must be selected from a choice of BIOL6055, BIOL6075, BIOL6077, BIOL6082 and BIOL6083.

#### **Optional modules**

TWO further elective modules must be selected from available BIOL modules or from modules available from outside Biological Science provided they are relevant to Biology (e.g. Environmental Sciences (ENVS), Oceanography (SOES) , Psychology (PSYC)). The FHEQ Level 7 equivalent of an FHEQ Level 6 module already taken cannot be selected.

## ***MSci Zoology***

### Part 1 (FHEQ Level 4)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students will take seven *compulsory* modules (BIOL1001, BIOL1003, BIOL1004, BIOL1005, BIOL1010, BIOL1012 and BIOL1020).

In addition one optional module must be chosen. Students without a pass in 'A-level Chemistry will be enrolled on CHEM1012 as an additional ninth module but may decide whether to take the module or not. If the exam is taken, the outcome will be included on your degree transcript. If you choose not to take the exam this will not prevent you from progressing, but it may limit your choice of module options in subsequent years.

### Part 2 (FHEQ Level 5)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students must take five *compulsory* modules (BIOL2008, BIOL2039, SOES2011, BIOL2001 and BIOL2045) and a minimum of 1 module from BIOL2018 and BIOL2040.

An additional three elective modules (see tables on page 39-43 generally these are from within Biological Sciences and are described at the end in Section 1 of this handbook. Please note certain modules are prerequisites for specific year three modules. Students have the option of taking at most TWO elective modules (15 ECTS) produced by another academic unit (not labelled as BIOL). Not more than one UOSM, interdisciplinary elective module can be taken in Part 2. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the MSci Zoology degree course, (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

### Part 3 (FHEQ Level 6)

**To enter part 3 of the MSci Zoology degree, students must have achieved an average part mark of  $\geq 60\%$  at the end of Part 2**

Students must take 60 ECTS in total during the year.

A total of 15ECTS-worth of project modules must be taken in the from the available options

Either BIOL3034 (15ECTS), BIOL3061 (15ECTS), BIOL3071 (15ECTS) or BIOL3069 (15ECTS)

A further six modules must be selected of which at least four must be BIOL modules which will usually be from those listed in the table on page 41. At least 6 'Z' designated Zoology options must be taken during the year. Please note certain modules have prerequisites of specific year two modules which should have been taken.

Students have the option of taking up to two elective modules (7.5 ECTS) produced by another academic unit (not labelled as BIOL) or an external UOSM module. Please note that elective modules may be subject to timetabling and other regulations limiting their availability as part of the BSc Zoology degree course, (for details see departmental web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options. The pathways within the degree programmes are merely advisory. They are to help students and tutors to plan sensible combinations of modules

#### Part 4 (FHEQ Level 7)

In Part 4 you will undertake a compulsory research project (30ECTS) from the options below.

BIOL6013 or BIOL6069

The following modules are compulsory

BIOL6053 (7.5ECTS) and BIOL6073 (3.75ECTS) plus one further 3.75ECTS module that must be selected from a choice of BIOL6055, BIOL6075, BIOL6077, BIOL6082 and BIOL6083.

#### **Optional modules**

TWO further elective modules must be selected from available BIOL modules or from modules available from outside Biological Science provided they are relevant to Zoology (e.g. Environmental Sciences (ENVS), Oceanography (SOES), Psychology (PSYC)). The FHEQ Level 7 equivalent of an FHEQ Level 6 module already taken cannot be selected.

#### ***MSci Ecology & Conservation***

##### Part 1 (FHEQ Level 4)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students will take seven *compulsory* modules (BIOL1001, BIOL1003, BIOL1004, BIOL1005, BIOL1010, BIOL1012 and BIOL1020).

In addition one optional module must be chosen. Students without a pass in 'A-level Chemistry will be enrolled on CHEM1012 as an additional ninth module but may decide whether to take the module or not. If the exam is taken, the outcome will be included on your degree transcript. If you choose not to take the exam this will not prevent you from progressing, but it may limit your choice of module options in subsequent years.

## Part 2 (FHEQ Level 5)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students must take five *compulsory* modules (BIOL2001, BIOL2004, BIOL2008, BIOL2041 and BIOL2047)

An additional three elective modules must be chosen (see tables on page 39-43 generally these are from within Biological Sciences and are described at the end in Section 1 of this handbook. Please note certain modules are prerequisites for specific year three modules. Students have the option of taking at most TWO elective modules (15 ECTS) produced by another academic unit (not labelled as BIOL). Not more than one UOSM, interdisciplinary elective module can be taken in Part 2. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the MSci Ecology & Conservation degree course, (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

## Part 3 (FHEQ Level 6)

**To enter part 3 of the MSci Ecology & Conservation degree, students must have achieved an average part mark of  $\geq 60\%$  at the end of Part 2**

Students must take 60 ECTS in total during the year.

A total of 15ECTS-worth of project modules must be taken in the from the available options

Either BIOL3034 (15ECTS), BIOL3061 (15ECTS), BIOL3071 (15ECTS) or BIOL3069 (15ECTS)

A minimum of four modules must be chosen from the following selection

BIOL3009, BIOL3053, BIOL3010, BIOL3056, BIOL3067, BIOL3068, BIOL3070 and BIOL3072

Additional modules must be selected to make up the total requirement of 60ECTS during the year. Please note certain modules have prerequisites of specific year two modules which should have been taken.

Students have the option of taking up to two elective modules (7.5 ECTS) produced by another academic unit (not labelled as BIOL) or an external UOSM module. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the MSci Ecology & Conservation degree course, (for details see

departmental web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options. The pathways within the degree programmes are merely advisory. They are to help students and tutors to plan sensible combinations of modules

#### Part 4 (FHEQ Level 7)

In Part 4 you will undertake a compulsory research project (30ECTS) from the options below.

BIOL6013 or BIOL6069

The following modules are compulsory  
BIOL6053 (7.5ECTS) and BIOL6052 (7.5ECTS).

A further two skills-based modules must be chosen from the following choice  
BIOL6055 (3.75ECTS), BIOL6073 (3.75ECTS) and BIOL6075 (3.75ECTS); BIOL6081 (3.75ECTS) and BIOL6082 (3.75ECTS).

#### ***Optional modules***

One elective SOES or ENVS module should be selected from the list below.  
SOES6008, SOES6020, SOES6021, SOES6051, SOES6062, SOES6068, ENS6003, ENVS6006, ENVS6023, ENVS6024.  
The FHEQ Level 7 equivalent of an FHEQ Level 6 module already taken cannot be selected.

Part 1 modules Semester 1		Degree		
		Biology	Zoology	Ecology & Conservation
		BSc. and MSci	BSc. and MSci	BSc. and MSci
Module code	Module name			
BIOL1004	Patterns of Life	C	C	C
BIOL1010	Macromolecules of Life	C	C	C
BIOL1012	Systems Physiology	C	C	C
BIOL1020	Core Skills in the Life Sciences	C	C	C
Semester 2				
BIOL1001	Experimental and Field Biology	C	C	C
BIOL1003	Ecology and Evolution	C	C	C
BIOL1005	Cell Biology and Genetics	C	C	C
BIOL1022	Metabolism & Metabolic Disorders	R	R	R
BIOL1013	Integrative Mammalian Physiology	R	R	R
BIOL1023	Cell and Tissue Histology	R	R	R
SOES1006	Introduction to Marine Ecology	R	R	R

C = Compulsory module

R = Recommended module

Part 2 modules Semester 1		Degree							
		Biology (BSc. and MSci.)				Zoology (BSc. and MSci.)			Ecology & Conservation (BSc. and MSci)
		Integrated	Molecular	Cell & Dev.	Biodiv. & Ecol.	General	Cell & Devel.	Ecol. & Evol.	
Module code	Module name								
BIOL2002	Cell Biology	**		**		**	**		
BIOL2004	Pure & Applied Population Ecology	**			**	**	**	C	
BIOL2008	Quantitative Methods in Biological & Environmental Science	C	C	C	C	C	C	C	
BIOL2010	Flow of Genetic Information		**						
BIOL2012	Exploring Proteins		**						
BIOL2014	Neuroscience	*		**		*	**		
BIOL2039	Animal Behaviour	*			**	C	C	C	
BIOL2043	Biotechnology & the Living Cell	*	*					R	
SOES2011	Marine Vertebrates	X	X	X	C	C	C	C	
								X	

Semester 2									
BIOL2001	Evolution	C	C	C	C	C	C	C	C
BIOL2045	Vertebrate Development				C	C	C	C	R
BIOL2047	Animal Conservation	R			R	R		R	C
BIOL2007	Plant Development & Function	C	C	C					R
BIOL2011	Molecular & Cellular Biochemistry		**						
BIOL2013	Bioinformatics & DNA Technology		**						
BIOL2018	Adaptive Physiology	*	*	**	*	(C)**	(C)*	(C)**	
BIOL2022	Immunology, Infection & Inflammation					*	*		
BIOL2038	Microbiology								
BIOL2040	Neural Basis of Behaviour					(C)**	(C)**	(C)	
BIOL2041	New Forest Field Course				**			**	C
BIOL2044	Medical Microbiology								
SOES2006	Phytoplankton and Primary Production				*	X	X	X	
SOES2017	Ecological Processes in the Marine Benthos				*	*		*	
SOES2032	Palaeobiology				*	*		*	

Part 3 - project modules	Degree							
	Biology (BSc. and MSci.)				Zoology (BSc. and MSci.)			Ecology & Conservation (BSc. and MSci)
	Integrated	Molecular	Cell & Dev.	Biodiv. & Ecol.	General	Cell & Devel.	Ecol. & Evol.	
ONE 15ECTS project from BIOL3034† BIOL3061† BIOL3071† BIOL3069† BIOL3058 BIOL3059  Or TWO 7.5ECTS project modules (one in each semester) from BIOL3062 (semester 1); BIOL3060* (semester 1), BIOL3031** (semester 1) BIOL3073 (semester 2), BIOL3066* (semester 2), and BIOL3032** (semester2)					Z	Z	Z	



- † Students on the MSci Biology, MSci Zoology or M Ecology & Conservation degree programmes must take BIOL3034, BIOL3061, BIOL3069 or BIOL3071 as their project option.
- \* BIOL3060 is an essential prerequisite in order to take BIOL3066. \*\* It is not permitted to take both BIOL3031 and BIOL3032
- (C) Must take at least one of the modules

Part 3 modules (elective) Semester 1		Degree							
		Biology (BSc. and MSci.)				Zoology (BSc. and MSci.)			Ecology & Conservation (BSc. and MSci.)
		Integrated	Molecular	Cell & Dev.	Biodiv. & Ecol.	General	Cell & Devel.	Ecol. Evol.	
Module code	Module name								
BIOL3001	Current Topics in Cell & Developmental Biology	*	*	*		Z	Z		
BIOL3003	Plant Cell Biology	*	*	*					
BIOL3009	Applied Ecology	*			*	Z		Z*	
BIOL3014	Molecular Cell Biology		*						
BIOL3015	Regulation of Gene Expression		*						
BIOL3021	Cellular and Molecular Neuroscience		*	*		Z	Z		
BIOL3027	Selective Toxicity								
BIOL3053	Biodiversity & Conservation	*			*	Z		Z*	
BIOL3063	Bioinformatics & Systems Biology								
BIOL3025	Neuropharmacology of CNS Disorders								
BIOL3064	Cancer & Chromosome Biology								
BIOL3067	Evolution and Development	*			*	*		*	
SOES3013	Zooplankton Ecology & Processes				*	*		*	
<b>Semester 2</b>									
BIOL3010	Topics in Ecology & Evolution	*			*	Z		Z	
BIOL3013	Molecular Recognition		*						
BIOL3017	The Molecular and Structural Basis of Disease								
BIOL3018	Molecular Pharmacology								

BIOL3020	Systems Neuroscience			*		Z	Z		
BIOL3022	Cell Signalling in Health and Disease								
BIOL3048	Neurodegenerative Disease								
BIOL3051	Applied Plant Biology	*	*	*					
BIOL3056	Global Change Biology	*			*	*		*	
BIOL3057	Biofilms and Microbial Communities	*	*		*				
BIOL3068	Fluxes, Cycles and Microbial Communities				*			*	
BIOL3070	Tropical Ecology Field Course	*			*	*		*	
SOES3015	Palaeoclimate Change								
SOES3017	Marine Fisheries Ecology								

Part 4 - project modules	Degree							
	MSci Biology				MSci. Zoology			MSci Ecology & Conservation
	Integrated	Molecular	Cell & Dev.	Biodiv. & Ecol.	General	Cell & Devel.	Ecol. & Evol.	
ONE 30ECTS project from BIOL6013 Advanced Laboratory Research Project BIOL6069 Advanced Field Research Project					Z	Z	Z	

Part 4 modules Semester 1		Degree							
		MSci. Biology				MSci. Zoology			MSci Ecology & Conservation
		Integrated	Molecular	Cell & Dev.	Biodiv. & Ecol.	General	Cell & Devel.	Ecol. Evol.	
Module code	Module name								
BIOL6053	Current Research	C	C	C	C	C	C	C	C
BIOL6073	Critical Thinking	C	C	C	C	C	C	C	C
BIOL6055	Computational Methods for Biological Data Analysis	C*	C*	C*	C*	C*	C*	C*	C*
BIOL6075	Biological Optical Imaging	C*	C*	C*	C*	C*	C*	C*	C*
BIOL6082	Skills in Biomolecular NMR	C*	C*	C*	C*	C*	C*	C*	C*
BIOL6083	Skills in Optical Spectroscopy	C*	C*	C*	C*	C*	C*	C*	C*
BIOL6072	Science Communication								
BIOL6052	Advanced Quantitative Methods								C
BIOL6066	Biodiversity & Conservation					Z		Z	
BIOL6021	Current Topics in Cell & Developmental Biology								
BIOL6044	Plant Cell Biology								
BIOL6010	Applied Ecology					Z		Z	
BIOL6030	Molecular Cell Biology								
BIOL6027	Regulation of Gene Expression								
BIOL6035	Cellular and Molecular Neuroscience					Z	Z		
BIOL6024	Selective Toxicity								
BIOL6036	Neuropharmacology of CNS Disorders								
BIOL6071	Cancer & Chromosome Biology								
<b>Semester 2</b>									
BIOL6077	Skills in Molecular Bioscience	C*	C*	C*	C*	C*	C*	C*	C*
BIOL6029	Topics in Ecology & Evolution					Z		Z	
BIOL6032	Molecular Recognition								
BIOL6033	The Molecular and Structural Basis of Disease								
BIOL6022	Molecular Pharmacology								
BIOL6034	Systems Neuroscience					Z	Z		
BIOL6023	Cell Signalling in Health and Disease								
BIOL6045	Neurodegenerative Disease								

BIOL6046	Applied Plant Biology								
BIOL6028	Global Change Biology								
BIOL6047	Biofilms and Microbial Communities								

C - compulsory module

C\* - one of the modules should be chosen from the available choice

Overlapping Modules: In selecting modules for years 3 and 4 you must note that you may not take overlapping modules at both level 3 and level 4 (FHEQ levels 6&7 respectively).			
<i>Level 6 overlaps Level 7</i>		<i>Level 6 overlaps Level 7</i>	
BIOL3001	BIOL6021		
BIOL3018	BIOL6022	BIOL3027	BIOL3015
BIOL3022	BIOL6023	BIOL3056	BIOL6028
BIOL3010	BIOL6029	BIOL3014	BIOL6030
BIOL3017	BIOL6033	BIOL3013	BIOL6032
BIOL3021	BIOL6035	BIOL3020	BIOL6034
BIOL3025	BIOL6036	BIOL3015	BIOL6027
BIOL3017	BIOL6033	BIOL3037	BIOL6038
BIOL3043	BIOL6039	BIOL3044	BIOL6040
BIOL3052	BIOL6041	BIOL3054	BIOL6042
BIOL3055	BIOL6043	BIOL3003	BIOL6044
BIOL3051	BIOL6046	BIOL3048	BIOL6045
BIOL3053	BIOL6066	BIOL3057	BIOL6047
BIOL3027	BIOL6024		

### ***BSc Biology, Ecology & Conservation or Zoology with a 'Minor' subject***

The structure of your degree programme allows you to exercise choice in each year of study. You can exercise this choice in a number of ways.

You can use these modules to deepen your knowledge of your main subject.

You can combine additional modules from your main subject with modules from the other disciplines or choose from a selection of interdisciplinary modules.

You can choose modules that build into a minor pathway, the title of which will be mentioned in your degree transcript.

Details of the minors available and the modules that are included can be found at [http://www.southampton.ac.uk/cip/information\\_for\\_students/minor\\_subjects/index.page?](http://www.southampton.ac.uk/cip/information_for_students/minor_subjects/index.page?)

## Biomedical Sciences, Biochemistry, Pharmacology

### **BSc Biomedical Sciences**

#### Part 1 (FHEQ Level 4)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students will take four *core* modules (BIOL1007, BIOL1008, BIOL1011 and BIOL1013), 30 ECTS and three *compulsory* modules (BIOL1006, BIOL1020, and CHEM1039) 30 ECTS. Students have a choice of either BIOL1023 (which is compulsory for those lacking A-level chemistry) and BIOL1021

#### Part 2 (FHEQ Level 5)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

The module BIOL2046 is compulsory. Further you must take at least one of BIOL2010/2016 and one of BIOL2014/2022.

In addition a further three optional modules must be taken (see tables on page 58-61), generally these are from within Biological Sciences and are described later in this handbook. Please note certain modules are prerequisites for specific year three modules. Students have the option of taking at most TWO elective modules (15 ECTS) produced by another academic unit (not labelled as BIOL). Not more than one UOSM, interdisciplinary elective module can be taken in Part 2. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the BSc Biomedical Sciences degree course, (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

#### Part 3 (FHEQ Level 6)

Students must take 60 ECTS.

(a) Students will take either

One of BIOL3034 or BIOL3058 or BIOL3059 (15ECTS) or BIOL3069 (15 ECTS)

Or

Two of (each 7.5 ECTS) BIOL3031, BIOL3032, BIOL3060, BIOL3066, BIOL3073 (note that BIOL3031 and BIOL3032 cannot both be taken, and BIOL3066 must be preceded by BIOL3060)

(b) Students must take) a further six modules, these will usually be from those listed in the table on page 60. Please note certain modules have prerequisites of specific year two modules which should have been taken.

Students have the option of taking a single elective module (7.5 ECTS) produced by another academic unit (not labelled as BIOL) or an external UOSM module. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the BSc Biomedical Sciences degree course, (for details see departmental web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options. The pathways within the degree programmes are merely advisory. They are to help students and tutors to plan sensible combinations of modules

## **BSc Biochemistry**

### Part 1 (FHEQ Level 4)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students will take four *core* modules (BIOL1007, BIOL1008, BIOL1011 and BIOL1013), 30 ECTS and four *compulsory* modules (BIOL1006, BIOL1020, BIOL1021 and CHEM1039), 30 ECTS. Instead of CHEM1039/BIOL1021, students wishing to study advanced chemistry (following discussion with their tutor), can take EITHER CHEM1041 and CHEM1042 (Fundamentals of Organic Chemistry I and II) AND CHEM1043 and CHEM1044 (Fundamentals of Physical Chemistry I and II) OR CHEM1041 and CHEM1042 AND CHEM1045 and CHEM1046 (Fundamentals of Inorganic Chemistry I and II)

### Part 2 (FHEQ Level 5)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

The two modules BIOL2010 and BIOL2011 are core. The three modules BIOL2012, BIOL2013 and BIOL2046 are compulsory.

In addition a further three optional modules must be taken (see tables on page 58-61), generally these are from within Biological Sciences and are described later in this handbook. Please note certain modules are prerequisites for specific year three modules. Students have the option of taking at most TWO elective modules (15 ECTS) produced by another academic unit (not labelled as BIOL). Not more than one UOSM, interdisciplinary elective module can be taken in Part 2. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the BSc Biochemistry degree course, (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

### Part 3 (FHEQ Level 6)

Students must take 60 ECTS.

(a) Students will take either one of

BIOL3034 (15 ECTS) or BIOL3058 (15 ECTS) or BIOL3059 (15 ECTS) or BIOL3069 (15 ECTS)

or

two of (each 7.5 ECTS) BIOL3031, BIOL3032, BIOL3060, BIOL3066, BIOL3073 (note that BIOL3031 and BIOL3032 cannot both be taken, and BIOL3066 must be preceded by BIOL3060)

(b) Students must take three compulsory modules (22.5 ECTS)

BIOL3013, BIOL3014 and BIOL3017

(c) A minimum of one module must be taken from BIOL3015, BIOL3018, BIOL3021, BIOL3022, BIOL3027, BIOL3052, BIOL3063 and BIOL3064. In addition a further two modules must be taken; this will generally be from those listed in the table on page 53 (Please note certain modules have prerequisites of specific year two modules which should have been taken). Students have the option of taking a single elective module (7.5 ECTS) produced by another academic unit (not labelled as BIOL) or an external UOSM module. Please note that elective modules may be subject to timetabling and other regulations limiting their availability as part of the BSc Biochemistry degree course (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

## **BSc Pharmacology**

### Part 1 (FHEQ Level 4)

Students must take 60 ECTS, (eight 7.5 ECTS modules). Students will take four *core* modules (BIOL1007, BIOL1008, BIOL1011 and BIOL1013), 30 ECTS and four *compulsory* modules (BIOL1006, BIOL1020, BIOL1021 and CHEM1039) 30 ECTS. Instead of CHEM1039/Biol1021, students wishing to study advanced chemistry (following discussion with their tutor), can take EITHER CHEM1041 and CHEM1042 (Fundamentals of Organic Chemistry I and II) AND CHEM1043 and CHEM1044 (Fundamentals of Physical Chemistry I and II) OR CHEM1041 and CHEM1042 AND CHEM1045 and CHEM1046 (Fundamentals of Inorganic Chemistry I and II)

### Part 2 (FHEQ Level 5)

Students must take 60 ECTS, (eight 7.5 ECTS modules).

The two modules BIOL2016 and BIOL2017 are core. The four modules BIOL2010, BIOL2011, BIOL2014 and BIOL2022, are compulsory. In addition you must take at least one module from BIOL2046 or BIOL2012. If you have only selected 7 modules then one further optional module must be taken, (see table on page 59), generally these are from within Biological Sciences and are described later in this handbook. Please note certain modules are prerequisites for specific year three modules. Students have the option of taking at most TWO elective modules (15 ECTS) produced by another academic unit (not labelled as BIOL). Not more than one UOSM, interdisciplinary elective module can be taken in the second year.



Please note that elective modules may be subject to timetabling and other regulations limiting their availability as part of the BSc Pharmacology degree course, (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

### Part 3 (FHEQ Level 6)

Students must take 60 ECTS.

(a) Students will take either one of

BIOL3034 (15 ECTS) or BIOL3058 (15 ECTS) or BIOL3059 (15 ECTS) or BIOL3069 (15 ECTS)

or

two of (each 7.5 ECTS) BIOL3031, BIOL3032, BIOL3060, BIOL3066, BIOL3073 (note that BIOL3031 and BIOL3032 cannot both be taken, and BIOL3066 must be preceded by BIOL3060)

(b) Students must take three compulsory modules (22.5 ECTS)

BIOL3018, BIOL3025 and BIOL3027

(c) A minimum of two modules will be taken from BIOL3014, BIOL3015, BIOL3017, BIOL3021, BIOL3022, BIOL3048 and BIOL3052. In addition a further module must be taken; this will generally be from those listed in the table on page 60. (Please note certain modules have prerequisites of specific year two modules which should have been taken.) Students have the option of taking a single elective module (7.5 ECTS) produced by another academic unit (not labelled as BIOL) or an external UOSM module. Please note that elective modules may be subject to timetabling and other regulations limiting their availability as part of the BSc Pharmacology degree course (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

## ***Master of Biomedical Sciences (MBiomed Sci)***

### Part 1 (FHEQ Level 4)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students will take four *core* modules (BIOL1007, BIOL1008, BIOL1011 and BIOL1013), 30 ECTS and three *compulsory* modules (BIOL1006, BIOL1020, and CHEM1039) 30 ECTS. Students have a choice of either BIOL1023 (which is compulsory for those lacking A level chemistry) and BIOL1021

### Part 2 (FHEQ Level 5)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

The module BIOL 2046 is compulsory. Further you must take at least one of BIOL2010/2016 and one of BIOL2011/2022.

In addition a further five optional modules must be taken, a minimum of three must be as list below (see tables on page 59), generally these are from within Biological Sciences and are described at the end in Section 1 of this handbook. Please note certain modules are prerequisites for specific year three modules. Students have the option of taking at most TWO elective modules (15 ECTS) produced by another academic unit (not labelled as BIOL). Not more than one UOSM, interdisciplinary elective module can be taken in Part 2. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the BSc Biomedical Sciences degree course, (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

### Part 3 (FHEQ Level 6)

**To enter part 3 of the MBiomed Sci degree, students must have achieved an average part mark of >60% at the end of Part 2**

Students must take 60 ECTS.

(a) Students will take either

BIOL3034 (15ECTS),

Or

BIOL3069 (15 ECTS)

(b) Students must take a further six modules, these will usually be from those listed in the table on page 54,. Please note certain modules have prerequisites of specific year two modules which should have been taken.

Students have the option of taking a single elective module (7.5 ECTS) produced by another academic unit (not labelled as BIOL) or an external UOSM module. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the Master of Biomedical Sciences degree course, (for details see departmental web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options. The pathways within the degree programmes are merely advisory. They are to help students and tutors to plan sensible combinations of modules

#### Part 4 (FHEQ Level 7)

You will take the following two compulsory modules at FHEQ level 7 (45 ECTS)

BIOL6013 Individual laboratory-based investigation (30 ECTS)

BIOL6053 Current Research (7.5 ECTS)

Furthermore, you will undertake 7.5 ECTS in either another project (BIOL6011 Advanced Literature Project or BIOL6072 Advanced Science Communication) or in two skills modules (3.75 ECTS each) chosen from BIOL6055 Computational Methods, BIOL6073 Critical Thinking in Biological Research, BIOL6075 Advanced Optical Imaging, BIOL6073 , BIOL6077 Skills in Molecular Bioscience, BIOL6082 Skills in Biomolecular NMR, or BIOL6083 Skills in Optical Spectroscopy..

In addition you will take two additional BIOL level four modules (FHEQ level 7; 15 ECTS) from a range of BIOL level 4 modules (FHEQ level 7).

BIOL6032	Molecular Recognition
BIOL6030	Molecular Cell Biology
BIOL6039	Cellular and Molecular Pathology
BIOL6027	Regulation of Gene Expression
BIOL6033	The Molecular and Structural Basis of Disease
BIOL6022	Molecular Pharmacology
BIOL6036	Neuropharmacology of CNS Disorders
BIOL6024	Selective Toxicity
BIOL6041	Biomedical technology
BIOL6071	Cancer Chromosome Biology
BIOL6034	Systems Neuroscience
BIOL6035	Cellular and Molecular Neuroscience
BIOL6023	Cell Signalling in Health and Disease
BIOL6038	Immunology
BIOL6040	Maternal, Fetal and Neonatal Physiology
BIOL6045	Neurodegenerative Disease
BIOL6042	Nutrition in Health & Disease: Part 1
BIOL6043	Nutrition in Health & Disease: Part 2
BIOL6074	Bioinformatics and Systems Biology*
BIOL6076	Biomedical Parasitology
BIOL6080	Synaptic Function in Health and Disease
BIOL6079	Glial Development and Biology
NATS6008	Biomedical Spectroscopy and Imaging

*\*Please note BIOL6055 cannot be taken by students studying BIOL6074 or who have taken BIOL3063 in Year 3.*

Overlapping Modules: In selecting modules for years 3 and 4 you must note that you may not take overlapping modules at both level 3 and level 4 (FHEQ levels 6&7 respectively).			
<i>Level 6 overlaps Level 7</i>		<i>Level 6 overlaps Level 7</i>	
BIOL3014	BIOL6030	BIOL3013	BIOL6032
BIOL3017	BIOL6033	BIOL3015	BIOL6027
BIOL3025	BIOL6036	BIOL3018	BIOL6022
BIOL3052	BIOL6041	BIOL3027	BIOL6024
BIOL3021	BIOL6035	BIOL3020	BIOL6034
BIOL3048	BIOL6045	BIOL3022	BIOL6023
BIOL3055	BIOL6043	BIOL3037	BIOL6038
		BIOL3044	BIOL6040
BIOL3064	BIOL6071	BIOL3054	BIOL6042
BIOL3043	BIOL6039	BIOL3065	BIOL6076
		BIOL3063	BIOL6074
		BIOL3060/66	BIOL6072

The pathways within the degree programmes shown in the table on page 56 are merely advisory. They are to help students and tutors to plan sensible combinations of modules

## ***Master of Biochemistry (MBiochem)***

### Part 1 (FHEQ Level 4)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students will take four *core* modules (BIOL1007, BIOL1008, BIOL1011 and BIOL1013), 30 ECTS and four *compulsory* modules (BIOL1006, BIOL1020, BIOL1021 and CHEM1039) 30 ECTS. Instead of CHEM1039/BIOL1021, students wishing to study advanced chemistry (following discussion with their tutor), can take EITHER CHEM1041 and CHEM1042 (Fundamentals of Organic Chemistry I and II) AND CHEM1043 and CHEM1044 (Fundamentals of Physical Chemistry I and II) OR CHEM1041 and CHEM1042 AND CHEM1045 and CHEM1046 (Fundamentals of Inorganic Chemistry I and II).

### Part 2 (FHEQ Level 5)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

The two modules BIOL2010 and BIOL2011 are core. The three modules BIOL2012, BIOL2013 and BIOL2046 are compulsory.

In addition a further three optional modules must be taken (see tables on page 58-61), generally these are from within Biological Sciences and are described at the end in Section 1 of this handbook. Please note certain modules are prerequisites for specific year three modules. Students have the option of taking at most TWO elective modules (15 ECTS) produced by another academic unit (not labelled as BIOL). Not more than one UOSM, interdisciplinary elective module can be taken in the second year. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the Master of Biochemistry degree course, (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

### Part 3 (FHEQ Level 6)

To enter Part 3 of the MBiochem degree, students must have achieved an average part mark of >60% at the end of Part 2.

Students must take 60 ECTS.

(a) Students will take either BIOL3034 (15ECTS) or BIOL3069 (15 ECTS)

(b) Students must take three compulsory modules (22.5 ECTS)

BIOL3013, BIOL3014 and BIOL3017

(c) A minimum of one module must be taken from, BIOL3015, BIOL3018, BIOL3021, BIOL3022, BIOL3027, BIOL3052, BIOL3063 and BIOL3064. In addition a further two modules must be taken; this will generally be from those listed in the table on page 54. (Please note certain modules have prerequisites of specific year two modules which should have been taken.) Students have the option of taking a single elective module (7.5 ECTS) produced by another academic unit (not labelled as BIOL) or an external UOSM module. Please note that elective modules may be subject to timetabling and other regulations limiting their availability as part of the Master of Biochemistry degree course (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

#### Part 4 (FHEQ Level 7)

You will take the following two compulsory modules at FHEQ level 7 (45 ECTS)

BIOL6013 Advanced Research Project (30 ECTS)

BIOL6053 Current Research (7.5 ECTS)

Furthermore, you will undertake 7.5 ECTS in either another project (BIOL6011 Advanced Literature Project or BIOL6072 Advanced Science Communication) or in two skills modules (3.75 ECTS each) chosen from BIOL6055 Computational Methods\*, BIOL6073 Critical Thinking, BIOL6075 Advanced Optical Imaging, BIOL6077 Skills in Molecular Bioscience, BIOL6082 Skills in Biomolecular NMR, BIOL6083 Skills in Optical Spectroscopy.

In addition you will take two additional BIOL level four modules (FHEQ level 7; 15 ECTS) from a range of BIOL level 4 modules (FHEQ level 7).

BIOL6032	Molecular Recognition
BIOL6030	Molecular Cell Biology
BIOL6039	Cellular and Molecular Pathology
BIOL6027	Regulation of Gene Expression
BIOL6033	The Molecular and Structural Basis of Disease
BIOL6022	Molecular Pharmacology
BIOL6036	Neuropharmacology of CNS Disorders
BIOL6024	Selective Toxicity
BIOL6041	Biomedical technology
BIOL6071	Cancer Chromosome Biology
BIOL6034	Systems Neuroscience
BIOL6035	Cellular and Molecular Neuroscience
BIOL6023	Cell Signalling in Health and Disease
BIOL6038	Immunology
BIOL6040	Maternal, Fetal and Neonatal Physiology
BIOL6045	Neurodegenerative Disease

BIOL6042	Nutrition in Health & Disease: Part 1
BIOL6043	Nutrition in Health & Disease: Part 2
BIOL6074	Bioinformatics and Systems Biology*
BIOL6076	Biomedical Parasitology
NATS6008	Biomedical Spectroscopy and Imaging

\*Please note BIOL6055 cannot be taken by students studying BIOL6074 or who have taken BIOL3063 in Year 3.

Overlapping Modules: In selecting modules for years 3 and 4 you must note that you may not take overlapping modules at both level 3 and level 4 (FHEQ levels 6&7 respectively).			
<i>Level 6 overlaps Level 7</i>		<i>Level 6 overlaps Level 7</i>	
BIOL3014	BIOL6030	BIOL3015	BIOL6027
BIOL3017	BIOL6033	BIOL3018	BIOL6022
BIOL3025	BIOL6036	BIOL3027	BIOL6024
BIOL3052	BIOL6041	BIOL3020	BIOL6034
BIOL3021	BIOL6035	BIOL3022	BIOL6023
BIOL3048	BIOL6045	BIOL3037	BIOL6038
BIOL3055	BIOL6043	BIOL3044	BIOL6040
BIOL3025	BIOL6036	BIOL3054	BIOL6042
BIOL3064	BIOL6071	BIOL3065	BIOL6076
BIOL3043	BIOL6039	BIOL3063	BIOL6074
BIOL3013	BIOL6032	BIOL3060/66	BIOL6072

The pathways within the degree programmes shown in the table on page 58-59 are merely advisory. They are to help students and tutors to plan sensible combinations of modules

## ***Master of Neuroscience (MNeuroscience)***

### Part 1 (FHEQ Level 4)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

Students will take four *core* modules (BIOL1007, BIOL1008, BIOL1011 and BIOL1013), 30 ECTS and four *compulsory* modules (BIOL1006, BIOL1020, BIOL1021 and CHEM1039) 30 ECTS

### Part 2 (FHEQ Level 5)

Students must take 60 ECTS, (eight 7.5 ECTS modules)

The BIOL2014 module is CORE and the five modules BIOL2010, BIOL2011, BIOL2016, BIOL2022 and BIOL2046 are compulsory. Students must select one from BIOL2017 (highly recommended) or BIOL2040.

In addition a further optional module must be taken, (see tables on pages 59), generally these are from within Biological Sciences and are described at the end in Section 1 of this handbook. Please note certain modules are prerequisites for specific year three modules. Students have the option of taking at most TWO elective modules (15 ECTS) produced by another academic unit (not labelled as BIOL). Not more than one UOSM, interdisciplinary elective module can be taken in the second year. Please note that elective modules maybe subject to timetabling and other regulations limiting their availability as part of the Master of Neuroscience degree course, (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

### Part 3 (FHEQ Level 5)

**To enter Part 3 of the Master of Neuroscience degree, students must have achieved an average part mark of >60% at the end of Part 2.**

Students must take 60 ECTS.

(a) Students will take either

BIOL3034 (15ECTS),

Or

BIOL 3069 (15ECTS)



(b) Students must take two compulsory modules (15 ECTS)

BIOL3021, and BIOL3025

(c) Two modules will be taken from BIOL3018, BIOL3020, BIOL3048 and one from BIOL3022, and BIOL3017. In addition a further first semester module must be taken; this will generally be from those listed in the table on page 60. (Please note certain modules have prerequisites of specific year two modules which should have been taken.) Students have the option of taking a single elective module (7.5 ECTS) produced by another academic unit (not labelled as BIOL) or an external UOSM module. Please note that elective modules may be subject to timetabling and other regulations limiting their availability as part of the Maser of Neuroscience degree course (for details see academic unit web sites). Students should discuss the choice of elective modules with their tutor before pursuing such options.

#### Part 4 (FHEQ Level 7)

Students must take 60 ECTS

You will take the following three compulsory modules at FHEQ level 7 (45 ECTS)

BIOL6084 Advanced Neuroscience (15 ECTS)

BIOL6013 Individual laboratory-based investigation (30 ECTS)

BIOL6078 Structure and Function of the Nervous System (7.5 ECTS)

In addition you will select an additional BIOL level four module worth 7.5 ECTS from those listed below

BIOL6022 Molecular Pharmacology (7.5 ECTS)

BIOL6034 Systems Neuroscience (7.5 ECTS)

BIOL6045 Neurodegenerative Disease (7.5 ECTS)

BIOL6079 Glial Development and Biology

BIOL6080 Synaptic Function in Health and Disease

Overlapping Modules: In selecting modules for years 3 and 4 you must note that you may not take overlapping modules at both level 3 and level 4 (FHEQ levels 6&7 respectively).

*Level 6 overlaps Level 7*

BIOL3018	BIOL6022
BIOL3020	BIOL6034
BIOL3048	BIOL6045

Pathway for BIOCHEMISTRY/BIOMEDICAL/PHARMACOLOGY/NEUROSCIENCE students

Year 1- modules		Degree	Biochem.	Pharma.	Biomedical Science	Neurosci.
Semester-1			BSc and Master	BSc	BSc and Master	Master
BIOL1007	Macromolecules of Life		C &P	C &P	C &P	C &P
BIOL1011	Systems Physiology		C &P	C &P	C &P	C &P
CHEM1039	Chemistry for Biological Sciences		A	A	B	C
BIOL1020	Core Skills in Life Sciences		C	C	C	C
CHEM104X	Fundamentals of Org/Phys/Inorg Chemistry I		A	A		
CHEM1012	Introduction to Chemistry				B	
Semester2						
BIOL1008	Metabolism & Metabolic Disorders		C &P	C &P	C &P	C &P
BIOL1013	Integrative Mammalian Physiology		C &P	C &P	C &P	C &P
BIOL1021	Behaviour of Biomolecules		A	A	D	C
BIOL1006	Cell Biology & Genetics		C	C	C	C
CHEM104X	Fundamentals of Org/Phys/Inorg Chemistry II		A	A		
BIOL1023	Cell and Tissue Histology				D	

C= compulsory module

C&P=Core module (must be passed)

Note BIOL1020 is taken over semesters 1 and 2

A=Biochemistry and Pharmacology students may take advanced chemistry courses in place of CHEM1039 and BIOL1021.

These are EITHER CHEM1041 and CHEM1042 AND CHEM1043 and CHEM1044

OR CHEM1041 and CHEM1042 AND CHEM1045 and CHEM1046

B= Biomedical students must take one module labelled B, CHEM1012 is compulsory for biomedical students lacking A level chemistry

D= Biomedical students must take one module labelled D, BIOL1023 is compulsory for biomedical students lacking A level chemistry

Year 2- modules		Degree	Biochem.	Pharma.	Biomedical Science					Neurosci.	
			BSc and Master	BSc	BSc and Master					Master	
Semester1		Pathway			Bioch.	Physio	Pharm.	Path	Dev Cell Biol	Neuro	
BIOL2010	Flow of Genetic Information		C &P	C	A	A	A	A	A	A	C
BIOL2014	Neuroscience		*	C		*	*	*		*	C &P
BIOL2012	Exploring Proteins: Structure &Function		C	E	*		*	*	*		
BIOL2016	Pharmacology A		*	C &P	A	A	A	A	A	A	C
BIOL2046	Quantitative Methods in Biomedical Sciences		C	E	C &P	C &P	C &P	C &P	C &P	C &P	C &P
BIOL2002	Cell Biology										
BIOL 2043	Biotechnology and the Living Cell										

Semester2											
BIOL2011	Molecular and Cellular Biochemistry		C &P	C	B	B	B	B	B	B	C
BIOL2017	Pharmacology B		*	C &P	*		*	*		*	D
BIOL2013	Bioinformatics & DNA Technology		C	*	*			*	*		
BIOL2022	Immunology, Infection & Inflammation		*	C	B	B	B	B	B	B	C &P
BIOL2045	Vertebrate Development					*		*	*	*	
BIOL 2044	Medical Microbiology						*	*			
BIOL2040	Neural Basis of Behaviour										D
BIOL2018	Adaptive Physiology		*	*		*					
BIOL2042	Biological Sciences Study Abroad										NA

Note BIOL2046 is taken over semesters 1 and 2

BIOL2012 and BIOL2017 require BIOL1021

If you wish to take BIOL2042 you must contact the coordinator.

C= compulsory module

C&P=Core module (must be passed)

\* suggested module choices for specified pathways

**Biochemistry**-must take and pass the two modules marked C&P (core) and take those marked C (compulsory). Additionally students must take a further three modules, normally selected from, but not restricted to, those marked (\*).

**Pharmacology**-must take and pass the two modules marked C&P (core) and take the four marked C (compulsory). Students must take one of the modules marked E. Additionally students must take a further module, normally selected from, but not restricted to, those marked (\*).

**Biomedical Sciences**-must take at least one from those marked A (BIOL2010 or BIOL2016) and one from those marked B (BIOL2011 or BIOL2022). Additionally students must take a further six modules, normally selected from those marked (\*)- A maximum of two elective modules can be selected from suitable courses run by academic units other than Biological Sciences however only a single UoSM module may be taken (if considering taking such an external module please discuss this option with your tutor)

**MNeurosci**- must take and pass the two modules marked C&P (core) and take the three marked C (compulsory). One of the modules marked D must be taken, BIOL2017 is highly recommended. Additionally students must take a further module in semester two.- (if considering taking a module external to Biological Sciences please discuss this option with your tutor)

Year 3- project modules	Degree	Pathway	Biochem.	Pharma.	Biomedical Science					Neurosci.
			BSc and Master	BSc	BSc and Master					Master
					Bioch.	Physio	Pharm.	Path	Dev Cell Biol	Neuro
<b>EITHER</b> -one of BIOL3034, Laboratory Research Project (15ECTS)- two semesters, or BIOL3058, Bioscience Business (15ECTS) - two semesters or BIOL3069 In-Silico Research Project (15ECTS), two semesters BIOL3059, Bioscience Education (15ECTS) - two semesters <b>OR</b> -two from Science communication (7.5 ECTS) (BIOL3060- semester 1), Literature Based Research Project (7.5 ECTS) (BIOL 3031 semester or BIOL3032 semester 2)- only one may be taken Extended Science Communication (7.5ECTS) (BIOL3066 -semester2) - to be taken with BIOL3060, Bioethics Project (7.5 ECTS) (BIOL3073- semester2)			Over semester 1 and 2 students must take 15 ECTS from these modules. Students can do only one per semester - MBiochem, MBIomed Sci and MNeurosci students must take BIOL3034 or BIOL3069							

Students must also take a further 6 modules,

**Biomedical Sciences**- A maximum of two elective modules can be selected from suitable courses run by academic units other than Biological Sciences however only a single UoSM module may be taken (if considering taking such an external module please discuss this option with you tutor)

**Biochemistry**- Three modules (C) must be taken. Of the three additional modules at least two must be from those marked X the third being a BIOL module or elective module

**Pharmacology**- Three modules (C) must be taken. Of the three additional modules at least two must be from those marked Y the third being a BIOL module or elective module

In all three programs. a single suitable elective module run by academic units other than a BIOL or a UoSM module can be selected. (if considering taking an external module please discuss this option with your tutor)

**MNeurosci**- Two modules (C) must be taken, two modules must be taken from those marked A and one from those marked B. The additional module taken in semester 1 should be a BIOL module.

Year 3- taught modules	Degree	Pathway	Biochem.	Pharma.	Biomedical Science					Neurosci.
			BSc and Master	BSc	BSc and Master					Master
					Bioch.	Physio	Pharm.	Path	Dev Cell Biol	Neuro
<b>Semester-1</b>										
BIOL3014	Molecular Cell Biology		C	Y	*	*	*	*	*	*
BIOL3027	Selective Toxicity		X	C			*	*		*
BIOL3021	Cellular & Molecular Neuroscience		X	Y	*	*	*	*	*	C
BIOL3015	Regulation of Gene Expression		X	Y	*	*			*	*
BIOL3043	Cellular and Molecular Pathology					*		*		*
BIOL3001	Current Topics in Cell Biology					*		*		*
BIOL3054	Nutrition in Health & Disease: Part 1							*		*
BIOL3037	Immunology					*		*		*
BIOL3063	Bioinformatics & Systems Biology		X		*	*		*		*
BIOL3064	Cancer and Chromosome Biology		X		*			*	*	*
BIOL3025	Neuropharmacology of CNS Disorders			C			*	*		C
BIOL3043	Cellular & Molecular Pathology				*		*	*	*	*

**Semester-2**

BIOL3017	The Molecular & Structural Basis of Disease		C	Y	*	*	*	*	*	*	B
BIOL3018	Molecular Pharmacology		X	C	*		*			*	A
BIOL3013	Molecular Recognition		C		*	*	*		*	*	
BIOL3022	Cell Signalling in Health & Disease		X	Y	*	*	*	*	*	*	B
BIOL3052	Biomedical Technology		X	Y	*		*		*		
BIOL3048	Neurodegenerative Disease			Y				*		*	A
BIOL3044	Developmental Origins of Health and Disease					*			*		
BIOL3020	Systems Neuroscience					*				*	A
BIOL3055	Nutrition in Health & Disease: Part 2										
BIOL3057	Biofilms & Microbial Communities						*	*			
BIOL3065	Biomedical Parasitology							*			

\* suggested modules suitable for specified pathways C= compulsory module for given degree  
 BIOL3012, BIOL3013, BIOL3017, BIOL3018, BIOL3021 all require BIOL1021 to have been taken

Year 4- project modules	Degree	Biochem.	Biomedical Science					Neurosci.
			Master					
			Bioch	Physio	Pharm	Path	Dev Cell Biol	
BIOL6013, Advanced Research Project (30ECTS)- two semesters,		C	C	C	C	C	C	C
BIOL6053, Current research (7.5 ECTS) - two semesters		C	C	C	C	C	C	C
BIOL6067, Advanced Neuroscience (15 ECTS)- two semesters		Not open to MBiochem/ MBiomedical Sci					C	

**MBiochem and MBiomed Sci**

A further three modules will be taken from a range of BIOL level 4 (NQF7), with 7.5ECTS taken from those marked Y or Z - NB those in italic text are half modules and if taken 2 must be c

**MNeurosci**-The module BIOL6078 (C) is compulsory- A further module from those marked A must be taken, those marked with an asterisk are highly recommended

You may not take overlapping modules at both level 3 and 4 (NQF levels 6 and 7) for a list of overlapping modules see earlier

Year 4- taught modules	Degree	Biochem.	Biomedical Science					Neurosci.
			Master					
			Biochem	Physio	Pharm	Path	Dev Cell Biol	
<b>Semester-1</b>	Pathway							
BIOL6030	Molecular Cell Biology		*				*	
BIOL6021	Current Topics in Cell Biology			*			*	
BIOL6024	Selective Toxicity		*		*	*		
BIOL6039	Cellular and Molecular Pathology			*		*		
BIOL6035	Cellular & Molecular Neuroscience					*	*	
BIOL6027	Regulation of Gene Expression		*	*				
BIOL6037	Pathophysiology of The Lung			*		*		
BIOL6042	Nutrition in Health & Disease: Part 1					*		
BIOL6036	Neuropharmacology of CNS Disorders				*	*		*
BIOL6074	Bioinformatics and Systems Biology							
BIOL6071	Cancer Chromosome Biology							
BIOL6078	Structure and Function of the Nervous System							C
BIOL6080	Synaptic function in Health and Disease							A*
BIOL6038	Immunology			*		*		
BIOL 6011	Advanced literature project- two semesters	Y	Y	Y	Y	Y	Y	Y
BIOL6072	Science Communication	Y	Y	Y	Y	Y	Y	Y
BIOL 6055	<i>Computational Methods for Biological Data Analysis</i>	Z	Z	Z	Z	Z	Z	Z
BIOL6075	<i>Biological Optical Imaging</i>	Z	Z	Z	Z	Z	Z	Z
BIOL6073	<i>Critical thinking in Biological Research</i>	Z	Z	Z	Z	Z	Z	Z
BIOL 6082	<i>Skills in Biomolecular NMR</i>	Z	Z	Z	Z	Z	Z	Z

<b>Semester-2</b>		Biochem.	Biochem	Physio	Pharm	Path	Dev Cell Biol	Neuro	Neurosci.
BIOL6033	The Molecular & Structural Basis of Disease		*			*			
BIOL6022	Molecular Pharmacology				*				A
BIOL6025	Cellular & Genetic Aspects of Animal Development			*			*		
BIOL6032	Molecular Recognition		*						
BIOL6023	Cell Signalling in Health & Disease		*	*		*	*		
BIOL6041	Biomedical Technology		*						
BIOL6045	Neurodegenerative Disease					*		*	A
BIOL6040	Developmental Origins of Health and Disease			*			*		
BIOL6034	Systems Neuroscience			*				*	A
BIOL6076	Biomedical Parasitology								
BIOL6079	Glial Development and Biology								A*
NATS6008	Biomedical Spectroscopy and Imaging								
BIOL6043	Nutrition in Health & Disease: Part 2					*			
BIOL6082	<i>Skills in Optical Spectroscopy</i>	Z	Z	Z	Z	Z	Z	Z	
BIOL 6077	<i>Skills in Molecular Bioscience</i>	Z	Z	Z	Z	Z	Z	Z	

\* suggested modules suitable for specified pathways C= compulsory module for given degree

BIOL6055, BIOL6073, BIOL6075 and BIOL6077 are all 3.75 ECTS

BIOL6055 cannot be taken by students taking BIOL6074/BIOL3063

## DESCRIPTION OF MODULES

The information given about modules has been made as accurate as possible at the time of going to press but the University reserves the right to modify or alter without prior notice any of the modules advertised; it may not be possible to offer all modules or components of a module as described in this booklet in each academic session. In the event of a module being discontinued, arrangements exist to enable students to substitute to an alternative module.

*The University is transferring from CATS (Credit Accumulation and Transfer Scheme) to ECTS (European Credit Transfer and Accumulation System). CATS can be converted to ECTS by dividing the CATS value by 2, e.g. a 15 CATS module is 7.5 ECTS. This CATS to ECTS transfer does not affect your degree in anyway.*

Full details of all the modules outlined below can be viewed via the [Biological Sciences website](#)

### FIRST YEAR MODULES (FHEQ Level 4)

BIOL1001	<a href="#">EXPERIMENTAL AND FIELD BIOLOGY</a>	Semester 2
ECTS: 7.5	Coordinator: Dr J Lock & Dr N Gostling	(Easter vacation)
CATS: 15	Prerequisites: None	

This module is restricted to students on the Biology, Zoology and Ecology & Conservation programmes for whom it is compulsory. BIOL 1001 is made up of a ~8 day residential field course normally in Andalucía, southern Spain. The field course provides an opportunity for students to get first-hand experience of sampling, handling, identifying and studying organisms in the field.

As this is a Compulsory module, the travel, equipment and accommodation are covered by Biological Sciences.

BIOL1003	<a href="#">ECOLOGY AND EVOLUTION</a>	Semester 2
ECTS: 7.5	Coordinator: Dr J Lock	
CATS: 15	Prerequisites: A-level Biology	

The aim of this module is to introduce the student to the main branches of ecology by considering the various levels at which the subject may be studied: individuals, populations, communities and ecosystems.

BIOL1004	<a href="#">PATTERNS OF LIFE</a>	Semester 1
ECTS: 7.5	Coordinator: Dr N Gostling	
CATS: 15	Prerequisites: A-level Biology or Botany or Zoology	

The aim of the module is to provide an introduction to the evolution and diversity of living organisms.

BIOL1005	<a href="#">CELL BIOLOGY &amp; GENETICS</a>	Semester 2
ECTS: 7.5	Coordinator: Dr A Marchant	
CATS: 15	Prerequisites: A-level Biology or Botany or Zoology preferred	

This module is only available for students enrolled on Biology and Zoology degree programmes and students outside of Biological Sciences - see BIOL1006 as alternative

The aim of this module is to provide an introduction to Cell Biology and Genetics from general principles to modern day applications.

BIOL1006      [CELL BIOLOGY & GENETICS](#)      Semester 2  
ECTS: 7.5      Coordinator: Dr Alan Marchant  
CATS: 15      Prerequisites: A-level Biology or Botany or Zoology preferred

This module is ONLY available for students enrolled on Biochemistry, Biomedical Sciences and Pharmacology degree programmes - see BIOL1005 as alternative.

The aim of this module is to provide an introduction to Cell Biology and Genetics from general principles to modern day applications.

BIOL1007      [MACROMOLECULES OF LIFE](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr ML Bellamy  
CATS: 15      Prerequisites: A or A/S level Chemistry or Physical Science; alternatively  
CHEM1012 must be taken.

This module is ONLY available for students enrolled on Biochemistry, Biomedical Sciences and Pharmacology degree programmes - see BIOL1010 as alternative.

The aim of this module is to describe the types of macromolecule that constitute living cells, with a particular emphasis on DNA and proteins. As an entry level module it is designed to bring forward participants to a common point where all will share the appropriate biological knowledge, terminology and understanding of these fundamental molecules.

BIOL1008      [METABOLISM & METABOLIC DISORDERS](#)      Semester 2  
ECTS: 7.5      Coordinator: Dr ML Bellamy  
CATS:15      Prerequisites: BIOL1007

The aims of the module are to provide you with an understanding of: (1) the basic metabolic pathways; (2) inborn errors of metabolism and the application of DNA technology to their study; (3) the control and integration of metabolism. This unit completes the first year course in Biochemistry, following on from the first semester module on the Macromolecules of Life (BIOL 1007).

BIOL1010      [MACROMOLECULES OF LIFE](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr ML Bellamy  
CATS: 15      Prerequisites: A or A/S level Chemistry or Physical Science; alternatively CHEM1012 must be taken.

This module is only available for students enrolled on Biology, Ecology & Conservation and Zoology degree programmes and students outside of Biological Sciences - see BIOL1007 as alternative.

The aim of this module is to describe the types of macromolecule that constitute living cells, with a particular emphasis on DNA and proteins. As an entry level module it is designed to bring forward participants to a common point where all will share the appropriate biological knowledge, terminology and understanding of these fundamental molecules.

BIOL1011      [SYSTEMS PHYSIOLOGY](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr C Clarkin  
CATS: 15      Prerequisites: None

This module is ONLY available for students enrolled on Biochemistry, Biomedical Sciences and Pharmacology degree programmes - see BIOL1012 as alternative. The aim of the module is to introduce students to basic principles and concepts of physiology and how these principles operate in mammalian systems.

BIOL1012      **SYSTEMS PHYSIOLOGY**      Semester 1  
ECTS: 7.5      Coordinator: Dr C Clarkin  
CATS: 15      Prerequisites: None

This module is only available for students enrolled on Biology, Ecology & Conservation and Zoology degree programmes and students outside the Biological Sciences - see BIOL1011 as alternative  
The aim of the module is to introduce students to basic principles and concepts of physiology and how these principles operate in mammalian systems.

BIOL1013      **INTEGRATIVE MAMMALIAN PHYSIOLOGY**      Semester 2  
ECTS: 7.5      Coordinator: Dr N Smyth  
CATS: 15      Prerequisites: None.

This module is ONLY available for students enrolled on Biological Sciences degree programmes - see BIOL1014 as alternative.

The aim of this module is to introduce the principles and the mechanisms involved in mammalian endocrinology, reproduction, and immunity as well as cell-cell communication in animal systems. The lecture programme is supported by a series of four practicals.

BIOL1014      **INTEGRATIVE MAMMALIAN PHYSIOLOGY**      Semester 2  
ECTS: 7.5      Coordinator: Dr N Smyth  
CATS: 15      Prerequisites: BIOL1011 or BIOL1012.

This module is only available for students from s outside the Biological Sciences - see BIOL1013 as alternative.

The aim of this module is to introduce the principles and some of the mechanisms involved in mammalian endocrinology ,reproduction, and immunity as well as cell-cell communication in animal systems.

BIOL1020      **CORE SKILLS IN THE LIFE SCIENCES**      Semester 1 & 2  
ECTS: 7.5      Coordinator: Dr ML Bellamy  
CATS:15      Prerequisites: None

The aim of this module is to generate an awareness of how biological research is carried out and how it culminates in the ultimate goal of research - a published scientific paper. As well as covering laboratory and computer techniques that are commonly used to generate experimental data, the module also includes hands-on experience of the analysis, visualisation and interpretation of data – skills that will be required for final year projects.

BIOL1021      **BEHAVIOUR OF BIOMOLECULES**      Semester 2  
ECTS: 7.5      Coordinator: Dr D Doyle  
CATS:15      Prerequisites: A-level chemistry

This module builds on the content of CHEM1039 to provide the student with a comprehensive understanding of the chemistry that underpins biochemical sciences and some of the techniques that are employed to study it. The module provides a solid foundation in the reaction mechanisms that are found in biological systems, the thermodynamic properties of gases and liquids, the role of metal ions in biology and an introduction to spectroscopy.

BIOL1022      **METABOLISM & METABOLIC DISORDERS**      Semester 2  
ECTS: 7.5      Coordinator: Dr ML Bellamy  
CATS:15      Prerequisites: BIOL1007 or BIOL1010

This module provides you with an understanding of: (1) the basic metabolic pathways; (2) inborn errors of metabolism and the application of DNA technology to their study; (3) the control and integration of metabolism. This module completes the first year teaching in biochemistry, following on from the first semester module on the Macromolecules of life (BIOL 1010/1007), looking at the much smaller metabolite molecules.



BIOL1023      [CELL & TISSUE HISTOLOGY](#)      Semester 2  
ECTS: 7.5      Coordinator: Dr NR Smyth & Dr MR Andrews  
CATS: 15      Prerequisites: None

This module will give an understanding of the various principles and applications of cell and tissue imaging, providing familiarity with the appearance and functional aspects of a number of different types of cells, tissues, organs and systems. This will involve examining tissue and cell structures at cellular and subcellular levels. It will introduce students to the ultrastructural features of tissues and cells. It will also introduce the microscopic changes which underlie the major forms of pathology.

## **SECOND YEAR MODULES (FHEQ Level 5)**

BIOL2001      [EVOLUTION](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr M Chapman  
CATS: 15      Prerequisites: BIOL1003 or BIOL1004

The aim of the module is to explore the main evolutionary processes, both at a phenotypic and molecular level, and the resulting evolutionary patterns, at different time scales.

BIOL2002      [CELL BIOLOGY](#)      Semester 1  
ECTS: 7.5      Coordinator: Professor MJ Terry  
CATS: 15      Prerequisites: Normally BIOL1007 or BIOL1010, and BIOL1005 or BIOL1006

The aims of this module are to promote an appreciation of the complexity of animal, plant and microbial cells. Develop an understanding of selected key cellular structures and processes. Develop an appreciation of some of the techniques used in cell biology research and provide a basis for further study of cell biology and related topics in later modules.

BIOL2004      [PURE AND APPLIED POPULATION ECOLOGY](#)      Semester 1  
ECTS: 7.5      Coordinator: Professor CP Doncaster  
CATS: 15      Prerequisites: BIOL1003

The aim of this module is to build on the basic principles of population ecology introduced in BIOL1003, to achieve a broad appreciation of current theory and practice.

BIOL2007      [PLANT DEVELOPMENT AND FUNCTION](#)      Semester 2  
ECTS: 7.5      Coordinator: Dr LE Williams  
CATS: 15      Prerequisites: None

Plants and humans share a common ancestor, which lived three billion years ago. Although plants can survive easily without us, green plants are essential to our survival and well-being. They are also the primary producers of the terrestrial ecosystem— all of the food that animals eat comes directly or indirectly from plants. They are primary converters of solar into chemical energy. They have a major influence on the global cycling of oxygen, carbon dioxide and nitrogen. Furthermore, we rely on plants for food, fibre, fuel and a whole array of chemical compounds. Therefore, an appreciation of plant development and function is central to your biological education and the study of plant biology has never been more important or more exciting. The understanding and manipulation of plant growth and development is an important and expanding science and molecular and genetic tools are enabling plant scientists to understand plants with ever-increasing levels of sophistication. In this course we demonstrate that plants are complex and responsive organisms and that the link between genetics, development, growth and function enables the plant to survive in an ever-changing environment.

BIOL2008      [QUANTITATIVE METHODS IN BIOLOGICAL AND ENVIRONMENTAL SCIENCE](#)      Semester 1  
ECTS: 7.5      Coordinator: Professor CP Doncaster  
CATS: 15      Prerequisites: BIOL1001 preferred

The aim of this module is to develop analytical skills required for the final year Project, scientific investigation in general, and your future career. The module will develop skills in computer literacy and graphical

presentation, understanding of scientific method and hypothesis testing, a few simple mathematical concepts, and basic methods of statistical analysis, including non-parametric tests, analysis of variance and data modelling.

BIOL2010      **FLOW OF GENETIC INFORMATION**      Semester 1  
ECTS: 7.5      Coordinator: Dr D Doyle  
CATS: 15      Prerequisites: BIOL1007/1010, BIOL1005/1006 and BIOL1008/1022 preferred

The module focuses on nucleic acid and protein biogenesis with particular emphasis on the flow of genetic information from DNA to RNA to proteins and key regulatory steps. Material relating to both prokaryotic and eukaryotic organisms will be covered.

BIOL2011      **MOLECULAR & CELLULAR BIOCHEMISTRY**      Semester 2  
ECTS: 7.5      Coordinator: Dr ML Bellamy and Dr P Skipp  
CATS: 15      Prerequisites: (BIOL1007 and BIOL1006) or (BIOL1010 and BIOL1005); BIOL2010 preferred

The aim of this module is to develop the basic concepts of protein structure and function within the overall context of cell function. A major theme in the module is that of cell signalling and the role of membrane proteins in signalling events.

BIOL2012      **EXPLORING PROTEINS: STRUCTURE AND FUNCTION**      Semester 1  
ECTS: 7.5      Coordinator: Dr JM Werner  
CATS: 15      Prerequisites: BIOL1007 and CHEM1039 or CHEM1041 or CHEM1042 or CHEM1043 or CHEM1044 or CHEM1045

Proteins are at the heart of almost every biological process. They fulfil an astounding array of diverse functions. Antibodies are masters in recognising other molecules and enzymes speed up reactions by many orders of magnitude; these are two of the examples of proteins that you will encounter in this module. Without understanding proteins modern biology would be inconceivable. This module aims to provide an understanding of the biology, structure and function of proteins.

BIOL2013      **BIOINFORMATICS & DNA TECHNOLOGY**      Semester 2  
ECTS: 7.5      Coordinator: TBC  
CATS: 15      Prerequisites: BIOL1007 or BIOL1010  
This module is highly recommended for BIOL3015 (Genes and Gene Expression)

The aim of this module is to provide an understanding of key genetic processes at the molecular level, and their exploitation for gene manipulation.

BIOL2014      **NEUROSCIENCE**      Semester 1  
ECTS: 7.5      Coordinators: Dr J Dillon & Dr K Deinhardt  
CATS: 15      Prerequisites: (BIOL1011 or BIOL1012) and (BIOL1013 or BIOL1014) and (BIOL1008 or BIOL1022) and (CHEM1039 or CHEM1012 or A-level Chemistry). If you do not have all the prerequisites, it may still be possible to take the module depending on availability of space; in this case contact the module coordinator.

This aim of this module is to convey the concept of neuroscience as an integrative discipline by providing insight into mammalian brain functions, from molecular and cellular aspects of synaptic signalling to higher cognitive function that regulates behaviour.

BIOL2016      **PHARMACOLOGY A**      Semester 1  
ECTS: 7.5      Coordinators: Professor V O'Connor and Dr Y Wang  
CATS: 15      Prerequisites: Any BIOL1007 - BIOL1014 module. CHEM1039 or CHEM1041 or CHEM1042 or CHEM1043 or CHEM1044 or CHEM1045

The aim of this module is to introduce pharmacology with particular emphasis on basic mechanisms of drug action.

BIOL2017      **PHARMACOLOGY B**      Semester 2  
ECTS: 7.5      Coordinator: Professor KR Fox  
CATS: 15      Prerequisites: Any BIOL1007 – BIOL1014 module. CHEM1039 or CHEM1041 or CHEM1042 or CHEM1043 or CHEM1044 or CHEM1045

The aim of this module is to provide second year students with an introduction to general pharmacology. It builds on the general principles taught in the first semester module Pharmacology A (BIOL 2016).

BIOL2018      **ADAPTIVE PHYSIOLOGY**      Semester 2  
ECTS: 7.5      Coordinator: Dr H Wijnen  
CATS: 15      Prerequisites: Any BIOL1007 – BIOL1014 module (other first year modules may be accepted by agreement with the Coordinator). CHEM1039, CHEM1012 or A-level Chemistry preferred

This module provides insight in various aspects of adaptive animal physiology including the regulation of immunity, circulation, reproduction, osmotic state, respiration, body temperature, and developmental transitions. The way that these systems have evolved adaptive differences across the animal kingdom is a topic of particular interest. A second major focus is concerned with the regulatory principles that allow individual animals to adjust their physiological systems to cope with changes in their environment.

BIOL2022      **IMMUNOLOGY, INFECTION AND INFLAMMATION**      Semester 2  
ECTS: 7.5      Coordinator: Dr J Teeling  
CATS: 15      Prerequisites: BIOL1011 and BIOL1013

The aim of this module is to give second year students an introduction to basic immune mechanisms and to illustrate those principles using examples from different diseases.

BIOL2038      **ENVIRONMENTAL MICROBIOLOGY**      Semester 2  
ECTS: 7.5      Coordinator: Dr Sandra Wilks  
CATS: 15      Prerequisites: BIOL1007/1010

This module aims to provide a comprehensive introduction to microbiology, including fundamental aspects of microbial diversity and physiology, and with a focus on selected themes that are essential features of environmental microbiology and microbial ecology. The module will be designed to include up-to-date understanding of modern research in these fields and the link between laboratory-based discovery science and contemporary applied microbiology. The structure of the laboratory sessions will provide training in the practical skills necessary for microbiology in academic research or in the workplace.

*Students cannot take BIOL2038 as well as BIOL2044*

BIOL2039      **ANIMAL BEHAVIOUR**      Semester 2  
ECTS: 7.5      Coordinators: Dr J Lock and Dr AR Kraaijeveld  
CATS: 15      Prerequisites: A-level Biology or Zoology; BIOL2008 strongly preferred

The aims of the module are to provide an introduction to the study of animal behaviour, taking an integrative approach that addresses animal behaviour from ethological, ecological and evolutionary angles, and to review the basic concepts of behaviour as a science.

BIOL2040      **NEURAL BASIS OF BEHAVIOUR**      Semester 2  
ECTS: 7.5      Coordinator: Dr H Wijnen  
CATS: 15      Prerequisites: A-level Biology or Zoology; BIOL2008 strongly preferred. CHEM1039, CHEM1012 or A-level Chemistry preferred

The aim of this module is to elucidate some of the principles by which the nervous system generates and controls the behaviour of animals.

BIOL2041      [NEW FOREST FIELD COURSE](#)      Semester 2  
ECTS: 7.5      Coordinators: Dr J Lock  
CATS: 15      Prerequisites: BIOL1001, BIOL1003 and BIOL1004

This module will provide you with valuable ecological surveying and species identification techniques within the context of conservation priorities for a local and unique national park, the New Forest, through a series of day trips in order to complete a research project. You will be able to build on the taxonomic skills gained in BIOL1001. You will focus on UK wildlife and identify to species level, a valuable employability skill, particularly if you are interested in pursuing a career in ecological consultancy.

BIOL2042      [BIOLOGICAL SCIENCES STUDY ABROAD](#)      Semester 2  
ECTS: 30      Coordinator: Dr HV Siddle  
CATS: 60      Prerequisites: overall average module mark of >60%

The module is studied abroad in the second semester of part two. The marks for the courses taken at the overseas institution will be used to produce a single overall module mark for 30ECTS. Marks will be translated according to the university policy. Details on which universities are available to students on the different degree programmes are obtainable from the coordinator. Choice of overseas courses is to be decided in consultation with the module coordinator and programme leads to ensure that all learning outcomes and prerequisite requirements are met when the student returns to study at UoS.

BIOL2043      [BIOTECHNOLOGY AND THE LIVING CELL](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr A Marchant  
CATS: 15      Prerequisites:

This module will enable students to gain an understanding about the development and application of cell biotechnology in the modern world. Topics to be covered will span the range of cell biotechnology in microbiological, plant and animal systems.

BIOL2044      [MEDICAL MICROBIOLOGY](#)      Semester 2  
ECTS: 7.5      Coordinator: Dr Sandra Wilks  
CATS: 15      Prerequisites: BIOL1007/1010

This module aims to provide a comprehensive introduction to microbiology, including fundamental aspects of microbial diversity and physiology, and with a focus on selected themes that are essential features of medical microbiology. The module will be designed to include up-to-date understanding of modern research in these fields and the link between laboratory-based discovery science and contemporary medical microbiology. The structure of the laboratory sessions will provide training in the practical skills necessary for microbiology in academic research or in the workplace.

*Students cannot take BIOL2038 as well as BIOL2044*

BIOL2045      [VERTEBRATE DEVELOPMENT](#)      Semester 2  
ECTS: 7.5      Coordinators: Dr Salah Elias, Dr Neil Smyth, Dr Neil Gostling  
CATS: 15      Prerequisites: BIOL1005 or BIOL1011 preferred. CHEM1039, CHEM1012 or A-level Chemistry preferred

The aim of this module is to develop the basic concepts of human and other vertebrate animal development. Students will come to understand the main mechanisms behind both animal development and organised cellular differentiation and how these processes are studied. They will also become aware of how various changes in developmental pathways can play a role in human and animal health

BIOL2046      **QUANTITATIVE METHODS IN BIOMEDICAL SCIENCES**      Semesters 1 & 2  
ECTS: 7.5      Coordinator: Dr N Smyth  
CATS: 15      Prerequisites: BIOL1020 preferred

The aim of this module is to develop analytical skills required for the final year Project, scientific investigation in general, and your future career. The module will develop skills in computer literacy and graphical presentation, understanding of scientific method and hypothesis testing, a few simple mathematical concepts, and basic methods of statistical analysis, including non-parametric tests, analysis of variance and data modelling.

BIOL2047      **ANIMAL CONSERVATION**      Semester 2  
ECTS: 7.5      Coordinators: Dr K Peh  
CATS: 15      Prerequisites: BIOL1003 and BIOL2004

'We are now losing our biodiversity on a massive scale worldwide – a current extinction crisis fuelled by human-induced threats. There is an urgent need to educate our next generation conservation scientists and practitioners so that they are well-equipped to preserve our wildlife, and in a better position to protect our natural resources. This module aims to provide an overview that integrates the process, theory, and practice of animal conservation; and provides cutting-edge conservation science to undergraduates with the principle aim of disseminating the latest conservation knowledge.

### THIRD YEAR MODULES (FHEQ Level 6)

BIOL3001      [CURRENT TOPICS IN CELL & DEVELOPMENTAL BIOLOGY](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr M Przewloka  
CATS: 15      Prerequisites: BIOL2002 or BIOL2010 preferred

The aim of this module is to provide a detailed and up-to-date study of a small number of topics in modern cell biology.

BIOL3003      [PLANT CELL BIOLOGY](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr LE Williams  
CATS: 15      Prerequisites: BIOL2007 preferred but not essential

This module explores current topics in plant cell biology. It provides an understanding of the unique features of plant cells and of the cellular mechanisms that allow plants to interact with their environment. Responses at the cellular level to important environmental problems encountered worldwide are discussed and the mechanisms plants use to adapt and survive are covered. The application of modern techniques in cell biology is included and so this module is also of value to those with a broad interest in cell biology. The topics include ones in which members of the course team are actively engaged in research and therefore the most up-to-date information is provided. Areas covered include: the diversity of plastid function; chloroplast function and assembly; the vacuole as a multifunctional compartment; membrane transport; calcium and phytochrome signalling; stress responses covering salt, ozone, and heavy metals.

BIOL3009      [APPLIED ECOLOGY](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr K Peh  
CATS: 15      Prerequisites: None, but BIOL2004 preferred

The aim of this module is to extend the knowledge of ecology and population biology taught in first, second and third year modules to cover the application of these disciplines to solving ecological problems, such as managing pests or genetically modified organisms and the problems associated with land use change. To provide a coherent summary of the main methods used to manage pest populations. To examine the ecological impacts of land use change and its mitigation. To provide examples of the applications of theoretical ecology to topical ecological issues. To provide a summary of factors influencing how the land is managed, especially in terms of food production.

BIOL3010      [TOPICS IN ECOLOGY AND EVOLUTION](#)      Semester 2  
ECTS: 7.5      Coordinator: Dr AR Kraaijeveld  
CATS: 15      Prerequisites: BIOL2001 (must be *passed*), BIOL2004

The aims of this module are to extend the knowledge of ecological and evolutionary processes taught in first and second year modules provide an in-depth account of the research areas of interest of Biological Sciences staff working in ecology and evolution.

BIOL3013      **MOLECULAR RECOGNITION**      Semester 2  
ECTS: 7.5      Coordinators: Dr I Tews  
CATS: 15      Prerequisites: BIOL2010/BIOL2011 or BIOL2012

The aim of this module is to illustrate the nature of interactions between macromolecules important in biological systems.

BIOL3014      **MOLECULAR CELL BIOLOGY**      Semester 1  
ECTS: 7.5      Coordinator: Dr I Tews  
CATS: 15      Prerequisites: BIOL2010/BIOL2011

The aim of this module is to provide an understanding of the ways in which proteins are targeted to their appropriate cellular locations within eukaryotic cells following synthesis; the mechanisms involved in targeting proteins presented from the external environment and the role played by tyrosine kinase receptor cascades and oncogenes in normal and aberrant cell signaling.

BIOL3015      **REGULATION OF GENE EXPRESSION**      Semester 1  
ECTS: 7.5      Coordinator: Professor KA Lillycrop  
CATS: 15      Prerequisites: BIOL1005/ BIOL2010

The aim of this module is to provide an understanding of i) gene regulation in eukaryotic organisms, ii) how the deregulation of gene expression leads to human genetic disorders such as cancer, iii) the molecular basis of inherited disease.

BIOL3017      **THE MOLECULAR AND STRUCTURAL BASIS OF DISEASE**      Semester 2  
ECTS: 7.5      Coordinator: Dr PTF Williamson  
CATS: 15      Prerequisites: BIOL2010/BIOL2011

This module is designed for the biomedical scientists and biochemists to explore the molecular aspects of human disease. The module will provide an understanding of how molecular studies can be applied to biomedical research in a range of areas including the study of: therapeutic protein production, virology, microbiology, amyloid disease and protein kinases.

BIOL3018      **MOLECULAR PHARMACOLOGY**      Semester 2  
ECTS: 7.5      Coordinator: Dr D Rusling  
CATS: 15      Prerequisites: BIOL2016 or BIOL2017

The aim of this module is to provide third year students with an introduction to the molecular basis of receptor pharmacology.

BIOL3020      **SYSTEMS NEUROSCIENCE**      Semester 2  
ECTS: 7.5      Coordinator: Dr H Wijnen  
CATS: 15      Prerequisites: BIOL2014 (BIOL3021 is encouraged)

To expose students to research level studies into the function/dysfunction of the central nervous system. The course will describe neural cell populations and CNS development, followed by the mechanisms of learning & memory and analyses of neural circuits controlling behaviour.

BIOL3021      **CELLULAR AND MOLECULAR NEUROSCIENCE**      Semester 1  
ECTS: 7.5      Coordinators: Professor V O'Connor  
CATS: 15      Prerequisites: BIOL2014

The aim of this module is to provide an understanding of the function of, and interactions between, membrane signalling proteins that produce the overt electrophysiological behaviour of neurones.

BIOL3022      [CELL SIGNALLING IN HEALTH AND DISEASE](#)      Semester 2  
ECTS: 7.5      Coordinator: Dr N Divecha  
CATS: 15      Prerequisites: BIOL2014, BIOL2010 and BIOL2011

The aim of this module is to give students a thorough background in the signalling mechanisms by which mammalian cells are regulated.

BIOL3025      [NEUROPHARMACOLOGY OF CNS DISORDERS](#)      Semester 1  
ECTS: 7.5      Coordinator: Professor LM Holden-Dye  
CATS: 15      Prerequisite: BIOL2016 or BIOL2017

The aim of this module is to describe basic concepts in neuropharmacology e.g. on the localisation and putative function of neurotransmitter pathways in the brain and to use this knowledge to consider different theories relating to the biochemical basis of action of psychotomimetic and psychotropic drugs. This is covered in the context of major psychiatric conditions including schizophrenia, depression and drug addiction.

BIOL3027      [SELECTIVE TOXICITY](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr D Rusling  
CATS: 15      Prerequisites: BIOL2017 (preferably BIOL2016 as well)

The aim of this module is to provide third year students with an introduction to the principles of selective toxicity, in which chemotherapeutic agents are used to inhibit the growth of an invading species by selective targeting pathways or processes in the pathogen.

BIOL3031      [LITERATURE-BASED RESEARCH PROJECT](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr ML Bellamy  
CATS: 15      Co-requisites: BIOL3062 or BIOL3060 or BIOL3073

The aim of this module is to provide an opportunity for study in depth of a topic chosen by the student after consultation with the coordinators and an appropriate supervisor.

BIOL3032      [LITERATURE-BASED RESEARCH PROJECT](#)      Semester 2  
ECTS: 7.5      Coordinator: Dr ML Bellamy  
CATS: 15      Co-requisites: BIOL3062 or BIOL3060

The aim of this module is to provide an opportunity for study in depth of a topic chosen by the student after consultation with the coordinators and an appropriate supervisor.

BIOL3034      [LABORATORY RESEARCH PROJECT](#)      Semesters 1 & 2  
ECTS: 7.5      Coordinator: Dr J Dillon  
CATS: 15      BIOL2008 or BIOL2046 must be *passed*

The aim of this module is to allow students to carry out an extensive laboratory-based, or data-based project on a special topic related to his/her main area of study, and to complete a literature survey on a topic related to this area of research.

BIOL3048      [NEURODEGENERATIVE DISEASES](#)      Semester 2  
ECTS: 7.5      Coordinator: Dr A Mudher  
CATS: 15

The aims of this module are to explore the various mechanisms that neurones employ to execute cell death processes in both normal and abnormal conditions; and to improve your understanding of the pathogenic mechanisms that cause cell death in several neurodegenerative diseases.

BIOL3051      [APPLIED PLANT BIOLOGY](#)      Semester 2  
ECTS: 7.5      Coordinator: Dr A Marchant  
CATS: 15      Prerequisites: BIOL2007 (preferred but not essential)



The aim of the course is to provide a broad introduction to the applied use of plants in the modern world, highlighting the benefits of using cutting edge technologies in combatting some of the challenges faced by society.

BIOL3052      **BIOMEDICAL TECHNOLOGY**      Semester 2  
ECTS: 7.5      Coordinator: Dr C Birts  
CATS: 15

This module is designed to illustrate the ways in which the theoretical principles of biochemistry, cellular and molecular biology presented in previous modules can be applied to yield important commercial or therapeutic products or processes.

BIOL3053      **BIODIVERSITY AND CONSERVATION**      Semester 1  
ECTS: 7.5      Coordinator: Dr RJ Morris  
CATS: 15      Prerequisites: BIOL1003, BIOL2004 and BIOL2008

This module concerns global biodiversity, what we understand by it and why it is in crisis, and current efforts to conserve and manage it.

BIOL3056      **GLOBAL CHANGE BIOLOGY**      Semester 2  
ECTS: 7.5      Coordinator: Dr J Godbold  
CATS: 15      Prerequisites: BIOL2007 preferred but not essential

This module aims to provide an understanding of i) current global change caused by human activities, ii) ways in which biota respond and adapt to global change, and iii) approaches available for mitigating and managing impacts of global change.

BIOL 3057      **BIOFILMS AND MICROBIAL COMMUNITIES**      Semester 2  
ECTS: 7.5      Coordinator: Dr S Wilks  
CATS: 15      Prerequisites: BIOL2038 preferred, but not essential

This module aims to provide an understanding of bacterial biofilms and the environmental, industrial and health care problems related to complex microbial consortia of societal importance. Students will learn to describe and explain the basis for biofilm development in nature and in chronic infections, as well as to understand and interpret the outputs of modern techniques in microbial biofilm research.

BIOL 3063      **BIOINFORMATICS & SYSTEMS BIOLOGY**      Semester 1  
ECTS: 7.5      Coordinator: Dr R Ewing  
CATS: 15      Prerequisites: BIOL2012 and BIOL2013 preferred, but not essential

The aims of this module are to introduce students to the latest genomic, transcriptomic and proteomic technologies; illustrate the applications and limitations of these approaches; and provide students with some practical bioinformatics skills to enable them to process, analyse, and interpret the resulting data.

BIOL 3064      **CANCER & CHROMOSOME BIOLOGY**      Semester 1  
ECTS: 7.5      Coordinator: Dr D Tumbarello  
CATS: 15      Prerequisites: BIOL1005 or BIOL1006 and BIOL1007

The aim of this module is to provide students with a research level understanding of various topics in cancer biology associated with carcinogenesis, tumour progression, and metastasis. This will require understanding the genetic drivers of cancer development and the mechanisms of progression both at the molecular and cellular level.

BIOL 3065      **BIOMEDICAL PARASITOLOGY**      Semester 2  
ECTS: 7.5      Coordinator: Dr N Smyth  
CATS: 15      Prerequisites: BIOL 2022 - for Biology / Zoology students: the Parasitology section of BIOL 2022 will be offered as freestanding lectures

The aim of this module is to introduce third year students to the main clinically relevant parasite classes, it will consider their lifecycles, the human/veterinary pathology caused and the treatment methods both of the primary and where applicable intermediate hosts and environment. It will give an understanding of vector borne disease. The module will consider the interaction and evasion methods used by parasites in respect to the immune system and chemical control. It will consider the evidence of possible benefits gained by parasitism. Finally it will demonstrate examples of host: parasite coevolution and consider the likely changes in parasite risk in the UK in the light of environmental change.

BIOL3067      **EVOLUTION AND DEVELOPMENT**  
ECTS: 7.5      Coordinator: Dr N Gostling      Semester 1  
CATS: 15      Prerequisites: Either BIOL1004 or 1003, BIOL2001

This module will deliver a comprehensive analysis of the topics associated with evolutionary developmental biology. This will involve exploring the theory of evolution; embryology and molecular pathways of development; what the fossil record tells us about development and the timings of emergence of species, body plans and morphological characters; how this can be used to produce trees elucidating evolutionary relationships. This module will link traditional 19th century topics of evolutionary theory and embryology with 21st century insights from phylogenetics, developmental and molecular biology and palaeontology.

BIOL3068      **FLUXES, CYCLES AND MICROBIAL COMMUNITIES**  
ECTS: 7.5      Coordinator: Dr M Dumont      Semester 2  
CATS: 15 Prerequisite: BIOL2038 preferred but not essential

Microorganisms are key players in all the major biogeochemical cycles on Earth. Microbial Biogeochemistry explores the microbial influence on the biological, chemical, and geological processes that shape natural environments on our planet. This is currently an area of intense research activity given the extent to which humans have been modifying the natural world, which have potential consequences for ecosystems, the biosphere and Earth's climate. Microorganisms have a critical role in these processes as major controllers of elemental fluxes, ecosystem functioning and as producers and consumers of major greenhouse gases. This module will introduce students to the diversity of microbial life that has been shaping our biosphere since the early beginnings of life, and that continues to shape our biosphere in the Anthropocene.

BIOL3070      **TROPICAL ECOLOGY FIELD COURSE**  
ECTS: 7.5      Coordinator: Dr J Snaddon      Semester 2  
CATS: 15      Prerequisite: BIOL1001, BIOL1003, BIOL2008

This module will provide first-hand experience of ecological research in a tropical environment and give you a foundation in a range of topics including biodiversity, community ecology, ecosystem processes and conservation.

Tropical forests are some of the most diverse ecosystems on Earth and play critical roles in global biogeochemical cycles and climate regulation. However they are undergoing rapid transformation through deforestation and land-use change. Alongside developing research skills this module will provide an opportunity for students to develop an understanding of how these ecosystems function and an appreciation of conservation and management of tropical forests.

BIOL3072      **BEHAVIOURAL ECOLOGY**  
ECTS: 7.5      Coordinator: Dr J Lock & Dr A R Kraaijeveld      Semester 1  
CATS: 15      Prerequisite: BIOL2039

Behavioural ecology considers the evolutionary pressures that shape behaviour. This module will explore animal behaviours from evolutionary biology and population ecological perspectives. Each week, lectures will consider a different behavioural ecology topic, to be discussed in more detail in accompanying weekly seminars. Throughout the module, students will keep an individual notebook/log/journal, sharing their notes and reflections with other students during seminars as part of group discussions to expand their personal learning network. Each student will write a research proposal for a behavioural ecology research project of



BIOL3069      [IN-SILICO RESEARCH PROJECT](#)      Semesters 1 and 2  
ECTS: 15      Coordinator: Dr R Ewing  
CATS: 30      Prerequisite: Either BIOL2008 or BIOL2013  
Co requisite: BIOL3063 preferred but not essential, if agreed by project supervisor

Each student undertakes an investigation which includes both practical and theoretical components. The theory component will consist of a critical review of the literature relating to the proposed experimental/analytical component of the project. The topic of the work is related to the appropriate degree programme. Each student is assigned to an appropriate supervisor who will advise on and direct the project and the preparation of a written report. The aim of this module is to allow students to carry out an extensive biological data-based project on a special topic related to his/her main area of study, and to complete a literature survey on a topic related to this area of research

BIOL3071      [EXTERNAL RESEARCH PROJECT](#)      Semesters 1 and 2  
ECTS:15      Coordinator: Dr N Gostling  
CATS: 30      Prerequisite for Biol/Ecol&Cons/Zool students: BIOL2008 (must be *passed*)

The aim of this module is to allow students to carry out a research at a location other than the University of Southampton project on a special topic related to his/her main area of study, and to complete a literature survey on a topic related to this area of research.

BIOL3073      [BIOETHICS PROJECT](#)      Semester 2  
ECTS: 7.5      Coordinator: Prof K Fox  
CATS: 15

While scientific discovery may be ethically neutral, its application can raise profound ethical questions, in which there is often disagreement and misunderstanding in both the scientific community and the general public. It is therefore important to understand the basic science that lies behind the discoveries, to recognise the potential ethical dilemmas these produce, and to appreciate the reasons why people come to different ethical conclusions. This module provides opportunities to explore some bioethical issues and to develop skills in presenting these to both academic and lay audiences.

NATS3006      [DRUGS OF THE FUTURE: DESIGNING A MAGIC BULLET](#)      Semester 2  
ECTS: 7.5      Coordinator: Dr Ivo Tews  
CATS: 15      Prerequisites: BIOL2012 and BIOL2016 or BIOL2017

The rational design of protein inhibitors brings together knowledge of physical chemistry, synthetic organic chemistry, molecular modelling, structural biology, enzymology/protein biochemistry and pharmacology. The overall aim of this module is to equip our students with the basic factual knowledge that, together with knowledge acquisition skills and critical thinking skills, will enable them to understand the processes that are involved in the rational design of protein inhibitors.

***The following third year modules are run by Biological Sciences but taught by Faculty of Medicine staff and include students on the MMedSci degree programme.***

BIOL3037      [IMMUNOLOGY](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr S Sahota (S.S.Sahota@soton.ac.uk)  
CATS: 15

The aims of the module are to provide an understanding of core immunology and the immunological basis of some common diseases.

BIOL3043      [CELLULAR AND MOLECULAR PATHOLOGY](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr J Blaydes ([jpb1@soton.ac.uk](mailto:jpb1@soton.ac.uk))  
CATS: 15      Prerequisites: BIOL2002 or BIOL2003 or BIOL2014

The aims of this module are to study recent advances in selected areas of biomedical science and to gain insight into the use of basic science in understanding the cell and molecular biology of specific disease processes.

BIOL3044      **DEVELOPMENTAL ORIGINS OF HEALTH AND DISEASE**      Semester 2  
ECTS: 7.5      Coordinator: Dr LR Green ([L.R.Green@soton.ac.uk](mailto:L.R.Green@soton.ac.uk))  
CATS: 15      Prerequisites: BIOL2003 and/or BIOL2018

The aim of this module is to explore the long-lasting effects that development during the 1000 days after conception has on the way our adult bodies work. In mice-to-men, discover the latest physiological advances about the biological pathways by which diet, environmental toxicants, and health and disease status of the mother and father affect health over the entire life-course, and the risk of later ill-health.

BIOL3054      **NUTRITION IN HEALTH & DISEASE: PART 1**      Semester 1  
ECTS: 7.5      Coordinator: Professor PC Calder ([pcc@soton.ac.uk](mailto:pcc@soton.ac.uk))  
CATS: 15      Prerequisites: Any BIOL2010 – 2013 module

The aim of this module is to examine the causative, protective or therapeutic roles of nutrition with regard to human disease.

BIOL3055      **NUTRITION IN HEALTH & DISEASE: PART 2**      Semester 2  
ECTS: 7.5      Coordinator: Dr GC Burdge ([g.c.burdge@soton.ac.uk](mailto:g.c.burdge@soton.ac.uk))  
CATS: 15      Prerequisites: Any BIOL2010 – BIOL2013 module

The aim of this module is to study specific nutrients which are considered to be of importance to human health and are currently the focus of significant interest including developing new recommendations for intake or means of assuring adequate status. Each nutrient will be studied in terms of its molecular, cellular and whole body effects. The module will focus on specific vitamins and trace elements, omega-3 fatty acids and adverse reactions to food.

## FOURTH YEAR MODULES (FHEQ Level 7)

### MAIN PROJECT MODULES

BIOL6013      [ADVANCED RESEARCH PROJECT](#) (LAB AND DATA)      Semesters 1 and 2  
ECTS: 30      Coordinator: Dr M Coldwell & Dr M Vargas-Caballero  
CATS: 60

The aim of this module is to allow students to carry out an extensive laboratory- or data-based project on a specific topic related to his/her main area of study. The topic of this project must be substantially different from that undertaken in BIOL3034 or BIOL3069, and should ideally be with a different supervisor.

BIOL6069      [ADVANCED FIELD RESEARCH PROJECT](#)      Semesters 1 and 2  
ECTS: 30      Coordinator: Dr AR Kraaijeveld  
CATS: 60

The aim of this module is to allow students to carry out an extensive field-based research project on a specific topic related to his/her main area of study. Each student selects an experimental investigation. The project is related to the major subject area of the student in the fourth year. Each student is assigned to an appropriate supervisor who will advise on and direct the project and the preparation of a written report. The supervisor for this project must be different from a student's supervisor for BIOL3061, or BIOL3062.

### OTHER PROJECT/SKILLS BASED MODULES

BIOL6011      [ADVANCED LIBRARY PROJECT](#)      Semester 1 and 2  
ECTS: 7.5      Coordinator: Dr ML Bellamy  
CATS: 15      Prerequisites: Any 3<sup>rd</sup> year project module preferred

The aim of this module is to provide an opportunity for a critical study in depth of a topic chosen by the student after consultation with the coordinator and an appropriate supervisor.

BIOL6052      [ADVANCED QUANTITATIVE METHODS](#)      Semester 1  
ECTS: 7.5      Coordinator: Dr T Ezard  
CATS: 15      Prerequisite: BIOL2008 or BIOL2046

The aims of the module are to review core principles of experimental design that underpin all quantitative methods; to develop and apply statistical models for complex field datasets using the freeware environment R; to diagnose and treat the causes and consequences of violating statistical assumptions including imbalance and covariation in multifactorial and multivariate analysis of ecological data.

BIOL6053      [CURRENT RESEARCH](#)      Semesters 1 and 2  
ECTS: 7.5      Coordinator: Dr N Smyth/ Dr A Marchant/ Dr MJ Coldwell  
CATS: 15

The aim of this module is to provide students with the opportunity to learn about current research in the format used by academics: seminars/conferences and discussions. Students will be expected to attend and engage in a series of scientific seminars by speakers external and internal to the University of Southampton. Students will be exposed to current research, much of which may not yet be published and therefore open to discussion. In the context of this module, students will also develop the skills required for summarising research in written form to a variety of target audiences, from scientific peers to the general public.

BIOL6055      **COMPUTATIONAL METHODS FOR BIOLOGICAL DATA ANALYSIS**      Semester 1  
ECTS: 3.75      Coordinator: Dr R Ewing  
CATS: 7.5      Cannot be taken if BIOL3063 already taken, or with BIOL6074

The aims of this module are to introduce students to the UNIX/LINUX environment and demonstrate command line and scripting tools for data manipulation, to describe different file formats, to illustrate and explore computational methods for accomplishing data analysis tasks, basic statistics and graphing of results and to demonstrate the value of data analysis pipelines that can automate analysis from raw data to publication-ready graphical output.

BIOL6072      **SCIENCE COMMUNICATION**      Semester 1  
ECTS: 7.5      Coordinator: Dr Declan Doyle  
CATS: 15      Preferable: Core and/or compulsory year 2 modules, relevant to either Biomedical Sciences/  
Biochemistry/Pharmacology, or Biology/Zoology  
Cannot be taken if BIOL3060 or BIOL3066 already taken

Science Communication involves the dissemination of science to a lay audience. This is essential as an aid for governmental and industrial policy making. It is needed to counteract any misperceptions about science and is becoming an obligation for publically funded work. This module provides an introduction to the methods and resources a student will need in order to play an active role in communicating science.

BIOL6073      **CRITICAL THINKING IN BIOLOGICAL RESEARCH**      Semester 1  
ECTS: 3.75      Coordinator: Dr AR Kraaijeveld  
CATS: 7

The focus of this module is to stimulate and enhance the ability of students to think critically about published scientific research. This is done through a combination of introductory lectures, workshops, and student-led presentations and discussions.

BIOL6075      **BIOLOGICAL OPTICAL IMAGING**      Semester 1  
ECTS: 3.75      Coordinator: Dr Mark Willett & Dr S Elias  
CATS: 7.5      Prerequisites: None

This module will use a largely practical approach to develop the basic skills required for biological optical imaging. The module will examine measurement fundamentals, optical theory and operation of modern light microscopes and the chemistry and handling involved in the preparation of specimens. In addition this module will address the analysis, interpretation and presentation of data as required in a research environment.

BIOL6077      **SKILLS IN MOLECULAR BIOSCIENCE**      Semester 2  
ECTS: 3.75      Coordinator: Dr M Coldwell  
CATS: 7.5      Prerequisites: (BIOL2010 and BIOL2011) or (BIOL2010 and BIOL2013) or (BIOL2011 and  
BIOL2013)

This module will give students with an interest in molecular biosciences an overview of various key aspects of gene manipulation and analysis. It will provide a grounding in key skills that will either directly help towards research projects or prepare students for techniques they are likely to encounter in longer-term research careers.

NATS6008      **BIOMEDICAL SPECTROSCOPY AND IMAGING**      Semester 2  
ECTS: 7.5      Coordinator: Dr Sumeet Mahajan  
CATS: 15      Prerequisites: None

Biomedical research, applications and many clinical tools are underpinned by modern spectroscopic and imaging techniques. These serve as valuable analytical tools for routine monitoring, diagnosis and prognosis as well as aids to therapeutic intervention such as surgery, transplants, and regular treatments. This module will introduce the key physical principles of different techniques used for spectroscopic and imaging measurements. State-of-the-art developments and applications in spectroscopy, microscopy, super-resolution and large-scale (whole body) imaging will be discussed, including biomedical imaging modalities applied in daily clinical practice.





BIOL6024      **SELECTIVE TOXICITY**      Semester 1  
ECTS: 7.5      Coordinator: Dr David Rusling  
CATS: 15      Prerequisites: BIOL2017 (preferably BIOL2016 as well)  
[Cannot take if BIOL3027 already taken]

The aim of this module is to provide students with more in depth knowledge and understanding to the principles of selective toxicity, in which chemotherapeutic agents are used to inhibit the growth of an invading species by selective targeting pathways or processes in the pathogen.

BIOL6027      **REGULATION OF GENE EXPRESSION**      Semester 1  
ECTS: 7.5      Coordinator: Professor KA Lillycrop  
CATS: 15      [Cannot take if BIOL3015 already taken]

The aim of this module is to provide an understanding of gene regulation at the transcriptional and post-transcriptional levels in eukaryotic organisms, and how the deregulation of such processes can lead to human disease.

BIOL6028      **GLOBAL CHANGE BIOLOGY**      Semester 2  
ECTS: 7.5      Coordinator: Dr J Godbold  
CATS: 15      Prerequisites: BIOL2007 preferred but not essential.  
[Cannot be taken if BIOL3056 already taken]

To provide: a) An understanding of current global change, in relation to anthropogenic influences b) To quantify the impacts of change, particularly atmospheric CO<sub>2</sub>, drought and temperature changes on biological systems c) To provide examples from molecular through to ecosystem on the likely impacts on change, using both animals and plants for case studies d) To provide an overview of the ecosystem services concept and the methodological approaches to quantifying and mapping ecosystem services.

BIOL6029      **TOPICS IN ECOLOGY & EVOLUTION**      Semester 2  
ECTS: 7.5      Coordinator: Dr AR Kraaijeveld  
CATS: 15      Prerequisites: BIOL2001 (must be passed), BIOL2004  
[Cannot be taken if BIOL3010 already taken]

The aims of this module are to extend the knowledge of ecological and evolutionary processes taught in first and second year modules provide an in-depth account of the research areas of interest of Biological Sciences staff working in ecology and evolution

BIOL6030      **MOLECULAR CELL BIOLOGY**      Semester 1  
ECTS: 7.5      Coordinator: Dr I Tews  
CATS: 15      Prerequisites: BIOL2010 and BIOL2011  
[Cannot take if BIOL3014 already taken]

The aim of this module is to provide an understanding of the ways in which proteins are targeted to their appropriate cellular locations within eukaryotic cells following synthesis; the mechanisms involved in targeting proteins presented from the external environment and the role played by tyrosine kinase receptor cascades and oncogenes in normal and aberrant cell signaling.

BIOL6032      **MOLECULAR RECOGNITION**      Semester 2  
ECTS: 7.5      Coordinators: Dr I Tews  
CATS: 15      Prerequisites: BIOL2010/BIOL2011 or BIOL2012  
[Cannot be taken if BIOL3013 already taken]

The aim of this module is to illustrate the nature of interactions between macromolecules important in biological systems.

BIOL6033      **MOLECULAR AND STRUCTURAL BASIS OF DISEASE**      Semester 2  
ECTS: 7.5      Coordinators: Dr PTF Williamson  
CATS: 15      Prerequisites: BIOL2010/BIOL2011 or MEDI2013  
[Cannot take if BIOL3017 already taken]

The aim of this module is to illustrate the nature of interactions between macromolecules important in biological systems.

BIOL6034      **SYSTEMS NEUROSCIENCE**      Semester 2  
ECTS: 7.5      Coordinator: Professor JE Chad  
CATS: 15      Prerequisites: BIOL2014 (BIOL3021 is encouraged)  
[Cannot take if BIOL3020 already taken]

To expose students to research level studies into the function/dysfunction of the central nervous system. The course will describe neural cell populations and CNS development, followed by the mechanisms of learning & memory and analyses of neural circuits controlling behaviour.

BIOL6035      **CELLULAR AND MOLECULAR NEUROSCIENCE**      Semester 1  
ECTS: 7.5      Coordinators: Professor JE Chad/Professor V O'Connor  
CATS: 15      Prerequisites: BIOL2014  
[Cannot take if BIOL3021 already taken]

The aim of this module is to provide an understanding of the function of, and interactions between, membrane signalling proteins that produce the overt electrophysiological behaviour of neurones.

BIOL6036      **NEUROPHARMACOLOGY of CNS DISORDERS**      Semester 2  
ECTS: 7.5      Coordinator: Professor LM Holden-Dye  
CATS: 15      Prerequisite: BIOL2016 or BIOL2017  
[Cannot be taken if BIOL3025 already taken]

The aim of this module is to describe basic concepts in neuropharmacology e.g. on the localisation and putative function of neurotransmitter pathways in the brain and to use this knowledge to consider different theories relating to the biochemical basis of action of psychotomimetic and psychotropic drugs. This is covered in the context of major psychiatric conditions including schizophrenia, depression and drug addiction.

BIOL6038      **IMMUNOLOGY**      Semester 1  
ECTS: 7.5      Coordinator: Dr S Sahota (S.S.Sahota@soton.ac.uk)  
CATS: 15      [Cannot take if BIOL3037 already taken]

The aims of the module are to provide an understanding of core immunology and the immunological basis of some common diseases.

BIOL6039      **CELLULAR AND MOLECULAR PATHOLOGY**      Semester 1  
ECTS: 7.5      Coordinator: Dr J Blaydes  
CATS: 15      Prerequisites: BIOL2002 or BIOL2003 or BIOL2014  
[Cannot take if BIOL3043 already taken]

The aims of this module are to study recent advances in selected areas of biomedical science and to gain insight into the use of basic science in understanding the cell and molecular biology of specific disease processes.

BIOL6040      **DEVELOPMENTAL ORIGINS OF HEALTH AND DISEASE**      Semester 2  
ECTS: 7.5      Coordinator: Dr LR Green ([L.R.Green@soton.ac.uk](mailto:L.R.Green@soton.ac.uk))  
CATS: 15      Prerequisites: BIOL2003 and/or BIOL2018  
[Cannot take if BIOL3044 already taken]

The aim of this module is to explore the long-lasting effects that development during the 1000 days after conception has on the way our adult bodies work. In mice-to-men, discover the latest physiological advances about the biological pathways by which diet, environmental toxicants, and health and disease status of the mother and father affect health over the entire life-course, and the risk of later ill-health.

BIOL6041      **BIOMEDICAL TECHNOLOGY**      Semester 2  
ECTS: 7.5      Coordinator: Dr C Birts  
CATS: 15      [Cannot take if BIOL3052 already taken]

This module is designed to illustrate the ways in which the theoretical principles of biochemistry, cellular and molecular biology presented in previous modules can be applied to yield important commercial or therapeutic products or processes.

BIOL6042      **NUTRITION IN HEALTH & DISEASE: PART 1**      Semester 1  
ECTS: 7.5      Coordinator: Professor PC Calder ([pcc@soton.ac.uk](mailto:pcc@soton.ac.uk))  
CATS: 15      Prerequisites: Any BIOL2010 – 2013 module  
[Cannot take if BIOL3054 already taken]

The aim of this module is to examine the causative, protective or therapeutic roles of nutrition with regard to human disease.

BIOL6043      **NUTRITION IN HEALTH & DISEASE: PART 2**      Semester 2  
ECTS: 7.5      Coordinator: Dr GC Burdge ([g.c.burdge@soton.ac.uk](mailto:g.c.burdge@soton.ac.uk))  
CATS: 15      Prerequisites: Any BIOL2010 – BIOL2013 module  
[Cannot take if BIOL3055 already taken]

The aim of this module is to study specific nutrients which are considered to be of importance to human health and are currently the focus of significant interest including developing new recommendations for intake or means of assuring adequate status. Each nutrient will be studied in terms of its molecular, cellular and whole body effects. The module will focus on specific vitamins and trace elements, omega-3 fatty acids and adverse reactions to food.

BIOL6044      **PLANT CELL BIOLOGY**      Semester 1  
ECTS: 7.5      Coordinator: Dr LE Williams  
CATS: 15      Prerequisite: BIOL2007 preferred but not essential  
                         [Cannot be taken if BIOL3003 already taken]

This module explores current topics in plant cell biology. It provides an understanding of the unique features of plant cells and of the cellular mechanisms that allow plants to interact with their environment. Responses at the cellular level to important environmental problems encountered worldwide are discussed and the mechanisms plants use to adapt and survive are covered. The application of modern techniques in cell biology is included and so this module is also of value to those with a broad interest in cell biology. The topics include ones in which members of the course team are actively engaged in research and therefore the most up-to-date information is provided. Areas covered include: the diversity of plastid function; chloroplast function and assembly; the vacuole as a multifunctional compartment; membrane transport; calcium and phytochrome signalling; stress responses covering salt, ozone, and heavy metals.

BIOL6045      **NEURODEGENERATIVE DISEASES**      Semester 2  
ECTS: 7.5      Coordinator: Dr A Mudher  
CATS: 15      [Cannot take if BIOL3048 already taken]

The aims of this module are to explore the various mechanisms that neurones employ to execute cell death processes in both normal and abnormal conditions; and to improve your understanding of the pathogenic mechanisms that cause cell death in several neurodegenerative diseases.

BIOL6046      **APPLIED PLANT BIOLOGY**      Semester 2  
ECTS: 7.5      Coordinator: Dr A Marchant  
CATS: 15      Prerequisite: BIOL2007 (preferred but not essential)  
                         [Cannot be taken if BIOL3051 already taken]

The aim of the course is to provide a broad introduction to the applied use of plants in the modern world, highlighting the benefits of using cutting edge technologies in combatting some of the challenges faced by society.

BIOL 6047      **BIOFILMS AND MICROBIAL COMMUNITIES**      Semester 2  
ECTS: 7.5      Coordinator: Professor JS Webb  
CATS: 15      Prerequisite: BIOL 2038  
                         [Cannot be taken if BIOL3057 already taken]

This module aims to provide an understanding of bacterial biofilms and the environmental, industrial and health care problems related to complex microbial consortia of societal importance. Students will learn to describe and explain the basis for biofilm development in nature and in chronic infections, as well as to understand and interpret the outputs of modern techniques in microbial biofilm research.

BIOL6066      **BIODIVERSITY AND CONSERVATION**      Semester 1  
ECTS: 7.5      Coordinator: Dr RJ Morris  
CATS: 15      Prerequisites: BIOL1003, BIOL2004 and BIOL2008  
                         [Cannot be taken if BIOL3053 already taken]

This module concerns global biodiversity, what we understand by it and why it is in crisis, and current efforts to conserve and manage it.

BIOL6071                    **CANCER & CHROMOSOME BIOLOGY**                    Semester 1  
ECTS: 7.5                    Coordinator: Dr D Tumbarello  
CATS: 15                    Prerequisites: BIOL1005 or BIOL1006 and BIOL1007  
   Cannot be taken if BIOL3064 already taken

The aim of this module is to provide students with a research level understanding of various topics in cancer biology associated with carcinogenesis, tumour progression, and metastasis. This will require understanding the genetic drivers of cancer development and the mechanisms of progression both at the molecular and cellular level.

BIOL6074                    **BIOINFORMATICS & SYSTEMS BIOLOGY**                    Semester 1  
ECTS: 7.5                    Coordinator: Dr R Ewing  
CATS: 15                    Prerequisites: BIOL2012 and BIOL2013 preferred, but not essential  
   Cannot be taken if BIOL3063 already taken, or with BIOL6055

The aims of this module are to introduce students to the latest genomic, transcriptomic and proteomic technologies; illustrate the applications and limitations of these approaches; and provide students with some practical bioinformatics skills to enable them to process, analyse, and interpret the resulting data.

BIOL6076                    **BIOMEDICAL PARASITOLOGY**                    Semester 2  
ECTS: 7.5                    Coordinator: Dr N Smyth  
CATS: 15                    Prerequisites: BIOL 2022 - for Biology / Zoology students: the Parasitology section of  
   BIOL 2022 will be offered as freestanding lectures  
   Cannot be taken if BIOL3065 already taken

The aim of this module is to introduce third year students to the main clinically relevant parasite classes, it will consider their lifecycles, the human/veterinary pathology caused and the treatment methods both of the primary and where applicable intermediate hosts and environment. It will give an understanding of vector borne disease. The module will consider the interaction and evasion methods used by parasites in respect to the immune system and chemical control. It will consider the evidence of possible benefits gained by parasitism. Finally it will demonstrate examples of host: parasite coevolution and consider the likely changes in parasite risk the UK in the light of environmental change.

BIOL6078                    **STRUCTURE & FUNCTION OF THE CENTRAL NERVOUS SYSTEM**                    Semester 1;  
ECTS: 7.5                    Coordinator: Dr M Andrews  
CATS: 15                    Prerequisites: None;

This module will give students an overview of the nervous system from an anatomical perspective. The aim of this module is to provide an understanding of the structure and function of the central and peripheral nervous system and how it interacts with other systems in the body to regulate human physiology and behaviour. Students will gain an understanding of specific brain/spinal cord structures and delineated systems and their associated functions through lectures, practical and tutorial sessions.

BIOL6079                    **GLIAL DEVELOPMENT & BIOLOGY**                    Semester 2  
ECTS: 7.5                    Coordinator: Dr D Gomez-Nicola  
CATS: 15                    Prerequisites: None;

This module provides an understanding of the development and function of the different glial cells types in the healthy brain, as well as their roles in disease. We will provide an overview of the different cell lineages that make up the different populations of glial cells, including astrocytes, oligodendrocytes, microglia, Schwann cells, Muller cells, NG2 cells, and others. We will identify key roles of each cell type in the healthy and diseased brain, as well as the mechanisms regulating crosstalk between different glial cells types and with neurons. Following this module, students will be expected to be able to integrate cell biology and molecular information into a coherent understanding of glial cells functions, and be able to evaluate examples of current research in this field.

BIOL6080                    **SYNAPTIC FUNCTION IN HEALTH AND DISEASE**                    Semester 1  
ECTS: 7.5                    Coordinator: Dr M Vargas-Caballero  
CATS: 15                    Prerequisites: None;

This module provides an understanding of synaptic function in health and disease from the molecular to the neuronal circuit level. The module will be based around seminal primary research papers that have shaped our understanding of synaptic function and synaptic integration in health and disease. Following this module, students will be expected to understand how synapses are analysed experimentally and design experiments to ask scientific questions in this topic.

BIOL6082      [SKILLS IN BIOMOLECULAR NMR](#)      Semester 1  
ECTS: 3.75      Coordinator: Dr P Williamson  
CATS: 7.5      Prerequisites: None;

This module will provide students with an introduction to Biomolecular NMR and the insights it can provide in the biochemical/biomedical sciences. The course will provide an introduction into the theoretical background of NMR sufficient to understand the techniques can be used for studying biomolecular structure/function as well as magnetic resonance imaging. The course will contain a taught component supported by practical introduction to NMR spectroscopy.

BIOL6083      [SKILLS IN OPTICAL SPECTROSCOPY](#)      Semester 2  
ECTS: 3.75      Coordinator: Dr P Williamson  
CATS: 7.5      Prerequisites: None;

Principle and practical application of UV/Visible Spectroscopy Fluorescence Spectroscopy CD Spectroscopy

BIOL6084      [ADVANCED NEUROSCIENCE](#)      Semester 1 and 2  
ECTS: 15      Coordinators: Dr D Gomez-Garcia and Dr M Andrews  
CATS: 30      Prerequisites: (BIOL3021, BIOL3025)

The aims of this module is to provide the MNeuroscience students a course based around Biological Sciences expertise in Neuroscience. The module will consist of multiple 'work packages', each led by neuroscience research scientists. Within each package the lead researcher(s) will explain the context of their research speciality and the concepts underlying the research methodologies employed and their analyses. The students will gain practical knowledge of how research data can be obtained, analysed and modelled to extend knowledge of neuroscience. These work packages will be focus around a generic structure encompassing pre-contact preparatory work, face to face contact in workshops, post contact assessment exercise followed by a final feedback session.