

Pharmaceutical Science

Final award	BSc
Intermediate awards available	Cert HE, Dip HE, BSc
UCAS code	
Details of professional body accreditation	N/A
Relevant QAA Benchmark statements	Biosciences
Date specification last up-dated	April 2012

BANNER BOX:

Pharmaceutical Science is a multi-disciplinary subject requiring knowledge of chemistry, anatomy, physiology, biochemistry, molecular biology and toxicology, applying their principles to the study of drugs.

ENTRY REQUIREMENTS

For students entering with AS/A2 qualification, the minimum requirement is 240 points at A2 level with a preferred minimum of 100 A2 points in Biology or Chemistry.

We also accept Access to Science, Advanced GNVQ in Science at merit grade, and BTEC National Diploma in Science with a minimum of 6 modules at merit grade or higher. All students should also have a minimum of grade C at GCSE, or equivalent, in English language, mathematics and double science.

Applicants with overseas or alternative qualifications are considered on an individual basis. For mature students, credit may be given for relevant work experience.

Direct entry to the second year of the programme is available for students with Higher National Certificate or Diploma in an appropriate area, or for those who have successfully completed study equivalent to level one at another University.

If you want to study Pharmaceutical Science but have not achieved the right entry qualifications, why not start with our extended degree programme in Pharmaceutical Science (feeds in at Level 1).

Students may be admitted through Accreditation of Experiential Learning (AEL) or Accreditation of Certified Learning (ACL) processes.

In the case of applicants whose first language is not English, then IELTS 6.0 (or equivalent) is required with a minimum of 5.5 in all components. International qualification will be checked for appropriate matriculation to UK Higher Education undergraduate programmes.

ABOUT THE PROGRAMME

What is Pharmaceutical Science?

Pharmaceutical Science is primarily concerned with the development of new medicines, including the design, disposition, delivery, action and use of drugs. This requires diverse subject knowledge including pharmacology (the effect of drugs on humans), pharmaceutical chemistry (design and synthesis of new drug molecules), pharmaceuticals (drug formulation for optimum delivery) and pharmacognosy (drug substances from natural origins).

Pharmaceutical Science at UEL

- This programme is a new addition to our portfolio of undergraduate programmes where it makes a logical addition.
- Includes all aspects of the development of new medicines, including drug design, quality control and drug regulation
- Incorporates specialist modules on Drug Design, Pharmaceutical Analysis, Pharmacology and Toxicology
- All modules offer extensive laboratory training through all years of the programme enhancing student employability
- The first year is shared with other Bioscience degrees at UEL, providing the option to transfer to similar degree programmes at the end of the first year.

Programme structure

- Most students follow a 3-year full-time pathway, however 4-year sandwich degree (will be encouraged) and part-time routes are also available.
- The programme is taught in a semesterised system with 3 modules of study in each semester for full-time students. Students may join the programme at the start of either semester.
- At Level 1 basic biochemistry, chemistry and physiology are introduced in modules on Cell Biology, Cellular Processes, Essential Chemistry and Human Physiology. Professional Practice provides general background and study skills. The other module of study is Microbiology or Anatomy
- At Level 2, all six modules are essential: Molecular Biology and Genetics, Cellular Biochemistry Introductory Toxicology, Introductory Pharmacology, Pharmaceuticals, and Research Methods.
- The third year of study can be spent away from the University in an agreed work placement.
- The final year (Level 3) has further modules specialising in aspects of Pharmaceutical Science: Drug Design, Pharmaceutical Analysis and Applied Toxicology. Plus there is the option to study either Bioinformatics and Functional Genomics or Systems Pharmacology.
- In your final year, you do an individual research project (up to one third of final year work), involving original work (normally laboratory-based).

Learning environment

Learning is encouraged through participation in a wide variety of activities including lectures, seminars, workshops, laboratory-based practicals, external visits, distance learning, web-based learning etc. Each module has 5 to 6 hours contact per week, and may need up to 10 hours further individual study per week on each module.

Success at university depends on developing your ability to study independently using library resources, Computer-assisted learning (CAL), handouts and web-based study activities. The first year has a Skills module which helps you make the major shift to independent learning needed at university, compared to schools and FE colleges, and also help to develop those transferable skills so important in working life.

Assessment

Students are assessed in practical work and theory. In most modules the module mark is derived from both coursework during the semester (this can take a variety of forms including laboratory work, data analysis, essays, oral presentations etc.) and from unseen written theory examination at the end of the semester. Some modules also include laboratory practical exams.

Level 1 (Year 1) modules introduce you to the standards and types of assessment used at university. Some have theory exams staged at intervals through the semester. Although they do not contribute to your final Honours grade, you are expected to achieve at least 40% in all Level 1 modules.

Your final Honours grade uses marks from Level 2 and Level 3 modules only. Your Level 1 modules prepare you to do your best in these later years.

If a module is not passed at the first opportunity, marks from later opportunities are capped at 40%.

Work experience/placement opportunities

- The 4-year Sandwich programme offers a years working experience normally in a laboratory which may be in a hospital, research institution or in a medical, industrial or food company. Placements are available nationwide and sometimes abroad.
- Your experience can be written up to pass a Work Experience module that will appear on your degree transcript. You also have the opportunity to take a work-based learning module which can contribute to your final degree classification.

Project work

- Project work is an essential component of an Honours degree programme and one that most students enjoy. Small projects and group work exercises feature throughout the programme.
- One third of your final year is spent on an individual research project. This will contribute over 20% to your total Honours mark.
- Project work encourages students to show initiative in their individual work under supervision, using appropriate analytical techniques to generate and interpret new data.
- Laboratory based projects are encouraged but library based research projects may also be undertaken.

Added value

- Extensive personal support throughout the programme.

- Staff with extensive experience of teaching students from a wide range of backgrounds.
- Sound practical and academic training.
- The sandwich year working in a laboratory will add value to your job prospects at the end of the programme.
- Effective careers advice and support available.

IS THIS THE PROGRAMME FOR ME?

If you are interested in

- Developing your knowledge and understanding of living systems.
- Learning and developing your practical skills in biological techniques.
- Understanding how the latest techniques such as Proteomics, Genomics and Metabolomics are used to better understand the process of life and evolution.
- Improving your scientific skills of logical argument and analysis.

If you enjoy....

- Reading or hearing about research, new drugs and therapies, and medicine
- The challenge of increasing not just your knowledge of facts, but also your understanding of how science contributes to the search for new solutions to problems.
- Doing scientific procedures and experiments in laboratories and IT labs with precision.
- Working in laboratories using standard and novel techniques to solve problems.
- Being able to study quietly and individually away from formal staff-led sessions.

If you want....

- To understand how new drugs are developed in the laboratory then in patients applied to treat disease
- The option of a year's work experience in a laboratory away from the University.
- To be able to spend up to one third of your final year on your own individual research project at the university (usually developing laboratory skills, but IT, survey or library projects also negotiable).

Your future career

As a Pharmaceutical Scientist you will have a wide range of career options available to you. A wide range of organisations employ pharmaceutical scientists in a range of roles. These include

Drug companies which are developing new drugs and evaluating new products

Chemical companies making intermediates for the drug industry require graduates with analytical skills who have an understanding of drug development

Major pharmaceutical companies who employ graduates to advise customers on technical aspects of their products

Research based careers in universities and research institutes

Opportunities outside the pharmaceutical industry in teaching and professions such as accounting and finance

How we support you

The School of Health, Sport and Bioscience provides immediate contact with University support systems.

In your first year, you are allocated a Personal Tutor (a member of staff familiar with your degree). You will see your Tutor at regular intervals to discuss progress and life in general.

Module leaders and Programme leaders also give support on academic matters, and advice about other specialist help available through the University.

The School also has a Help Desk to provide administrative assistance and advise how to get the right help.

Internet homepages are used by many staff to support their teaching and your learning.

Lecture and practical files, quizzes, mark summaries and much more is now available for several modules via [UELPlus Online links](#).

Throughout the programme you will find a number of scheduled support activities devoted to specific aspects e.g. how to write your project report, or more general aspects such as careers.

Support for students on a University level includes:

- Libraries and Learning Resource Centres
- Childcare for students with children aged 2 1/2 years to 5 years.
- Careers advice and information
- Counselling and Advice for practical problems
- Health Centre with a nurse regularly on duty.
- Language tuition
- Dyslexia support
- Accommodation

Bonus factors

- A small and friendly campus.
- A School with staff and facilities to match to the wide interests and backgrounds of students.
- Good connections with employers.

- A 5 minute walk from Westfield Stratford City shopping complex
- Close proximity to the Olympic Park
- Multiplex cinema, theatre, supermarkets, high street shops, restaurants, cafes and pubs a few minutes walk away in Stratford - a major site of new development in East London.
- Central London only 20 minutes away by underground and [extensive transport links with all parts of London](#).

Programme aims and learning outcomes

What is this programme designed to achieve?

This programme is designed to give you the opportunity to:

- To gain an understanding of how new drugs and therapies are developed to fight disease.
- To apply that basic understanding to the study of specific, more advanced, topics enabling students to have current knowledge in selected areas.
- To develop skills in the performance and interpretation of a range of appropriate experimental techniques.
- To develop research skills
- To develop independent learning skills, which can be carried on throughout life.
- To gain an insight into the work of biologists in modern society.

What will you learn?

Knowledge

- All students gain a broad overview of the biology field at level one. Thereafter you will acquire more detailed specialist knowledge in your chosen areas.
- The programme aims to provide a background to a large number of the scientific techniques used in biological investigations.
- Students will acquire an understanding of the laboratory procedures and techniques used, which will allow the rapid acquisition of more specialist skills later in their career.
- An awareness of the wider implications of scientific research on society as a whole.

Thinking skills

- The ability to comprehend, analyse and criticise published information in biology.
- The ability to formulate hypotheses with the minimum of assistance.
- The ability to use integrated approaches to problem solving.

Subject-Based Practical skills

- The ability to analyse data from your own and other people's experiments and to interpret them in the light of published work.
- The ability to select and apply a range of practical skills relevant to your chosen areas of biology.
- The ability to design and carry out experimental work.

- The ability to effectively communicate your work to scientists and the general public.
- The ability to select and utilise appropriate computer software.
- The ability to carry out literature searches effectively to find information on a specific topic.

Skills for life and work (general skills)

- The development of your own style of independent learning.
- The ability to communicate ideas and experiments to others and to debate relevant scientific and /or ethical issues.
- IT skills.
- Communication skills.
- Team work.
- Time management.
- Confidence.

The programme structure

Introduction

All programmes are credit-rated to help you to understand the amount and level of study that is needed.

One credit is equal to 10 hours of directed study time (this includes everything you do e.g. lecture, seminar and private study).

Credits are assigned to one of 5 levels:

0 equivalent in standard to GCE 'A' level and is intended to prepare students for year one of an undergraduate degree programme

1 equivalent in standard to the first year of a full-time undergraduate degree programme

2 equivalent in standard to the second year of a full-time undergraduate degree programme

3 equivalent in standard to the third year of a full-time undergraduate degree programme

M equivalent in standard to a Masters degree

Credit rating

The overall credit-rating of this programme is 360 credits.

Typical duration

The expected duration of this programme is 3 years when attended in full-time mode or 4 years in part-time mode. It is possible to move from a full-time mode of study to a part-time mode of study and vice-versa, to accommodate any external factors such as financial

constraints or domestic commitments. Many of our students make use of this flexibility and this may impact on the overall duration of their study period.

How the teaching year is divided

The teaching year begins in September and ends in June but some programmes also allow students to join at the start of Semester B, in February.

A typical student, in full-time attendance mode of study, will register for 120 credits in an academic year. A student in a part-time mode of study may register for up to 80 credits in any academic year.

What you will study when

This programme is part of a modular degree scheme. A student registered in a full-time attendance mode will take six 20 credit modules (or fewer, if any are 40 credit modules) per year. An honours degree student will complete modules totalling 120 credits at level one, modules totalling 120 credits at level 2 and modules totalling 120 credits at level 3.

It is possible to bring together modules from one field with modules from another to produce a combined programme. Subjects are offered in a variety of combinations:

Single 120 credits at levels one, two and three

Major 80 credits at levels one, two and three

Joint 60 credits at levels one, two and three

Minor 40 credits at levels one, two and three

LEVEL	UEL Module Code	TITLE	SKILLS MODULES (Insert Y where appropriate)	CREDITS	STATUS SINGLE	STATUS MAJOR	STATUS JOINT	STATUS MINOR
1	BS1005	Professional Practice	Y	20	Core	Core	Option	
1	BS1001	Cell Biology		20	Core	Core	Core	Core
1	BS1041	Human Physiology		20	Core			
1	BS1006	Essential Chemistry		20	Option	Core	Core	Core
1	BS1002	Cellular Processes		20	Core	Core	Option	
1	BS1022	Microbiology		20	Option			
1	BS1003	Anatomy		20	Option			
2	BS2067	Cellular Biochemistry		20	Core			
2	BS2002	Molecular Biology & Genetics		20	Core	Core	Option	Option
2	BS2060	Research Methods	Y	20	Core	Core	Option	

2	BS2041	Introductory Pharmacology		20	Core	Core	Option	Option
2	BS2018	Introduction to Toxicology		20	Core			
2	BS2065	Pharmaceutics		20	Core	Core	Core	Core
	BS2099	Work Based Learning			Option			
3	BS3001	Bioinformatics and Functional Genomics		20	Option		Option	
3	BS3034	Applied Toxicology		20	Core		Option	
3	BS3041	Systems Pharmacology		20	Option		Option	
3	BS3077	Drug Design		20	Core	Core	Core	Core
3	BS3072	Pharmaceutical Analysis		20	Core	Core	Option	Core
3	BS3063	Independent Research Project (double module)	Y	40	Core	Core	Option	

Modules are defined as:

Core - Must be taken

Option - Select from a range of identified module within the field

University Wide Option Select from a wide range of university wide options

The following are the core and optional requirements for the single, major, joint and minor routes for this programme

The Skills Modules listed in the Joint Route are Core, unless the equivalent Skills Modules are taken in your other combined subject.

Requirements for gaining an award

In order to gain an honours degree you will need to obtain 360 credits including:

- A minimum of 120 credits at level one or higher
- A minimum of 120 credits at level two or higher
- A minimum of 120 credits at level three or higher

In order to gain an ordinary degree you will need to obtain a minimum of 300 credits including:

- A minimum of 120 credits at level one or higher
- A minimum of 120 credits at level two or higher
- A minimum of 60 credits at level three or higher

In order to gain a Diploma of Higher Education you will need to obtain at least 240 credits including a minimum of 120 credits at level one or higher and 120 credits at level two or higher

In order to gain a Certificate of Higher Education you will need to obtain 120 credits at level one or higher

In order to gain an Associate Certificate you will need to obtain a minimum of 20 credits at level one or higher

Teaching, learning and assessment

Teaching and learning

Knowledge is developed through

- Lectures
- Tutorials
- Workshops
- Practicals
- Reading
- Internet, UELPlus and CAL

Thinking skills are developed through

- Computer aided learning
- Presentations
- Preparing for tutorials and seminars/workshops
- Completing coursework assignments (including data analysis essays, presentations etc)
- Independent reading

Practical skills are developed through

- Laboratory Practical and/or fieldwork
- Computer simulations and use of IT

Skills for life and work (general skills) are developed through

- Managing time
- Presenting ideas and arguments in a structured manner - written and oral communication
- Problem solving
- Team work

Assessment

A wide variety of assessment methods are used including

- Written examinations

- Practical reports
- Essays
- Data analysis
- Poster presentations
- Oral presentations
- Portfolios
- Final year research project and dissertation
- MCQ tests
- Database searches
- Library exercises

Knowledge and Thinking Skills are assessed by

- Evidence of reading and comprehension of the topics covered in the module being assessed. This will be particularly apparent in essay work and examinations.
- Ability to describe, explain and discuss various aspects of the programme material in the context of class tutorials, group work, presentations and other pieces of assessed coursework for the module.
- In the final year particularly, thinking skills will be assessed by the ability to take information presented in any module out of its original context and to utilise this information in the construction of arguments, comparisons, hypotheses etc as required to address the specific assessments in each module.

Practical skills are assessed by

- The ability to carry out laboratory practical work effectively, within the timeframe allocated.
- The ability to interpret and report on work carried out in the laboratory.
- The ability to complete assignments using appropriate resources.
- Evidence of logical planning and management of time in the preparation of materials for assessment.

Skills for life and work (general skills) are assessed by

- The ability to work to strict deadlines
- The ability to select and utilise appropriate problem solving skills
- Demonstration of effective oral and written communication skills
- Evidence of interpersonal skills such as teamwork and /or team leadership
- Evidence of general numeracy skills

How we assure the quality of this programme

Before this programme started

Before this programme started, the following was checked:

- there would be enough qualified staff to teach the programme;
- adequate resources would be in place;
- the overall aims and objectives were appropriate;
- the content of the programme met national benchmark requirements;

- the programme met any professional/statutory body requirements;
- the proposal met other internal quality criteria covering a range of issues such as admissions policy, teaching, learning and assessment strategy and student support mechanisms.

This is done through a process of programme approval which involves consulting academic experts including some subject specialists from other institutions.

How we monitor the quality of this programme

The quality of this programme is monitored each year through evaluating:

- external examiner reports (considering quality and standards);
- statistical information (considering issues such as the pass rate);
- student feedback.

Drawing on this and other information, programme teams undertake the annual Review and Enhancement Process which is co-ordinated at School level and includes student participation. The process is monitored by the Quality and Standards Committee.

Once every six years an in-depth review of the whole field is undertaken by a panel that includes at least two external subject specialists. The panel considers documents, looks at student work, speaks to current and former students and speaks to staff before drawing its conclusions. The result is a report highlighting good practice and identifying areas where action is needed.

The role of the programme committee

This programme has a programme committee comprising all relevant teaching staff, student representatives and others who make a contribution towards the effective operation of the programme (e.g. library/technician staff). The committee has responsibilities for the quality of the programme. It provides input into the operation of the Review and Enhancement Process and proposes changes to improve quality. The programme committee plays a critical role in the quality assurance procedures.

The role of external examiners

The standard of this programme is monitored by at least one external examiner. External examiners have two primary responsibilities:

- To ensure the standard of the programme;
- To ensure that justice is done to individual students.

External examiners fulfil these responsibilities in a variety of ways including:

- Approving exam papers/assignments;
- Attending assessment boards;
- Reviewing samples of student work and moderating marks;
- Ensuring that regulations are followed;

- Providing feedback through an annual report that enables us to make improvements for the future.

Listening to the views of students

The following methods for gaining student feedback are used on this programme:

- Module evaluations
- Student representation on programme committees (meeting each semester)
- Personal tutor, module leader, programme leader, field co-ordinator

Students are notified of the action taken through:

- Circulating the minutes of the field committee and the annual quality improvement report
- Verbal feedback to specific groups
- Providing details on the appropriate noticeboard

Listening to the views of others

The following methods are used for gaining the views of other interested parties:

- Feedback from former students
- Industrial liaison committee
- Liaison with sandwich placement employers

Where you can find further information

Further information about this programme is available from:

- The UEL web site (<http://www.uel.ac.uk>)
- The programme handbook
- Module study guides
- UEL Manual of General Regulations <http://www.uel.ac.uk/qa/>
- UEL Quality Manual <http://www.uel.ac.uk/qa/>
- Regulations for the Academic Framework <http://www.uel.ac.uk/academicframework/>
- UEL Guide to Undergraduate Programmes
- School web pages <http://www.uel.ac.uk/hsb/>