



Programme Handbook 2017/18

BSc Honours Pharmacology Students

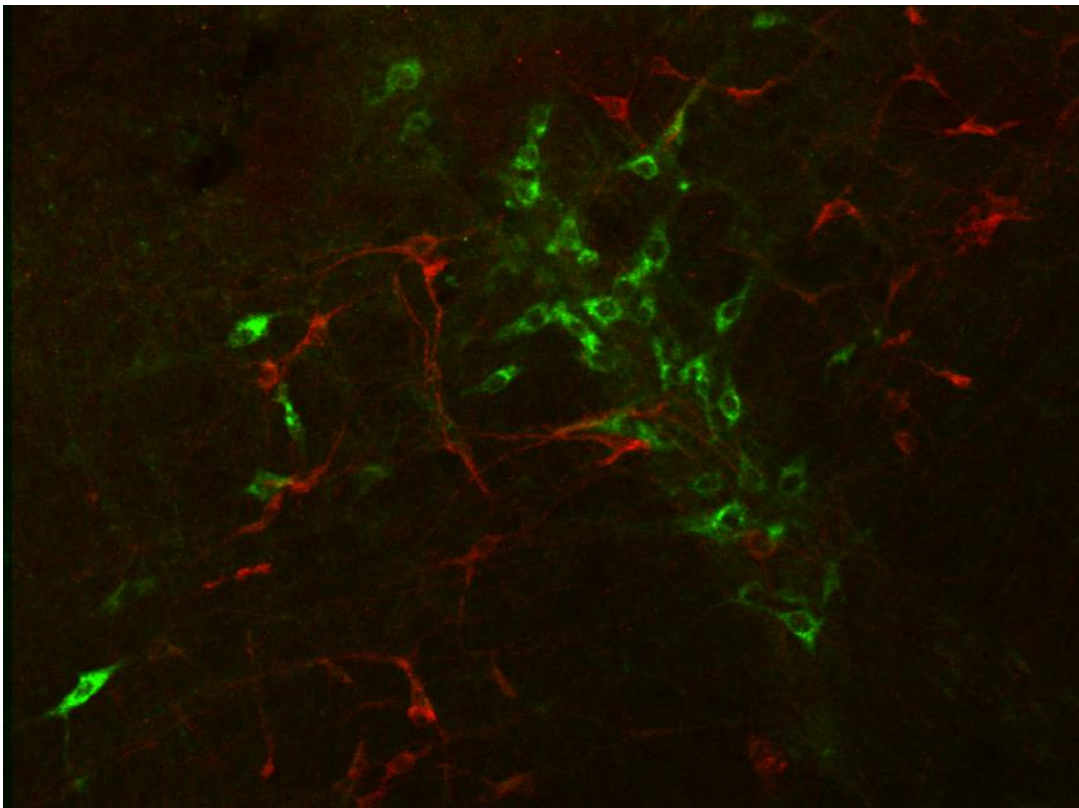
(UBSPHASING05)

MSci Honours Pharmacology Students

(UMSPHASING05)

IBSc Honours Pharmacology Students

(UBIMEDWPHA01)



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Image on front cover - 5HT and mu opioid receptor (the site for morphine) containing neurones in pain control areas of the brain stem
(Shafaq Sikandar and Tony Dickenson, 2013)

TABLE OF CONTENTS

TABLE OF CONTENTS	3
INTRODUCTION	4
THE BIOSCIENCES TEACHING OFFICE	4
PHARMACOLOGY AT UCL.....	5
INTRODUCTION TO UCL PHARMACOLOGY	5
KEY PHARMACOLOGY PROGRAMME CONTACTS.....	5
CONTACTING MEMBERS OF STAFF	5
MODULE ORGANISERS / LECTURERS.....	5
ADVICE AND HELP – PERSONAL TUTORS	6
REFERENCES	6
NOTICE BOARDS AND STUDENT MAIL	6
E-MAIL.....	7
THE PHARMACOLOGY DEGREE PROGRAMME	7
PROGRAMME AIMS & OBJECTIVES.....	8
1.1.1 AIMS.....	8
1.1.2 OBJECTIVES.....	8
ASSESSMENT – COURSEWORK.....	9
1.1.3 MARKING SCHEME FOR SCIENCE AND INTERCALATING BSc STUDENTS	9
1.1.4 REGULATIONS FOR SELECTION AND SUBMISSION OF PHARMACOLOGY FINAL YEAR PROJECTS.....	10
DEGREE REQUIREMENTS AND PROGRESSION DURING DEGREE PROGRAMME.....	11
1.1.5 PROGRESSION FROM YEAR TO YEAR	11
1.1.6 REQUIREMENTS FOR BSc AND MSci HONOURS PHARMACOLOGY.....	11
1.1.7 CALCULATION OF AWARDS.....	12
1.1.8 IBSc PHARMACOLOGY STUDENTS.....	12
1.1.9 EXTRAMURAL YEAR/YEAR IN INDUSTRY.....	12
1.1.10 STUDY ABROAD.....	13
FEEDBACK MECHANISMS	13
1.1.11 STAFF-STUDENT CONSULTATIVE COMMITTEE (SSCC).....	13
1.1.12 STUDENT REPRESENTATIVES ON FACULTY COMMITTEES.....	13
1.1.13 STUDENT QUESTIONNAIRES	13
1.1.14 NSS	13
1.1.15 COMPLAINTS AND GRIEVANCES	14
PROGRAMME TIMETABLES & MODULES 2017-2018.....	15
TERM DATES	15
IMPORTANT DATES	15
PHARMACOLOGY YEAR BY YEAR	15
COMMON TIMETABLE TEACHING BLOCKS.....	16
1 ST YEAR TEACHING.....	17
1.1.16 COURSES FOR 1 st YEAR PHARMACOLOGY STUDENTS (2017/2018)	17
2 ND YEAR TEACHING	21
1.1.17 COURSES FOR 2 ND YEAR PHARMACOLOGY STUDENTS (2017/2018).....	21
3 RD YEAR TEACHING	25
1.1.18 COURSES AVAILABLE TO 3 rd YEAR and 4 th YEAR (MSci) STUDENTS (2017/2018)..25	
1.21 UCL LOCAL AREA MAP	35
.....	35

INTRODUCTION

The Division of Biosciences was formed in 2008 when the Faculty of Life Sciences was re-organised. The Division has a number of undergraduate and iBSc programmes covering the Biosciences area – such as Pharmacology, Neuroscience, Physiology, Biochemistry, Biology, etc.

UCL Biosciences is one of the largest multi-disciplinary research environments in the UK with over 120 research active laboratories. State-of-the-art research facilities enhance the research environment and provide students with possibility of enhancing research skills. Our excellence is founded on the legacy of Nobel Prizes awarded to six of our alumni including Hill, Huxley, Katz, Black, Evans and O’Keefe.

Together with the accompanying Divisional booklet, these notes are intended to inform BSc, MSci and IBSc students about the organisation of the Pharmacology programmes, and to help students have an enjoyable and productive College life. The aim is also to try to answer some of the questions students commonly ask (or sometimes feel unsure about, but are too shy to ask!).

You will find that most of your dealings are with the Degree Programme Tutor (Prof Talvinder Sihra), who organises your degree programme and the module organisers who run the modules you take. Your Degree Programme Tutor may be your first contact. In some cases he may refer you to the Faculty Tutor (Dr Hazel Smith), who deals with admissions, advice on the choice of and change of degree programme, fees matters, examinations, attendance, poor academic progress, reports to outside bodies, and LEA and other awards.

The following pages should be read in conjunction with the information about your modules provided at the start of each module and by referring to the College and Examination Regulations which can be found at: http://www.ucl.ac.uk/ras/acd_regs. The Student Handbook can be located via the relevant sections at: <http://www.ucl.ac.uk/current-students/>

THE BIOSCIENCES TEACHING OFFICE

The Biosciences Teaching Office is located on the ground floor of the Medawar building. The main office is room G10; teaching administration staff are also in rooms G03, G04 and G05. The Teaching Office staff are knowledgeable teaching administrators covering all the degree programmes and modules offered within the Division.

The Teaching Office is open 09.30 am - 4.00 pm Monday to Friday for any manner of student enquiries. Holiday opening hours are 10am-12pm and 2pm-4pm. This is where you will submit and collect the majority of your hard-copy coursework. The office is also available for any general enquiries you may have such as timetabling, locating module organisers etc.

PHARMACOLOGY AT UCL

INTRODUCTION TO UCL PHARMACOLOGY

Pharmacology belongs to the UCL Faculty of Life Sciences, and falls within the Neuroscience, Physiology and Pharmacology basket of degrees (Head of Teaching - Prof Talvinder Sihra). The programme is taught by members of staff from the Research Department of Neuroscience, Physiology and Pharmacology (NPP), whose Head, Prof Trevor Smart, takes overall responsibility for the excellent quality of research underpinning Pharmacology teaching here at UCL. The Pharmacology BSc/MSci Programme Tutor (Prof Talvinder Sihra) deals with all academic matters relevant to undergraduate students.

The Students: There are around 25-30 students in each year of the BSc/MSci degree. These students are joined by students studying for a BSc or MSci in other degree programmes for the PHAR1001 Mechanisms of Drug Action, PHAR2002: General & Systematic Pharmacology and PHAR2003: Experimental Pharmacology courses in 2nd year and the PHAR3003: Molecular Pharmacology and PHAR3004: Receptor Mechanisms modules in 3rd year. In addition, Medical Students taking an IBSc in Pharmacology or Physiology & Pharmacology join 3rd year students in their final year.

The Staff: There are around 20-25 members of academic staff in NPP involved in Pharmacology teaching, a number of technical and administrative staff, and large number of Ph.D. students and postdoctoral research staff within NPP. BSc/MSci students have most contact with academic staff and some contact with technical staff, Ph.D. students and postdoctoral fellows who all contribute to teaching on Pharmacology (PHAR) modules.

KEY PHARMACOLOGY PROGRAMME CONTACTS

Pharmacology Degree Programme Tutor: Prof Talvinder Sihra (t.sihra@ucl.ac.uk), Room 334, MEDAWAR BLDG, Tel: 020 7679 3296

1st Year Tutor: Dr Guy Moss (g.moss@ucl.ac.uk), Room 237, MEDICAL SCIENCES BLDG, Tel: 020 7679 3752

2nd Year and MSci (4th Year) Tutor: Prof Talvinder Sihra (t.sihra@ucl.ac.uk), Room 334, MEDAWAR BLDG, Tel: 020 7679 3296

3rd Year Tutor: Dr Martin Stocker (m.stocker@ucl.ac.uk), 2nd Floor, MEDICAL SCIENCES BLDG, Tel: 020 7679 7244

Integrated BSc Student Tutor. Prof Lucia Sivilotti (l.sivilotti@ucl.ac.uk)

Biosciences Teaching Office, Room G10, Medawar Building: Pharmacology Administrator: Miss Louise Le Cornu (l.lecornu@ucl.ac.uk) Tel: 0203-108-1034

CONTACTING MEMBERS OF STAFF

The best way to contact members of staff is by e-mail. E-mail addresses can be found on the internet. The UCL directory at <http://www.ucl.ac.uk/directory/>

MODULE ORGANISERS / LECTURERS

Module organisers have overall responsibility for organising whole unit/half unit courses. If you have an enquiry or problem with a **module** you should contact the **module organiser**.

If you have an enquiry or problem with a particular **lecture** within a module then it might be more appropriate to contact the **lecturer** concerned (and ccing the module organiser). Some staff who give lectures on Biosciences modules are from different departments. The Teaching Office should be able to tell you which department staff are from.

ADVICE AND HELP – PERSONAL TUTORS

All new students are assigned a Personal Tutor at the start of the programme. This will be same as the personal tutor assigned under the PHOL1001 module that all 1st year BSc/MSci students undertake. The Programme Tutor will introduce the Personal Tutor scheme during Induction Week, and student may meet personal tutors during the reception/party.

Continuing students will stay with their previously assigned Personal Tutors – whom you should try to meet during Induction Week.

Should any student need information or advice, their Personal Tutor should be their first contact. The Programme Tutor can also be consulted on any matter at any time.

If for any reason you prefer to seek help outside the Faculty, there are the following sources of support: [Student Union Rights and Advice Centre](#) is located at 25 Gordon Street, London, WC1H 0AY. Tel: 020 7679 2998

[UCL Student Disability Services](#) provide a comprehensive range of support services for students who have a disability which impacts upon their studies at UCL. Location: level 4, UCL Institute of Education, 20 Bedford Way, London, WC1H 0AL. Email: disability@ucl.ac.uk

[UCL Student Psychological Services](#) is dedicated to helping UCL students with personal, emotional and psychological concerns. Location: Ground Floor, 3 Taviton Street, London WC1H 0BT. Tel: 020 7679 1487. E-mail: g.nandagopal@ucl.ac.uk (Gopiha Nandagopal, Senior Executive Officer)

[The Student Centre](#) is located on the ground floor of the Chadwick Building on the Gower Street Campus and is open from 10:00 – 16:00, Monday, Tuesday, Thursday and Friday. On Wednesdays the Student Centre is open 11:00 to 17:00.

[Ridgmount Practice](#) (formerly Gower Place Practice) is the UCL Health Centre. Registered students can make appointments or attend the walk-in surgery which operates from Monday – Friday between 9.30am to 10.30am and 2.30pm to 3.30pm. Ridgmount Practice is located at 8 Ridgmount Street.

UCL Student Support and Wellbeing is working in partnership with [Care first](#) to provide students with an out of hours support and information helpline. Information and counselling are provided via telephone from Monday to Friday from 5pm to 9am, at weekends and during Bank Holidays and College closure periods.

REFERENCES

You are almost certain to require references from your tutors for anything from accommodation or summer placements to permanent jobs, or for further study in due course. Your Personal Tutor will advise you about references and you may also consult your Year/Programme Tutor. It is always courteous to discuss the matter with your potential referee before giving his or her name (an e-mail to your personal tutor should usually be sufficient). Please allow plenty of leeway before a deadline when seeking a reference from your tutor as it takes considerable time to write references.

NOTICE BOARDS AND STUDENT MAIL

Apart from your module pages, your Moodle site will also have also has general page for information about the Pharmacology Programme <http://moodle.ucl.ac.uk/course/view.php?id=997>

This is used to provide you with general and specific information about the programme, and used as noticeboard for important announcements and reminders pertaining to particular year or the programme as a whole.

Divisional notice boards are placed outside the teaching office on the ground floor of the Medawar Building.

The most used 'notice board' of all nowadays is actually e-mail. Students are expected to check their UCL e-mail accounts regularly; important information is often disseminated by this route exclusively. It is your responsibility to update your personal information on the College 'Portico' system whenever there are any

changes because some notifications may be sent by conventional mail.

E-MAIL

All staff and the College will use your UCL email account to contact you about various matters. It is therefore essential that you check your e-mail regularly as important information is often disseminated by the **e-mail route only**, so failure to check your account may result in missed deadlines and the like. When you register with Information Systems you will be allocated a UCL email address. This is the address which will be used by the College and all staff. When corresponding with staff by e-mail, please ensure you include your name in the body of the e-mail as it is difficult to determine your identity from the usual UCL e-mail address format (i.e. zabcdef.11@ucl.ac.uk) unless you have created an alias with your proper name (recommended). Information on how to do this can be found at <http://www.ucl.ac.uk/is/email/>. Sometimes students prefer to use their private e-mail address rather than the UCL one. We do NOT advise this but if you do use a non-UCL e-mail, it is your responsibility to arrange forwarding of messages to your UCL account. If this is not done you will miss important messages. Please note that staff will **not** normally respond to or correspond with private e-mail addresses except in exceptional/pre-empted circumstances.

THE PHARMACOLOGY DEGREE PROGRAMME

The Pharmacology degree programme is made up of modules and an academic year is made up of modules worth 1.0 or 0.5 course units. A 1.0 cu module normally has 40-50 hours of lectures and a total work load (including private reading, preparation of course work and revision) of 375 hours. You may not take more than 4 course units in a year. Each has its own assessment components which usually include an examination and coursework.

A degree programme is defined by its core modules: those you must take. In many cases there is the possibility of taking some optional modules. Your Year/Programme Tutor will provide details of optional course-units which you can provisionally register for in 'Portico' (see below). In all cases your Year/Programme Tutor must approve your choice of optional module. In addition, the departments teaching the module must approve your enrolment as there may be constraints imposed by prerequisites, the timetable, or student numbers.

You must have a total of 11 course-units passed (including at least three Advanced course-units in the final year) and completed 12 course-units, to be awarded a BSc degree. Most students will have passed 12 units. Graduation with a BSc **honours** degree will require a minimum of 11.0 course-units passed, with the pass mark being 40%.

You should note that for the BSc programme, when the module total reaches 10 units, a degree must be awarded. Those students taking an extramural year (see below) require 11 course-units rather than 10 for the award of a degree. BSc students must also have completed and passed a library project (1.0 unit) or laboratory project (1.5 units) in the 3rd year.

For the Pharmacology MSc programme, you must have a total of 14.5 course-units passed, and completed 16 course-units. The pass mark is 40% for 1st, 2nd and 3rd year course-units, and 50% for 4th year course-units.

For consideration of an award of an MSc degree, a minimum 14.5 course units must be passed over the four-year programme and a minimum of 4 course-units at Masters level must be completed and passed. MSc students must also have completed and passed a library project (1.0 unit) in the 3rd year and a laboratory project (2.0 or 3.0 units) in the 4th year.

PROGRAMME AIMS & OBJECTIVES

1.1.1 AIMS

- To provide education in pharmacology of the highest quality and so produce graduates with sufficient in-depth understanding and appreciation of pharmacology to be successfully applied in employment, further study, or research in pharmacology, or in a related subject, while with sufficient breadth for those who will study pharmacology no further than first degree level, to successfully use the knowledge and skills developed during the degree in a wide range of careers.
- To offer a variety of learning experiences under the supervision of teachers actively engaged in research in pharmacology and related subjects in order to stimulate and encourage an attitude of enquiry and interest centred on the acquisition of knowledge and a desire for understanding.
- To continue to develop student knowledge, interest and appreciation of science via teaching in pharmacology.
- To stimulate and sustain enthusiasm for pharmacology and to enable students to engage in the subsequent phases of their careers with initiative and confidence in their abilities.
- To encourage the development of the personal transferable skills that will be essential for students' subsequent careers.
- To encourage an appreciation of social and commercial aspects of the application and exploitation of pharmacological knowledge and techniques.

1.1.2 OBJECTIVES

Graduates of Pharmacology will have acquired:

- an up to date knowledge of pharmacology and its continuity with chemistry, biochemistry and molecular biology, and with pathology and physiology; an awareness of some of the present day boundaries of knowledge in pharmacology; and detailed knowledge of chosen areas of pharmacology research.
- an appreciation of the importance of experimental work in pharmacology and of the use of experimental approaches drawn from other disciplines; experience in conducting laboratory experiments and projects in pharmacology as individual and as group exercises.
- the technical and organisational skills needed to acquire sound pharmacological data; experience in the critical evaluation of pharmacological data, the methods by which the data were obtained, the statistical analyses used and the inferences and conclusions drawn.
- the skills of locating and retrieving information, from a variety of sources, and compiling it to a deadline, into clear, original and critical reports; other computer-based transferable skills such as the use of word processing, spreadsheet, graphics and statistical packages as well as familiarity with computer-based simulations, tutorials and assessments.
- the ability to communicate, both verbally and in written work, and to participate constructively in group activities and discussion through the production and presentation of essays, reports, dissertations, seminars, talks and posters, and the participation in group projects and discussions.

ASSESSMENT – COURSEWORK

1.1.3 MARKING SCHEME FOR SCIENCE AND INTERCALATING BSc STUDENTS

Life Sciences Faculty (Harmonised) Marking Scheme

Descriptor	Percentages	Notes to Guide Examiners (marks for individual questions)
Exceptional performance	91 - 100	An outstanding answer, work submitted publishable in current form.
High 1st	81 - 90	An excellent answer, original and showing a deep and critical understanding of the question. Work potentially publishable.
Mid-range 1st	76 - 80	Clear first class answer; almost everything included that you can think of (containing critical discussion of facts or evidence). Well argued, to the point. No significant errors.
Low 1 st	70 - 75	A very good, correct answer, showing insight and well written.
High 2i	66-69	A well organised and well expressed answer which shows clear understanding; a good number of correct facts, with no significant errors, but lacking the critical insight of a 1st class answer.
Mid-range 2i	65	
Low 2i	60-64	
High 2ii	56-59	Undoubtedly sufficient to pass but not enough detail, and/or not sufficiently well constructed or well-argued to be considered for a 2:1. May have had potential for a higher grade but contains one or two significant errors.
Mid-range 2ii	55	
Low 2ii MSci Pass	50-54	MSci Pass
High 3 rd MSci Fail	46-49	MSci Fail
Mid-range 3 rd	45	Adequate number of relevant points to pass (BSc) but muddled presentation. Several significant errors or very poor expression of material. Poor judgment about what is important.
Low-mid 3 rd	40-44	
Fails/referrals Referrals are NOT available to 1 st year or final year students or for students on M- or G-level modules	35-39	Addresses question set but supplies inadequate information, Relevant points counterbalanced by multiple significant errors. No judgement about balance of what is important or what is trivial. With a little extra work, candidate could pass (BSc).
Fail	25-34	Tries to answer question set but shows weak knowledge of subject/core concept throughout. Numerous and significant errors, poor presentation
Clear fail	15-24	Doesn't answer question set; little understanding of topic/core concepts but makes a few (2-3) relevant points.
Weak fail	1-14	Doesn't answer question set or is unacceptably brief, little/no understanding of the topic/core concepts but makes a single relevant point.
Zero	0	Irrelevant/unintelligible and/or doesn't answer question set or fails to provide an answer.

Pass mark for BSc modules = 40% and no referrals for 1st year or final year students.

Pass mark for M-level and G-level modules = 50% and no referrals.

1.1.4 REGULATIONS FOR SELECTION AND SUBMISSION OF PHARMACOLOGY FINAL YEAR PROJECTS

1.1.4.1 Project Selection Procedures and Criteria:

Projects may research any topic of relevance to Physiology, Pharmacology and Neuroscience. Students will already have been contacted by e-mail to start the project selection procedure detailed in the NPP Projects Moodle site: <https://moodle.ucl.ac.uk/course/view.php?id=40171>

After browsing the list of supervisors/laboratories offering projects, students decide their fields of interest, and formally apply to five supervisors/laboratories in order of preference as indicated on the aforementioned web-site.

PHAR3009 literature projects for 3rd year BSc and ISc students will be assigned based on student preference and then, for over-subscribed projects, on merit (i.e. based on 2nd and 1st year marks). All MSci students are required to undertake a library project in the 3rd year.

BSc students can undertake a PHAR3010 laboratory projects. Once a supervisor has accepted a student for supervision and agreed on an appropriate project title, projects have to be registered with the Project Tutor by completion of a Registration Form available from the relevant Moodle page, or online from the NPP Projects Moodle site. MSci students are required to do either a PHARM901 (2.0cu) or PHARM030 (3.0cu) laboratory project.

All students must normally have achieved an overall mark of at least 60% in the 2nd year (for MSci, 60% in 2nd and 3rd year) to do a laboratory project. Admission to laboratory projects will remain at the discretion of the prospective supervisor and Projects Tutor.

The exact time-tabling of the project is decided between the student and the supervisor. While frequent interaction with the supervisor is essential with PHAR3010/PHARM901/PHARM030 laboratory projects, students are reminded that PHAR3009 literature projects should also involve at least five "steering meetings" with the supervisor, which are arranged by the student.

Time allocated for laboratory projects includes the time reading around the subject before beginning experiments and for writing-up. Allowing laboratory work or writing-up to impinge on the time allocated for other modules is usually extra effort for diminishing returns and is accordingly to be discouraged.

1.1.4.2 Project Assessment:

For both PHAR3009 (literature project, 1.0 unit) and PHAR3010 (laboratory project, 1.5 unit) the project report comprises the major component of the final assessment. For laboratory projects, students' laboratory performance will also be taken into account in the final assessment.

Literature Projects will be assessed by a poster presentation and a written dissertation. Students taking a literature project will be required to have had at least five supervisory meetings during the project with their supervisor. The dates of these are flexible, but the onus is on the student to ensure that these meetings are arranged and documented on the Progress Form (found on the NPP Projects Moodle site), which will need to be submitted together with the completed project dissertation according to the deadline set.

Laboratory Projects will be assessed by a supervisor's report on the student's laboratory performance, a written dissertation, and poster presentation (PHAR3010) or oral presentation (PHARM901).

Poster presentations for PHAR3009 & PHAR3010 will be held in the penultimate week of term 2, prior to project submission. Oral presentations for PHARM901 will be held in the first week after Easter and, for PHARM030 projects, at end of the May examination period.

Project dissertations should be typewritten. Dissertations are expected to be a maximum of 7500 words. If the dissertation is in excess of this maximum word limit, over-length penalties will be applied. All sources of information in the project must be properly referenced, both in the text and in the bibliography. Students

must check Project Moodle pages for word limit regulations.

PHARM030 is assessed differently. Please check the Moodle page for details.

Extensive unacknowledged use of published text is considered as [plagiarism](#). The penalty for plagiarism is severe with a Department Panel (DP) being automatically convened to consider every reported instance. Recommendations of DPs have in the past ranged from a deduction of marks, according to the extent of plagiarism, to a complete nullification of the module mark.

Two copies of the written project reports together with an electronic copy of the project text (through the Moodle page) must be submitted no later than the stated deadline, unless prior arrangements for late submission have been agreed with the supervisor and the Project Tutor.

The submission of the electronic copy of the project text is compulsory and will be scanned for journal/text-book or web-based plagiarism, using Turnitin© software designed for the task.

All projects will be double marked by the supervisor and one other field expert. The mark for laboratory projects will include an assessment of practical skills and diligence in the lab as well as academic skills. The Department is obliged to keep both marked copies for the Physiology Examination Board meeting in June. These copies are not returnable, therefore students should retain an electronic and/or hard copy for their own records.

For more details on project preparation and assessment, please refer to the relevant project guidelines from: the NPP Projects Moodle site: <https://moodle.ucl.ac.uk/course/view.php?id=40171>, as well as relevant Moodle pages.

DEGREE REQUIREMENTS AND PROGRESSION DURING DEGREE PROGRAMME

1.1.5 PROGRESSION FROM YEAR TO YEAR

You are normally expected to take 4 course units with a minimum of passes in 3 units to progress from the 1st to the 2nd year. At the end of the 2nd year we expect you to have completed a total of 8 course units (minimum of passes in 7 units) to enter the 3rd year. Those on the MSci programme are expected to have passed 10.5 (out of 12 units) units at the end of the 3rd year and achieved at least 3rd year mark of at least 60% overall to progress to year 4.

A minimum of 11 course units **MUST** be **PASSED** (with 3.0cu at Advanced Level) at the end of the 3rd year BSc degree to be awarded an Honours Degree. A minimum of 10 units must be passed to be awarded an Ordinary Degree.

A minimum of 14.5 course units **MUST** be **PASSED** (with a 4.0cu at Masters Level) at the end of the MSci 4th year to be awarded an Honours Degree, with other stipulations mentioned previously – i.e. the number of Master's and Advanced course-units which must be passed. An Ordinary Degree is **NOT** available to MSci students.

1.1.6 REQUIREMENTS FOR BSc AND MSci HONOURS PHARMACOLOGY

Students must pass the General and Systematic Pharmacology (PHAR2002) and Molecular Pharmacology (PHAR3003) courses and complete the Experimental Pharmacology (PHAR2003) module in order to graduate with a BSc or MSci in Pharmacology. Additionally in the 3rd year, students (science and intercalating medical students), must have taken and passed a minimum of 2.5 course units (out of 4) in Pharmacology. Students are expected to re-register for failed examinations during the 1st and 2nd year and take them again at the earliest next opportunity as Late Summer Assessments. Students who have not passed the required minimum number of units will not be allowed to proceed to the next year. Instead the student will be suspended from College for a year ("a year away") and must re-enter for the failed examinations (a fee is payable for this). Only if sufficient units are passed will the admission to the College be permitted to continue the degree programme.

Aside from the need to pass a minimum number of course-units for progression, students should be aware that if they wish to be considered for an extramural year (Industrial Placement) they will require good marks in 1st year. Students on Industrial Placement write a report on their work which is similar to a one course unit final year research project report. The mark for this report is not normally taken into account by the Pharmacology Exam Board in determining a student's degree classification. Performance in previous years can be taken into account when staff consider students applying to them to undertake research projects in the final year. Earlier year marks may also be taken into account if demand for particular 3rd year modules exceeds the maximum number of students who can be accommodated on the course.

For MSci students the requirements are identical to those for the BSc programme in the first three years. However, MSci students must undertake a library project (PHAR3009: 1.0 unit) in the 3rd year and a laboratory project (2.0 or 3.0 cu) in the 4th year.

Departmental Prizes

Each year the department awards prizes for academic achievement in 1st, 2nd and 3rd year. These are:

1st Year: D. H. Jenkinson Prize

2nd Year: H. O. Schild Prize, Doreen Gettins Prize (Best Practical Improvement)

3rd Year: J. H. Gaddum

4th Year: A. J. Clark Prize

Project Prize: For the best PHAR3010/PHARM901/PHARM030 project.

1.1.7 CALCULATION OF AWARDS

Marks from all years contribute to the final calculation of BSc awards in the proportions:- 1:3:5::1st:2nd:3rd year. Student complete 4 module units in each year, with the best 3 module units counting towards the overall 1st year mark and the best 3.5 module units counting towards the overall 2nd year mark. All 3rd year modules count towards the overall mark.

The final MSci degree classification is based on a weighted overall mark calculated using results from all four years. The weighting is 1:3:5:5::1st:2nd:3rd:4th year respectively. In final evaluation of the overall degree, marks from the best 14.5 course unit (1st year, 3 course units; 2nd year, 3.5 course units; 3rd year, 4 course units; 4th year, 4 course units) will be considered, but note above the total number of course credits required for progression and completion.

1.1.8 IBSc PHARMACOLOGY STUDENTS

Integrated BSc students fall under 3rd year course-unit regulations. IBSc students will be new to course-unit degree programmes. Students should read these notes, the UCL Student Handbook and ask the Year/Programme Tutor for advice if matters are unclear.

The regulations covering an integrated BSc degree (which formally always has "with basic medical sciences" as part of the field of study) are similar in many respects to other course-unit degrees. The most important difference is that a minimum of 3 course-units must be passed in the 3rd (intercalating) year to be awarded an IBSc. The final mark used for integrated BSc degree classification is a weighted average of the first two MBBS years, and the integrated BSc year (weighting 1:1:6).

1.1.9 EXTRAMURAL YEAR/YEAR IN INDUSTRY

Regulations allow students to follow a BSc degree programme over four years rather than three. Your Year/Programme Tutor must approve your doing this and you should discuss the matter in good time. The extramural year is spent on an attachment to an organisation or institution approved by the College as having a function relevant and suitable for the student's field of study. Each year a few students in Pharmacology obtain industrial placements to work in the Pharmaceutical industry. These placements are very competitive and selection is based on academic record and a visit to industry for interview. Normally an extramural year is taken at the end of year 2 and students doing this must be in a position to progress to year 3. The College, through your Tutors, must approve both the institution or organisation and the work to be undertaken. The work done during the extramural year must be written up as a project report and

submitted before the beginning of the final year. This counts as an extra course-unit. When an extramural year is taken a student must pass a minimum of 11 course-units for the award of a degree (rather than 10). The Pharmacology Extramural Year tutor is Dr Dean Willis (dean.willis@ucl.ac.uk).

1.1.10 STUDY ABROAD

It is unusual, but not unknown, for students to study abroad for a year as part of their degree programme. If this is being considered it is vital that you discuss it with your tutors early in the first term of your second year as there are many academic and practical problems to be sorted out. You should note that students going abroad as part of their course MUST attend a course run by the Study Abroad Office <http://www.ucl.ac.uk/prospective-students/international-students/current-students/ucl-students-abroad> (Registrar's Division; study-abroad@ucl.ac.uk; x37712).

FEEDBACK MECHANISMS

1.1.11 STAFF-STUDENT CONSULTATIVE COMMITTEE (SSCC)

The joint NPP SSCC meets two or three times per year to provide a forum for discussion between staff and students. All students are invited to contribute to SSCC meetings by providing items for the agenda to Dr Ian Edwards (i.edwards@ucl.ac.uk) or Dr Martina Wicklein (m.wicklein@ucl.ac.uk) who joint chair the SSCC meetings, or via a student representative from the programme on the SSCC.

All the main groups of undergraduate students and the postgraduate students present in Pharmacology are represented on the SSCC. Two student representatives from the SSCC attend meetings of the Pharmacology Programme Steering Committee and the NPP Teaching Committee for agenda items relevant to matters raised at the SSCC. Nominations for SSCC representatives from each year can be made early in the autumn term. The NPP SSCC is, however, in principle open to any student wishing to attend to voice their views on a module or programme. The Head of Teaching (NPP: Prof Sihra) normally attends the SSCC meetings as well as other members of staff according to the needs of the agenda. The dates of the Staff Student Consultative Committee (SSCC) meetings and minutes are posted on a Moodle site for the SSCC (<http://moodle.ucl.ac.uk/course/view.php?id=9563>). Nominations for representatives will be requested in the second week of term.

1.1.12 STUDENT REPRESENTATIVES ON FACULTY COMMITTEES

There are undergraduate student members of the Faculty Board (which meets five times per year) as well as two student members on the Faculty Undergraduate Teaching Committee (which meets four times a year). The student representatives are put forward by UCL Union.

If you would like something considered by one of the aforementioned committees, you can ask your representative to table it for discussion or you could ask your Year/Degree Programme Tutor to put it on the Agenda.

1.1.13 STUDENT QUESTIONNAIRES

Students are asked to fill in Student Evaluation Questionnaires (SEQs; Opinio) at the end of each module. Students should also complete the Degree programme questionnaires given to all students towards the end of each academic year. These allow the Department to improve the teaching of the modules and programme year on year.

1.1.14 NSS

Aimed at mainly final-year undergraduates, the NSS gathers opinions from students about their experience of their programme, asking them to provide honest feedback on what it has been like to study at their institution.

Not only does the feedback provide institutions of what the learning experience was like for students in that year (helping to effect changes designed to improve the student experience), but it also allows prospective students to compare information across higher education programmes..

1.1.15 COMPLAINTS AND GRIEVANCES

It is important that any student who feels they have been treated unfairly, or feels that there is a deficiency of any sort in their treatment at UCL, should mention this as soon as they feel able to a suitable member of the College staff. Most often, your Personal Tutor or Year/Degree Programme Tutor will be the most appropriate person to discuss, in private, anything that is cause for concern. The Students Union and the College Dean of Students are also available to students to discuss grievances. This is important and for the benefit of all students.

PROGRAMME TIMETABLES & MODULES 2017-2018

TERM DATES

Term 1: Monday 25 September 2017 - Friday 15 December 2017

Term 2: Monday 08 January 2018 – Friday 23 March 2018

Term 3: Monday 23 April 2018 - Friday 08 June 2018

IMPORTANT DATES

Induction Week:

Monday 25 September - Friday 29 September 2017

Reading Weeks:

Monday 6 November – Friday 10 November 2017

Monday 12 February – Friday 16 February 2018

Additional teaching sessions such as practicals and tutorials may be scheduled during reading weeks and you must be available to attend these. **Reading weeks should not be viewed as a holiday. It is period for revision and reflection of the material taught to date.**

Main Examination Period:

23 April – 8 June 2018

You could have exams scheduled anytime during this period so you must be available on all these dates. The exam timetable is published by Central Exams, and should be made available directly to students by the end of term 2. For M-level modules, the required M-level assessment may be additional to the examination and follow immediately after the main examination period in May.

PHARMACOLOGY YEAR BY YEAR

The remaining pages of this booklet set out the structure of your degree programme and the main modules (core and optional) that are available each year.

More detailed information about individual modules may be found by referring to the weblinks given below; listed below are the ones you should find most useful when you are deciding which modules to take.

Faculty of Life Sciences: <http://www.ucl.ac.uk/lifesciences-faculty/>

Life Sciences Undergraduate Module Database:

<http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php>

(This database has information about all modules within the Faculty of Life Sciences.)

Portico: www.ucl.ac.uk/portico

Portico contains module information including assessment details. From Year 2 onwards you will need to use Portico to enter your module choices. Further information about how to do this can be found in the Biosciences Divisional Handbook.

Timetables: www.ucl.ac.uk/timetable

This handbook has been prepared before the start of term so you should **confirm all timetables** and venues by checking the above link. Do this regularly, in case times or, particularly, venues are changed.

Not uncommonly, a class has to move because of its size.

COMMON TIMETABLE TEACHING BLOCKS

	Monday	Tuesday	Wednesday	Thursday	Friday
9am – 11am	Block A	Block B	Block C	Block D	Block E
11am – 1pm	Block C	Block D	Block E	Block A	Block B
<i>1pm – 2pm</i>	<i>Lunch break *</i>	<i>Lunch break *</i>	<i>Lunch break *</i>	<i>Lunch break *</i>	<i>Lunch break*</i>
2pm – 6pm	Block F	Block G	<i>No teaching Wednesday afternoon</i>	Block H	Block I

*The lunch break may be used by some modules for teaching not possible to timetable otherwise.

1ST YEAR TEACHING

1.1.16 COURSES FOR 1st YEAR PHARMACOLOGY STUDENTS (2017/2018)

The following courses are taken by all students:

PHOL1001 – MAMMALIAN PHYSIOLOGY (1 unit)

Course Organiser: Dr Richard Tunwell

Course Structure: Lectures & Practical

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHOL1001>

The subject is covered broadly in a set of 46 lectures. The introductory lectures on "Cell Physiology" deal with the movement of solute across cell membranes, membrane and action potentials and the special properties of excitable tissues. The principle organ systems are then covered conventionally, in the order circulation, respiration, the gastrointestinal tract, the nervous system, endocrines and the kidney. A set of practicals and self-instructional sessions with some practical elements run on most Thursday afternoons. Students are expected to attend and contribute to all the tutorials sessions.

PHAR1001 – AN INTRODUCTION TO MECHANISMS OF DRUG ACTION (½ unit)

Course Organiser: Dr Guy Moss

Course Structure: Lectures & Practicals

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR1001>

This course is designed for those who are new to the subject of Pharmacology. During the course you will examine the actions of drugs at both the cellular/molecular level and at the level of interactions with the whole 'animal' (ourselves).

BIOC1001 – BIOCHEMISTRY AND MOLECULAR BIOLOGY (½ unit)

Course Organiser: Dr Chris Taylorson, Biochemistry & Molecular Biology

Course Structure: Lectures & Practicals

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=BIOC1001>

BIOC1001 provides a general introduction to cell biology, molecular genetics of bacteria, nucleic acids, protein structure, biochemistry, cell physiology and cell signalling in development and differentiation. Its structure allows it to be taken by students without A-level biology, as well as those who have studied Biology at A-level. It is a pre-requisite for several second year courses. The first part of the course is examined in January to give students some idea of what progress they are making. There is a further exam covering the latter part of the course in the summer.

CELL1001 – CELLS AND DEVELOPMENT (½ unit)

Course Organiser: Prof Sandip Patel

Course Structure: Lectures & Practicals

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/viewcourse.php?coursecode=CELL1001>

CELL1001 provides a general introduction to cell biology, developmental biology and cell physiology. It provides a good introduction to Cell Biology modules taken in 2nd year, such as CELL2006 and CELL2007. It builds upon BIOC1001, which students will usually have taken during term 1 of first year.

To introduce students to the ideas and techniques of cell biology that are essential for a basic understanding of modern biology. This course provides the foundation for second year study and supplements other course units. To introduce students to the requirements of university study in the biological sciences and to encourage them to develop the skills they will need to succeed in their studies.

CHEM1603 – CHEMISTRY FOR BIOLOGISTS (1 unit)

Course Organiser: Prof Andrea Sella

Course Structure: Lectures & Practicals

Website: <http://www.ucl.ac.uk/chemistry/undergraduate/synopses> (Please choose CHEM1603 from this website.)

The aim of this course is to provide students with the key foundations in chemistry needed to develop an understanding of biological systems at a molecular level. The course has a good balance of physical and organic chemistry. Students expecting to take higher level courses in chemistry and in biochemistry/molecular biology, pharmacology or neuroscience should take this course. It is highly recommended for other Life Science students.

STAT6101 – INTRODUCTION TO STATISTICAL METHODS AND COMPUTING (½ unit)

Course Organiser: Prof Tom Fearn (Dept of Statistics, 1-19 Torrington Place, Rm. 137)

Course Structure: Workshop/Practicals

Website: <https://www.ucl.ac.uk/statistics/current/ugserv.pdf>

To provide an introduction to statistical methods and interpretation of data, along with associated computing. To provide some expertise in applying quantitative methods in the Life and Physical Sciences. The statistical methods covered are useful in the routine analysis of scientific methods, as might be encountered in other course units.

**PHARMACOLOGY –
YEAR 1 - TERM 1 –
Block Allocations**

A: = uses first half of block (so can be taken with a B: module in the same block) B: = uses second half of block (so can be taken with an A: module in the same block) ≡ = courses with this symbol interdigitate so can be taken together in the same block

	Monday	Tuesday	Wednesday	Thursday	Friday
9 AM	Block A BIOC1001	Block B	Block C PHOL1001	Block D	Block E PHAR1001
10 AM					
11 AM	Block C PHOL1001	Block D	Block E PHAR1001	Block A BIOC1001	Block B
12 PM					
1 PM					
2 PM	Block F PHAR1001	Block G	(Occasional) BIOC1001 (practicals)	Block H PHOL1001 CHEM1603	Block I BIOC1001
3 PM					
4 PM					
5 PM					

Reading week: PHOL1001 (practicals not all groups)

PHARMACOLOGY – YEAR 1 - TERM 2 – Block Allocations

A: = uses first half of block (so can be taken with a B: module in the same block) B: = uses second half of block (so can be taken with an A: module in the same block) ≡ = courses with this symbol interdigitate so can be taken together in the same block

	Monday	Tuesday	Wednesday	Thursday	Friday
9 AM	Block A CELL1001	Block B STAT6101	Block C	Block D CHEM1603	Block E
10 AM					
11 AM	Block C	Block D CHEM1603	Block E	Block A CELL1001	Block B STAT6101
12 PM					
1 PM					
2 PM	Block F	Block G	(Occasional) CELL1001 (practicals)	Block H	Block I CELL1001
3 PM					
4 PM					
5 PM					

2ND YEAR TEACHING

1.1.17 COURSES FOR 2ND YEAR PHARMACOLOGY STUDENTS (2017/2018)

Pharmacology students must take 4 course units in total; Pharmacology 2002 (1 unit), Pharmacology 2003 (1 unit); Physiology 2005 (0.5 unit); Immunology 2001 (0.5 unit); and Biochemistry 2002 (0.5 unit) and/or Biochemistry 2003 (0.5 unit).

PHAR2002 – GENERAL AND SYSTEMATIC PHARMACOLOGY (1 unit)

Course Organiser: Prof Talvinder Sihra

Course Structure: Lectures & tutorials

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR2002>

A comprehensive lecture course compulsory for students of Pharmacology, Physiology/Pharmacology and Medicinal Chemistry. The course covers the mechanisms of action and uses of the major groups of drugs and important aspects of the pharmacokinetics and drug toxicity. Students must have a sound knowledge of physiology and biochemistry.

PHAR2003 – EXPERIMENTAL PHARMACOLOGY (1 unit)

Course Organiser: Prof Mark Farrant

Course Structure: Practicals/discussion sessions/seminars

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR2003>

This is a largely practical course, which is only available to students taking Pharmacology PHAR2002 which aims to develop experimental skills. In addition to a wide range of in-vitro experiments and studies of drug action in humans, the course includes student presentations, sessions to develop computer skills and also visits to research laboratories. Complementary, and only available to, students doing Pharmacology PHAR2002.

PHOL2005 – STRUCTURE AND FUNCTION OF THE NERVOUS SYSTEM (½ unit)

Course organiser: Prof Frances Edwards and Prof Krisjan Jessen

Course Structure: Lectures & Practicals

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHOL2005>

This course is an introduction to neurobiology, available to students from all departments including biological sciences, psychology, physical sciences, etc. It covers neural structure and function, organisation of the vertebrate nervous system, sensory pathways and perception, neurochemistry and pharmacology and the neural basis of behaviour. The course is available in the first or second year. It assumes a basic knowledge of biological principles (eg A-level) and includes optional classes for those who have not already taken courses that deal with resting potentials and action potentials. The course is taught jointly by staff from several departments and is intended to complement courses with more specialised neurobiology content run in individual departments (Anatomy, Pharmacology, Physiology, Biology).

IMMN2001 – IMMUNOLOGY (½ unit)

Course organiser: Dr Milica Vukmanovic-Stejic

Course Structure: Lectures

Website: <https://www.ucl.ac.uk/infection-immunity/study/undergraduate/undergraduate-modules>

A comprehensive introduction to the immune system. We will start by looking at the various cells and molecules that are involved, and explore their functional organisation. We will ask some basic questions such as how does the immune system know what to respond to?, and how does it eliminate infection?. We will go on to discuss the concept of immunological memory and how vaccination works. Like any complex machine, there are multiple ways in which the immune system can malfunction. Once you have an understanding of the 'nuts and bolts' of the immune system, and grasped some of the main concepts behind how it functions in a healthy individual, we will move on to talk about disease situations associated with imbalanced immunity, including immunodeficiencies, allergy and autoimmunity. We will also look at the medically very important field of transplantation, and investigate the potential for the immune system to fight different types of cancer.

BIOC2002 – ESSENTIAL PROTEIN STRUCTURE AND FUNCTION (½ unit)

Course organiser: Prof Stephen Perkins

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=BIOC2002>

This module provides students with an intermediate-level grounding in Cell and Molecular Biology and Biochemistry covering all aspects of structure function and control. No laboratory classes. Topics covered include: protein structure and enzyme kinetics, membrane structure and function, receptors and ions channels, metabolic and cellular regulation, techniques of molecular biology and control of gene expression and an introduction to the immune response.

BIOC2003 – ESSENTIAL MOLECULAR BIOLOGY (½ unit)

Course organiser: Prof Stephen Perkins

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=BIOC2003>

This 1/2 unit course, intended for students not specialising in Biochemistry, is a lecture course with tutorials. It covers topics in molecular biology and control of gene expression, immunology and the immune response, enzyme kinetics, membrane structure, haemoglobin structure and function, collagen and the extracellular matrix and intracellular protein targeting.

NEUR2006 – CELLULAR NEUROPHYSIOLOGY (½ unit)

Course Organiser: Dr Martin Stocker

Course Structure: Lectures & Practicals

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHOL2006>

The aim of the course is to provide an introduction to the production transmission and integration of signals within the nervous system. The biophysics of neural membranes is considered along with the physiology and pharmacology of synaptic transmission and plasticity. The role of glial cells and optogenetics will also be discussed.

ANAT2008 – DEVELOPMENTAL NEUROBIOLOGY (½ unit)

Course organiser: Prof Patricia Salinas

Course Structure: Lectures & Practicals

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=ANAT2008>

The course is an introduction to development in the nervous system, from the earliest embryonic events to the development of perception and complex behaviour in the neonate. The emphasis is experimental, that is, less on the facts than on how they were found out and where they lead next.

PHARMACOLOGY – YEAR 2 - TERM 1 – Block Allocations

A: = uses first half of block (so can be taken with a B: module in the same block) B: = uses second half of block (so can be taken with an A: module in the same block) ≡ = courses with this symbol interdigitate so can be taken together in the same block

	Monday	Tuesday	Wednesday	Thursday	Friday
9 AM	Block A BIOC2003	Block B PHAR2003 (B)	Block C PHOL2005	Block D PHAR2002	Block E
10 AM					
11 AM	Block C PHOL2005	Block D PHAR2002	Block E	Block A BIOC2003	Block B PHAR2003 (B)
12 PM					
1 PM					
2 PM	Block F PHAR2002 (A)	Block G PHAR2003 (Occasional)		Block H	Block I PHOL2005
3 PM					
4 PM					
5 PM					

PHARMACOLOGY – YEAR 2 - TERM 2 – Block Allocations

A: = uses first half of block (so can be taken with a B: module in the same block) B: = uses second half of block (so can be taken with an A: module in the same block) ≡ = courses with this symbol interdigitate so can be taken together in the same block

	Monday	Tuesday	Wednesday	Thursday	Friday
9 AM	Block A BIOC2002	Block B PHAR2003 (B)	Block C ANAT2008	Block D PHAR2002	Block E IMMN2001 (B) NEUR2006 (≡)
10 AM					
11 AM	Block C ANAT2008	Block D PHAR2002	Block E IMMN2001 (B) NEUR2006 (≡)	Block A BIOC2002	Block B PHAR2003 (B)
12 PM					
1 PM					
2 PM	Block F PHAR2002 (A) ANAT2008	Block G PHAR2003 NEUR2006 (≡) (Occasional)		Block H	Block I NEUR2006 (≡)
3 PM					
4 PM					
5 PM					

3RD YEAR TEACHING

Year 3 Structure for BSc/MSci Pharmacology

The same modules are available to third year BSc/MSci Pharmacology students.

	Module Code	Module Title	Unit	Term, Block
Choose one for BSc (PHAR3009 compulsory for MSci)	PHAR3009	Library Project	1.0	1 + 2
	PHAR3010	Laboratory Project	1.5	1 + 2
Compulsory	PHAR3003	Molecular Pharmacology	0.5	1
Optional	See Portico for list			

Year 4 Structure for MSci Pharmacology

Fourth year MSci Pharmacology undertake an experimental lab research project worth 2.0 CU and must choose taught courses up to a value of 2.0 CU.

	Module Code	Module Title	Unit	Term, Block
Choose one	PHARM901	Experimental Lab Project	2.0	1 + 2
	PHARM030	Experimental Lab Project	3.0	1 + 2
Optional	See Portico for list			

1.1.18 COURSES AVAILABLE TO 3RD YEAR and 4TH YEAR (MSci) STUDENTS (2017/2018)

Pharmacology students must start the 3rd year with (PHAR3003): Molecular Pharmacology. Over the 3rd year BSc students should take a total of 4.0 units with a minimum of 2.5 units in Pharmacology which can include either a 1.5 unit laboratory project (PHAR3010) or a 1.0 unit library project (PHAR3009). MSci students should take 4 units in the 3rd year with a minimum of 2.5 units in Pharmacology including a 1.0 unit library project. In the 4th year, together with a laboratory project (2 or 3 units) MSci students must take a total of 1 unit in Pharmacology or other options agreed with the Programme Tutor.

Important Note – intermediate and advanced levels

In Year 3, only 0.5 CU can be at Intermediate (Year 2) level. In Year 4, only 0.5 CU can be at Advanced (Year 3) Level.

PHAR3001/PHARM001 – NEUROPHARMACOLOGY (1 unit)

Course organiser: Prof Anthony Dickenson & Dr Steve Marsh

Course Structure: Lectures & Practicals

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR3001>

Evidence for different transmitters (from morphological, electrophysiological, pharmacological and biochemical studies) is evaluated so as to build up a picture of their pre- and postsynaptic actions and their interactions in specific pathways and brain areas. This knowledge is then applied to a consideration of various disease states and drug action. Special emphasis is given to neurotransmitter function and malfunction in epilepsy, Parkinsonism, schizophrenia, depression,

pain and anxiety states and to the mode of action of drugs in these conditions. Students attend a comprehensive series of lectures and undertake individual or group projects in research laboratories. Also available as a ½ unit (PHAR3002/PHARM002) without the practical work.

PHAR3003 - MOLECULAR PHARMACOLOGY (½ unit) - COMPULSORY

Course organiser: Prof Alasdair Gibb

Course Structure: Lectures & Practical

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR3003>

The course deals with the quantitative principles that underlie the study of the action of drugs at receptors beginning with the physical chemical principles which underlie drug-receptor interactions. The molecular nature of receptors is considered in detail and a critical and quantitative approach to the analysis and interpretation of pharmacological data is developed. This course provides core information for BSc Pharmacology and MSci Medical Chemistry students and supplements existing course unit options for final year students in related degree programmes in the Faculty of Life Sciences. .

PHAR3004/PHARM004 - RECEPTOR MECHANISMS (½ unit)

Course organiser: Prof Alasdair Gibb

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR3004>

This course is about the mechanisms involved in the generation of a response following receptor activation, either by a natural hormone or neurotransmitter or by drug action, and how drugs may interfere with receptor-mediated responses. Mechanisms involving ligand-gated ion channels, voltage-dependent calcium channels and potassium channels, G-proteins, second messengers (e.g. inositol phosphates, diacylglycerol) and cellular kinases and phosphatases are then considered in detail, together with the role of calcium. A final section draws these themes together by examining integrated cell responses such as the control of the release of insulin from the pancreas.

PHAR3005/PHARM005 - PHARMACOLOGY OF INFLAMMATION (1 unit)

Course organiser: Dr Dean Willis

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR3005>

This course provides up-to-date information and ideas about the cells and mediators of acute and chronic inflammation. Basic mechanisms involved in the formation and/or release and subsequent actions of pharmacologically active agents such as histamine, prostanoids, thromboxanes, leukotrienes and kinins are studied. These ideas underpin the use and development of drugs for treating diseases involving inflammation, such as asthma and rheumatoid arthritis, and how new treatments could be developed for conditions for which there is at present no adequate therapy. Course work includes a group project, an essay and practical work

PHAR3031/PHARM031 - PHARMACOLOGY OF INFLAMMATION (½ unit)

Course organiser: Dr Dean Willis

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR3031>

To provide up-to-date information and ideas about the roles of circulating leukocytes and resident tissue cells, and the mediators they release, in the processes of acute and chronic inflammation. It also aims to illustrate the use and development of anti-inflammatory drugs.

- To know which cells and mediators are key in the development of an inflammatory response.
- To understand the criteria used to assess whether or not endogenous substances may be described as mediator of inflammation.
- To be able to explain the mechanism of action of drugs which are used to control the inflammatory process.
- To appreciate current trends in inflammatory mediator and anti-inflammatory drug research
- To understand in particular the pathology of asthma and rheumatoid arthritis and the therapeutic approaches towards these diseases
- To develop your skills in literature searches, literature/research evaluation, study design and presentation of research proposal

PHAR3006/PHARM006 - DRUG DESIGN AND DEVELOPMENT (½ unit)

Course organiser: Dr Alasdair O'Brien & Dr Dean Willis

Course Structure: Lectures & Practical

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR3006>

This course is taught jointly by the Divisions of Medicine and Biosciences and is about the discovery of new drugs. Students will consider the ways of identifying novel compounds for development and the processes which take place before such compounds are released onto the market following their introduction into clinical practice. The course includes an opportunity for project work on the development of a specific drug, a practical on the effects of drugs on

gastric secretion in human volunteers, seminars on ethics committee operation and on drug licensing and a one-day visit to a pharmaceutical company.

PHAR3008/PHARM008 - PSYCHOPHARMACOLOGY ½ unit

Course organiser: Dr Jonathan Fry

Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR3008>

This course outlines what is known about the actions of drugs that affect mood and behaviour. Key themes include the neurobiological basis of specific psychiatric disorders and their drug treatment and drugs of abuse. The lectures concentrate on the effects on behaviour of specific classes of drugs, including those derived from plants. All these topics will build on knowledge acquired in the Neuropharmacology (PHAR3001/3002) courses. There will also be small-group tutorials and a film demonstration of how drugs can affect behaviour of rodents and humans. All these sessions will aim to develop students' ability to appraise scientific literature and to provide the background material for the written assessment.

PHAR3011/PHARM011 - SYNAPTIC PHARMACOLOGY: The Synapse, A Major Site of Disease & Drug Action (½ unit)

Course organiser: Prof Talvinder Sihra and Prof Stuart Cull-Candy

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR3011>

This course aims to consider signalling within nerve cells, and communication between cells (synaptic transmission) by considering the workings of individual cells at the level of single receptor channels and ion channels. Synapses form the functional connections between nerve cells. How synapses, receptors and ion channels work are central to our understanding of much of modern Pharmacology. It represents one of the major research areas of interest in Neuroscience today. The course will describe the exciting new concepts that derive from molecular and cellular approaches to the pharmacology of synapses and ion channels.

PROJECT OPTIONS:

PHAR3009 – LIBRARY PROJECT (1 unit)

Course organiser: Prof Talvinder Sihra

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR3009>

Topic of choice that relates to the research/teaching within Pharmacology, no specific time tabling. The current status of the subject area is presented as a critical dissertation and as an assessed poster presentation.

PHAR3010 – LABORATORY PROJECT (1½ units)

Course organiser: Prof Talvinder Sihra

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHAR3010>

Lab of choice within the Pharmacology Department, no specific timetabling. Results of the laboratory work are presented as a dissertation. Criteria for selection:

- Science students: In the 2nd year, students have to have taken and passed PHAR2002 **AND** one of PHAR2003, PHAR2006, PHOL2002 or BIOC2001.
- Integrating BSc students: Students **must** have attended all of the 2nd year practicals including the Drug Action rotations and be able to provide a portfolio that attests the completion of the all assignments satisfactorily.
- All student must have achieved an overall mark of at least 60% in the 2nd year.

PHARM901 and PHARM030

For MSci students only.

For more details on project preparation and assessment, please refer to the project guidelines from:

https://www.ucl.ac.uk/biosciences/degree-programmes/current_students/npp_cdb_projects

RECOMMENDED ELECTIVE OPTIONS:

PHOL3001/PHOLM001 – RESPIRATION IN HEALTH AND DISEASE (½ unit)

Course organiser: Prof Alexander Gourine and Dr Robert Stephens

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHOL3001>

This course examines the control of breathing particularly in humans, in a wide range of physiological and pathophysiological conditions including exercise, altitude, sleep and asthma. The relationship between respiratory function, structural anatomy and pathological states are explored.

PHOLM004 – CELL SIGNALLING IN HEALTH & DISEASE (1 unit)

Course organiser: Dr Julie Pitcher

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHOL3004>

No formal prerequisites but a good grounding in Biochemistry and Cell Biology are recommended (for example PHOL2007). The topics include: membrane transport, ion channel basics, regulation of cell functions by calcium, pH, kinases and phosphatases.

PHOLM009 – SPACE MEDICINE & THE EXTREME ENVIRONMENT (1 unit)

Course organiser: Dr Kevin Fong & Dr Daniel Martin

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PHOL3009>

To provide an understanding of the physiological effects of the space environment upon the human body. To provide an understanding of the biomedical problems associated with long and short duration manned space flight. To provide an overview of medical and health care systems required for long duration space flight. To provide an understanding of the physiological effects of short and long duration exposure to terrestrial high altitude environments.

PHOL3011/M011 – AUTONOMIC AND CENTRAL CONTROL OF CARDIORESPIRATORY FUNCTION (½ unit)

Course organiser: Dr Ian Edwards

Course Structure: Lectures

Website: <https://www.ucl.ac.uk/lifesciences-faculty-php/courses/viewcourse.php?coursecode=PHOL3011>

This module will look at the autonomic control of the cardiovascular and respiratory systems. The module will cover the anatomy of the autonomic nervous system (introducing the relevant peripheral and central areas that are involved in homeostatic control), the sympathetic nervous system and the parasympathetic nervous system (specifically how they interact to control the activity of the cardiovascular system), the central respiratory network and how it establishes normal breathing patterns, and finally how the activity in these pathways changes in response to exercise and disease. This will be accompanied by a mini-project comparing the sympathetic/parasympathetic balance in different exercise paradigms.

PHOL3016 – CELL POLARITY AND DISEASE (1 unit)

Course organiser: Prof Shamshad Cockcroft & Dr Anselm Zdebik

Course Structure: Lectures

Website: <https://www.ucl.ac.uk/lifesciences-faculty-php/courses/viewcourse.php?coursecode=PHOL3016>

Epithelial cells form sheets that cover the surface of the body and line the internal organs and perform vectorial functions. The module will encompass four themes: • Cell Biology of Epithelial cells, • Vectorial transport in health and disease (absorption and secretion), • Specialised function of epithelia in sensing the environment

NEUR3003/NEURM003 – METABOLIC NEUROSCIENCE (½ unit)

Course organiser: Dr Stefan Trapp

Course Structure: Lectures

Website: <https://www.ucl.ac.uk/lifesciences-faculty-php/courses/viewcourse.php?coursecode=NEUR3003>

The course is centred around the neural structures traditionally described as the limbic system: hypothalamus, amygdala, septum and hippocampus and their role in normal and pathological function. The first half of the course consists of a set of lectures on the anatomy, physiology and role in behaviour of these structures, and the second half is devoted to student-led debates on topics surrounding a group of psychiatric disorders and their relation to the limbic system.

NEUR3018/NEURM018 – NEURAL BASIS OF LEARNING AND MOTIVATION (½ unit)

Course organiser: Dr Francesca Cacucci

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=ANAT3018>

The course is centred around the neural structures traditionally described as the limbic system: hypothalamus, amygdala, septum and hippocampus and their role in normal and pathological function. The first half of the course consists of a set of lectures on the anatomy, physiology and role in behaviour of these structures, and the second half is devoted to student-led debates on topics surrounding a group of psychiatric disorders and their relation to the limbic system.

NEUR3031/NEURM031 – CONTROL OF MOVEMENT (½ unit)

Course organiser: Prof Christopher Yeo

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=ANAT3031>

The course begins by considering the anatomy and physiology of essential components of the motor system; muscles and the motor unit; proprioception; spinal integration; ascending and descending pathways in the spinal cord; motor cortex; basal ganglia and cerebellum. The integrated action of these systems in locomotion, voluntary movements and eye movements is considered. The course concludes with analyses of motor learning, and modelling of motor control.

NEUR3041/NEURM041 – NEURAL COMPUTATION (½ unit)

Course organiser: Prof Neil Burgess

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=ANAT3041>

The course examines the computational properties of neurons and neuronal circuits using results from experimental models and in the context of current theories associated with these data. The topics covered will include (1) the role of synaptic plasticity in experiments and theories of brain function, (2) neurobiological mechanisms underlying learning and memory in simple organisms and in mammals, (3) plasticity and formation of neocortical sensor maps, (4) models for the function of the cerebellum and the hippocampus. (5) Current views of the mental representation of objects, and (6) neural network models and their impact on neurobiology.

NEUR3045/NEURM045 – VISUAL NEUROSCIENCE (½ unit)

Course organiser: Prof Andrew Stockman

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=ANAT3045>

This course is run in collaboration with the departments of Anatomy and Psychology. The course will treat the neurobiology of vision as an integrated subject. It will cover the physiology of cells in the retina and central visual pathways, and show how the cells' properties underlay the spatio-temporal processing carried out by the visual system as revealed by psychophysical experiments.

ANAT3028/ANATM028 – THE NEUROBIOLOGY OF NEURODEGENERATIVE DISEASE (½ unit)

Course organiser: Prof Stephen Davies

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=ANAT3028>

This course will focus on the cellular and molecular biology of Alzheimer's, Huntington's, Parkinson's and Motor Neurone disease, with the main emphasis on the mechanisms leading to cell death. A combination of lectures, clinical presentations and student-led discussion seminars will cover topics including: endogenous and exogenous excitotoxins, environmental and experimental lesions of monoaminergic neurones, developmentally regulated cell death, growth factors in the development and maintenance of CNS neurones, cell biology of the neuronal response to injury, transplantation strategies for treatment of neurodegenerative diseases.

ANAT3040 – MOLECULAR BASIS OF NEUROPSYCHIATRIC DISORDERS (½ unit)

Course organiser: Prof Stephen Hunt & Professor Stephen Davies

Course Structure: Lectures

Website: <https://www.ucl.ac.uk/lifesciences-faculty-php/courses/viewcourse.php?coursecode=ANAT3040>

The module is designed to provide students with a conceptual and detailed knowledge of the molecular basis of neuropsychiatric disease. Topics covered will include: depression, mania and anxiety, Alzheimer's and frontotemporal lobe dementias (FTLD), schizophrenia and psychosis, addiction reward and anhedonia, as well as autistic spectrum disorder and Rett syndrome. These subjects will be introduced through reference to contemporary research into the areas.

ANAT3042 – PAIN (½ unit) - This course can be included as a "Pharmacology" module choice

Course organiser: Dr Sandrine Geranton & Prof Stephen Hunt

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-facultyphp/courses/search.php?action=single&coursecode=ANAT3042>

This course is taught jointly by the Departments of Anatomy, Pharmacology, Physiology and Psychology, and aims to present an integrated approach to pain. Through a series of 18 lectures, students will be presented with information about the basic mechanisms of pain and its clinical manifestations. Students will also be introduced to current ideas about therapy and management and to the problems inherent in measurements of pain. A series of seminars based on reading topics will be held at the end of the course.

CELL3001/CELLM001 – STEM CELLS AND REGENERATIVE MEDICINE (½ unit)

Course organiser: Prof Tim Arnett

Course Structure: Lectures

Website: <https://www.ucl.ac.uk/lifesciences-faculty-php/courses/viewcourse.php?coursecode=CELL3001>

Introduction; self renewal and differentiation: totipotency-pluripotency-unipotency; stem cells & gene therapy; neural stem cells; haemopoietic stem cells; normal limb development and bone stem cells; limb regeneration; regeneration in fish; retinal repair; CNS repair; connective tissue engineering; cartilage & tracheal repair; wound healing / repair; fracture healing; muscle repair; orthopaedic bioengineering; haemopoietic stem cell transplantation; challenges in good manufacturing practice; translation; ethics.

CELL3006/CELLM006 – DYNAMIC BIOLOGICAL SYSTEMS (½ unit)

Course organiser: Dr Philip Lewis

Course Structure: Lectures

Website: <https://www.ucl.ac.uk/lifesciences-faculty-php/courses/viewcourse.php?coursecode=CELL3006>

Topics: (provisional) Programming using Python. Examples based on population dynamics (maths, conditionals, loops, data structures, functions, objects, libraries). Population dynamics. Rate equations for population change. Numerical integration. Notation of differential equations. Compartmental models. Equations for reaction kinetics including: production and degradation, the law of mass action, enzymatic reactions (Michaelis-Menten / Hill equations), gene regulation (activation / repression). Modelling biological systems. Construction of reaction networks. Implementation as code. Determination of parameter values. Deterministic and stochastic models. Basic error and stability analysis. Systems analysis. Working with models: parameter scans, sensitivity analysis, extracting statistical measurements. Phase space analysis to determine equilibria.

BIOC3013 – CANCER BIOLOGY (½ unit)

Course organiser: Prof Matilda Katan

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=BIOC3013>

Selected topics from Biochemistry BIOCC041. Carcinogenesis: metabolic activation of carcinogens, oncogenes, tumour suppressor genes and tumour markers, molecular genetics of disease: genetic probes, nutrient effects on gene expression, retinoids, molecular biology of diabetes mellitus.

BIOL3012 – SEX, GENES AND EVOLUTION (½ unit)

Course organiser: Prof Andrew Pomiankowski

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=BIOL3012>

A lecture and seminar course on modern aspects of evolutionary genetics and sociobiology. The course will concentrate on (a) the evolution of sex and its consequences and (b) evolutionary conflicts between individuals and genes within individuals. A wide range of topics will be covered including: the evolutionary origins of sexual reproduction; the maintenance and consequences of selfish genetic elements (meiotic drive genes, cytoplasmic genes, transposable elements, B chromosomes); the evolution of sex chromosomes; the evolution of distinct sexes; the origin and evolution of social insects; sexual selection; sperm competition; genomic imprinting; the inheritance of acquired characters; the biology of ageing.

PSYC3303 – TOPICS IN NEUROBIOLOGY (½ unit)

Course organiser: Dr Kate Jeffery

Course Structure: Lectures

Website: <http://www.ucl.ac.uk/lifesciences-faculty-php/courses/search.php?action=single&coursecode=PSYC3303>

The course is centred around the neural structures traditionally described as the limbic system: hypothalamus, amygdala, septum and hippocampus and their role in normal and pathological function.

**PHARMACOLOGY -
YEAR 3 - TERM 1 -
Block Allocations**

A: = uses first half of block (so can be taken with a B: module in the same block)

B: = uses second half of block (so can be taken with an A: module in the same block)

≡ = courses with this symbol interdigitate so can be taken together in the same block

	Monday	Tuesday	Wednesday	Thursday	Friday
9 AM	Block A PHAR3001/2 PHAR3002 PSYC3303	Block B PHAR3004 PHAR3006 PHOL3016	Block C PHAR3003	Block D PHAR3001/2 PHAR3002 NEUR3018	Block E PHOL3016 NEUR3041 ANAT3028
10 AM					
11 AM	Block C PHAR3003	Block D PHAR3001/2 PHAR3002 NEUR3018	Block E PHOL3016 NEUR3041 ANAT3028	Block A PHAR3001/2 PHAR3002 PSYC3303	Block B PHAR3004 PHAR3006 PHOL3016
12 PM					
1 PM					
2 PM	Block F PHAR3003	Block G (Occasional)		Block H PHAR3001/2	Block I PHAR3004 PHAR3006 PHOL3016
3 PM					
4 PM					
5 PM					

**PHARMACOLOGY –
YEAR 3 - TERM 2 –
Block Allocations**

A: = uses first half of block (so can be taken with a B: module in the same block)

B: = uses second half of block (so can be taken with an A: module in the same block)

≡ = courses with this symbol interdigitate so can be taken together in the same block

	Monday	Tuesday	Wednesday	Thursday	Friday
9 AM	Block A PHAR3011 PHOL3001 NEUR3031 CELL3001 BIOC3013	Block B PHAR3005 PHAR3031 PHOL3011	Block C PHAR3008	Block D ANAT3042 BIOC3013	Block E NEUR3003 BIOL3012
10 AM					
11 AM	Block C PHAR3008	Block D ANAT3042 BIOC3013	Block E NEUR3003 BIOL3012	Block A PHAR3011 PHOL3001 NEUR3031 CELL3001 BIOC3013	Block B PHAR3005 PHAR3031 PHOL3011
12 PM					
1 PM					
2 PM	Block F ANAT3040 CELL3006	Block G PHOL3001 NEUR3045 BIOC3013	(Occasional)	Block H PHAR3011 PHOL3011 CELL3006 BIOC3013	Block I PHAR3005 PHAR3031
3 PM					
4 PM					
5 PM					

**PHARMACOLOGY –
YEAR 4 - TERM 1 –
Block Allocations**

A: = uses first half of block (so can be taken with a B: module in the same block)
 B: = uses second half of block (so can be taken with an A: module in the same block)
 ≡ = courses with this symbol interdigitate so can be taken together in the same block

	Monday	Tuesday	Wednesday	Thursday	Friday
9 AM	Block A PHARM001/2 PHARM002 PSYCM303	Block B PHARM004 PHARM006	Block C PHOLM004 PHOLM009	Block D PHARM002 NEURM018	Block E NEURM041 ANATM028
10 AM					
11 AM	Block C PHOLM004 PHOLM009	Block D PHARM002 NEURM018	Block E NEURM041 ANATM028	Block A PHARM001/2 PHARM002 PSYCM303	Block B PHARM004 PHARM006
12 PM					
1 PM					
2 PM	Block F	Block G PHOLM004 PHOLM009 (Occasional)		Block H PHARM001/2	Block I PHARM004 PHARM006 PHOLM004
3 PM					
4 PM					
5 PM					

**PHARMACOLOGY -
YEAR 4 - TERM 2 -
Block Allocations**

A: = uses first half of block (so can be taken with a B: module in the same block)

B: = uses second half of block (so can be taken with an A: module in the same block)

≡ = courses with this symbol interdigitate so can be taken together in the same block

	Monday	Tuesday	Wednesday	Thursday	Friday
9 AM	Block A PHARM011 PHOLM001 NEURM031 CELLM001	Block B PHARM005 PHARM031 PHOLM011	Block C	Block D PHARM005 PHARM031 ANATM042	Block E NEURM003
10 AM					
11 AM	Block C	Block D PHARM005 PHARM031 ANATM042	Block E NEURM003	Block A PHARM011 PHOLM001 NEURM031 CELLM001	Block B PHARM005 PHARM031 PHOLM011
12 PM					
1 PM					
2 PM	Block F CELL3006	Block G PHOLM001 NEURM045 (Occasional)		Block H PHARM011 PHOLM011 CELL3006	Block I PHARM005
3 PM					
4 PM					
5 PM					

1.21 UCL LOCAL AREA MAP

