



LEARNING &amp; TEACHING SERVICE

## PROGRAMME SPECIFICATION FOR AN AWARD OF THE UNIVERSITY OF EAST ANGLIA

Course name	Course code <i>note PS</i>	Year
Pharmaceutical Sciences BSc	U1B231302	2017/18

**NOTE:** Whilst the University will make every effort to offer the modules listed, changes may sometimes have to be made for reasons outside the University's control (e.g. illness of a member of staff) or because of low enrolment or sabbatical leave.

## COURSE SUMMARY

<b>S1</b>	<b>a</b>	<b>SCHOOL(S) OF STUDY</b>	Pharmacy	
<i>note S1c</i>	<b>b</b>	<b>FACULTY or FACULTIES</b>	Science	
	<b>c</b>	<b>JOINT COURSE?</b> (ie owned/taught by more than one School)	<b>YES</b>	
			<b>NO</b>	No
<b>d</b>	<b>NAME OF COURSE DIRECTOR</b> (Home School)	Dr Julie Sanderson		
	<b>e</b>	<b>NAME OF DEPUTY COURSE DIRECTOR</b> (partner School, for Joint Courses only)		
<b>S2</b>	<b>a</b>	<b>COURSE TITLE</b>	Pharmaceutical Sciences BSc	
	<b>b</b>	<b>COURSE CODE</b>	U1B231301	
<i>note S2c &amp; S2d</i>	<b>c</b>	<b>AWARD</b>	BSc Hons	
	<b>d</b>	<b>EXIT AWARD(S) AND TITLE(S)</b>	Level 1: Certificate of Higher Education Level 2: Diploma of Higher Education	
	<b>e</b>	<b>FULL/PART-TIME (please specify)</b>	Full	
	<b>f</b>	<b>LOCATION (UEA Norwich, Distance Learning)</b>	UEA Norwich	
	<b>g</b>	<b>AVAILABLE FROM:</b>	2004/5	
<b>S3</b> <i>note S3a</i>	<b>a</b>	<b>PROFESSIONAL AWARD (if any)</b>	N/A	
<i>note S3b</i>	<b>b</b>	<b>ACCREDITING/VALIDATING BODY (if relevant)</b>	N/A	

		<b>Website (URL)</b>		
		<b>Date when accreditation/ validation may take place</b>		
<b>S4a</b> <i>note S4a</i>	<b>LEVEL</b>	Sub-degree (e.g. Cert. Dip.)	4: Certificate of Higher Education, 5: Diploma of Higher Education	
		Undergraduate	6: BSc Honours degree	
		Integrated Masters		
		Masters		
		Other postgraduate (please specify)		
<b>S4b</b> <i>note S4b</i>	<b>FHEQ STATEMENT</b>	Please detail how the programme meets the relevant qualification descriptor from the Framework for Higher Education Qualifications (FHEQ)	Students gain a systematic understanding, including acquisition of coherent and detailed knowledge of key aspects of Pharmaceutical Sciences (All modules). Knowledge, analysis and enquiry, devising and sustaining arguments, and ability to comment on scientific publications (scholarly reviews and primary sources) relating to research at the forefront of their discipline is engendered in the Final Year Dissertation (PHAB6008Y). Students are required to manage their own learning in several modules with “Team-based learning” exercises, where they are given information from a wide variety of sources to facilitate their learning. In PHAB6008Y, the students drive their own research and learning in order to produce their dissertation. Transferable skills are embedded throughout the programme, including presentations (oral, and written reports including lab reports and a dissertation), team-working, decision-making, sourcing information and critical appraisal.	
<b>S5</b> <i>note S5a</i>	<b>a</b>	<b>DURATION</b> (years or months)	3 years	
<i>note S5b</i>	<b>b</b>	<b>MODE OF ATTENDANCE</b> (full-time, part-time, distance, other)	Full-time	
<b>S6</b> <i>note S6</i>	<b>PLACEMENT(S)/WORK-BASED LEARNING REQUIRED</b>	YES	NO	No
		If YES, does this conform with the UEA's code of practice on placements?		

<b>S7</b> <i>note S7</i>	<b>RELEVANT SUBJECT BENCHMARK STATEMENT(S) and details of how the Programme Specification aligns with these</b>	There is no Subject Benchmarking Statements for Pharmaceutical Sciences
<b>S8</b> <i>note S8</i>	<b>ENTRY REQUIREMENTS</b>	Students are not recruited directly onto Year 1 of the BSc Pharmaceutical Sciences Pre-2013 course; the programme is for students recruited onto the Pharmacy with Foundation Year programme, but don't achieve the grades sufficient to transfer to the Pharmacy degree.
<b>S9</b>	<b>JACS Subject Level Code(s)</b> Consult Planning Office	
<b>S10</b>	<b>UCAS ADMISSION CODE / COURSE CODE</b> Consult Planning Office	
<b>S11</b> <i>note S11</i>	<b>FURTHER INFORMATION</b> (web link to further information)	
<b>S12</b>	<b>COURSE HIGHLIGHTS</b> (for publication in University Prospectus / Website /HEAR) Include succinct comments about employability, key skills and learning outcomes	
<i>note S12</i>	N/A	

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<b>AC1</b>	<b>COURSE MANAGEMENT INFORMATION</b>				
AC1.1	REGULATORY FRAMEWORK				
	Undergraduate Regulations (including Integrated Masters)			yes	
	Postgraduate Taught Regulations				
	Graduate Diplomas				
	PGCE				
AC1.2a	Is the course as a whole assessed on a pass/fail basis?	YES		NO	no
AC1.2b	Are any modules assessed on a pass/fail basis?	YES		NO	no
AC1.2c	If so, how many modules and what is the credit volume for each module?				

<b>AC2</b> <i>note</i> AC2.1	<b>YEAR WEIGHTINGS AND PROGRESSION REQUIREMENTS (For undergraduate or integrated masters courses only)</b>				
	Please select only from the permitted options - see UG/PGT regulations				

Stage <i>Note AC2.2</i>	Level	Year of course	Weightings	Progression requirement	Exit Award <i>Note AC2.3</i>
Stage 1	Level 4	2	0%		CertHE
Stage 2	Level 5	3	40%		DipHE
Stage 3	Level 6	4	60%		BSc

<b>AC3</b>	<b>BOARD OF EXAMINERS</b>
AC3.4	EXTERNAL EXAMINERS (see web link below for names, positions and institutions of External Examiners)
	(For Admin use only – to be added by LTS Web Administrator)

Details of all courses currently offered by the University are available at <https://www.uea.ac.uk/study/undergraduate/degrees> and <https://www.uea.ac.uk/study/postgraduate/taught-degrees>

## PS2 MAPPING LEARNING OUTCOMES

*note PS2*

Mapping learning outcomes – please list learning outcomes and enter module code against assessment type <b>YEAR 1 learning outcomes</b>	Assessment type								
	Essay	Lab report	Course test	Exam	Project/ Dissertation/ Report	Oral Presentation	Assessment of practice	Portfolio	Observed Structured Pharmaceutic al Exam
Describe the drug discovery and regulation process. Describe the history and current structure of the NHS and the different health economic mechanisms for making decisions regarding resource allocation within the NHS. Describe the public health agenda and the location and roles of different healthcare professionals within this. Define compliance, adherence and concordance and describe how they are measured and classified. Differentiate between evidence based medicine & non-evidence based medicine and describe the causes of iatrogenic disease. Describe the processes involved in conducting a clinical audit.				PHAB4003 Y 2 hours					
Apply and interpret simple statistical analyses.					PHA-4001Y				
Describe the basics of atomic theory, electronic structure and bonding. Recognise and explain the importance of molecular shape and structure. Describe the mechanistic details of a range of relevant reactions. Describe a range of basic synthetic techniques for the preparation of pharmaceutically relevant molecules.			PHAB-4003Y						
Demonstrate basic analytical laboratory skills (documentation, weighing, measuring, working with solids and liquids, precision and accuracy) and accurately perform volumetric analysis (various titrations). Describe the theory and practical application of spectroscopic methods of analysis (infra-red, UV/VIS, polarimetry).		PHAB-4003Y 3 reports							

Describe the structure and properties of amino acids and proteins, lipids and membranes, saccharides and carbohydrates and RNA and relate these to the functions of enzymes, cellular membranes and glycoproteins.			PHAB-4003Y						
Competently perform standard scientific mathematical calculations. In the context of pharmaceutical science explain the principles of thermodynamics, discuss fundamental solution and colloid science and how the physico-chemical sciences are used to formulate conventional liquid and semi-solid pharmaceutical products taking into account patient and drug-related factors. Explain (pseudo)-zero-order and (pseudo)-first order kinetics and correctly analyse simple kinetic data. Explain the salient features of GMP and the principles of liquid and semisolid product testing, including rheology. Correctly interpret simple product testing data.		PHAB-4002Y	PHAB-4002Y						
Describe the fundamental cellular structure, the processes of cell division, cell – system hierarchy, and the physiology of the major organ systems.		PHAB 4004Y 1 hour							
Describe the principles of transcription, translation, DNA replication, mutation and repair, genetics in diseases and the application of human genomics and biotechnology in medicine. Describe at a basic level inter and intra-cellular signalling processes in cells, receptors and their ligands/drugs and the basic principles of pharmacology including ADME and drug interactions.			PHAB 4004Y 2 hour						
<b>Other:</b> please give details									



**PS2 MAPPING LEARNING OUTCOMES - continued**

note PS2

<b>Mapping learning outcomes – please list learning outcomes and enter module code against assessment type</b> <b>YEAR 2 learning outcomes</b>	Assessment type								
	Essay	Lab report	Course test	Exam	Project/ Dissertation/ Report	Oral Presentation	Assessment of practice	Other	Other
Describe and explain the main elements of drug design and synthetic techniques. Demonstrate practical skills commonly used to obtain drug compounds, including chemical synthesis and enzyme assisted synthesis. Provide a basic overview of the routes to drug moieties from a variety of biological and chemical sources.		PHAB50 05Y 4 lab reports							
Explain the molecular pharmacology of drug action and the main mechanisms by which drugs interact with cellular components. Describe fundamental pharmacokinetic processes (i.e. absorption, distribution, metabolism and excretion) from a qualitative and a quantitative perspective. Describe and predict (utilising the chemical structure) the major mechanisms of drug metabolism.			PHAB50 05Y						
Explain the role of analysis in identification and purity assessment in relation to both compounds and processes and describe the different spectroscopic techniques, UV, IR and NMR. Demonstrating a basic ability to interpret spectroscopic data.				PHAB50 05Y					
Explain the physico-chemical principles underpinning solid oral and aerosol dosage form design. Describe the manufacturing processes used to produce different types of solid oral dosage forms on a large and small scale. Explain the physico-chemical and engineering principles underpinning oral controlled-release technologies. Describe pharmaceutical packaging and how this is selected for individual products. Explain the principles of stability testing for pharmaceutical products and correctly interpret data associated with product performance. Describe the different classes of micro-organisms, with particular reference to those micro-organisms of significance to the manufacture of sterile pharmaceutical products and human diseases. Describe the use of biotechnology. Describe basic elements of medical microbiology.		PHAB50 06Y	PHAB50 06Y						

<p>Describe how solid oral dosage forms are tested to ensure product compliance with regulatory requirements. Interpret a drug's physico-chemical data and predict optimum solid oral dosage formulation strategies for that drug.</p>					<p>PHAB5006Y tableting exercise practical report</p>	<p>PHAB5006Y Group oral presentation of a report</p>			
<p>Discuss the principles of sterile facilities design, control and operation. Explain the different methods of sterilisation and correctly interpret mathematical data relating to sterilisation and sterility testing. Explain the fundamentals of formulation of sterile pharmaceutical products.</p>					<p>PHAB5006Y tableting exercise practical report</p>	<p>PHAB5006Y Group oral presentation of a report</p>			
<p>Apply and interpret basic parametric and non-parametric data comparisons and correlation.</p>					<p>PHAB5007Y Service Evaluation report</p>				
<p>Describe the physiology of peripheral nervous system including the special senses, the ionic mechanisms underlying the action potential, the physiology of skeletal and smooth muscle and the pharmacology of the peripheral nervous system (PNS). Describe the synapse and know how drugs act at autonomic synapses to modify function of major organ systems. Cite the major neurotransmitters of the peripheral nervous system and receptor classification. Explain the pharmacology of drugs which affect the peripheral nervous system. Predict both the desired and undesired effects of peripheral nervous system active pharmacotherapy.</p>			<p>PHAB5007Y</p>						
<p>Describe the physiology of the endocrine system and the major diseases affecting it and the epidemiology and aetiology of major diseases involving the endocrine system and their treatment. Explain the pharmacology of drugs used in the treatment of disorders of the endocrine system. Explain the importance of structure-activity relationships of steroids. Explain the pharmacology of drugs used in the treatment of disorders of the endocrine system.</p>				<p>PHA5007Y 2 hours</p>					
<p><b>Other:</b> please give details</p>									

**PS2 MAPPING LEARNING OUTCOMES - continued**

note PS2

Mapping learning outcomes – please list learning outcomes and enter module code against assessment type <b>YEAR 3 learning outcomes</b>	Assessment type								
	Essay	Lab report	Course test	Exam	Project/ Dissertation/ Report	Oral Presentation	Assessment of practice	Other	Other
<p>Explain the physiology of the heart, vascular and renal system</p> <p>Explain the epidemiology, aetiology and pathophysiology of hypertension, coronary heart disease, heart failure, arrhythmias, stroke, acute and chronic renal disease and gout, and select the most appropriate treatment for these diseases.</p> <p>Explain and utilise the tools used to assess cardiovascular risk</p> <p>Explain the mechanisms of action and in conjunction with the chemical and physical aspects of drugs, explain the rationale for the safe and effective therapeutic use of drugs commonly used in the treatment of cardiovascular, cerebrovascular, and renal diseases.</p> <p>Interpret individual patient data in order to identify and recommend appropriate pharmaceutical and non-pharmaceutical interventions for the treatment and prevention of cardiovascular, cerebrovascular, renal, and gout</p> <p>Integrate knowledge of pharmacokinetics into the clinical context of renal pharmacokinetics</p>				PHAB60 07Y					
<p>Critique basic health services research</p> <p>Perform appropriate descriptive and inferential statistical analysis associated with randomised controlled trials and service evaluations</p>			PHAB60 07Y						
<p>Explain the physiology of the gastrointestinal tract, liver and pancreas</p> <p>Discuss nutritional assessment and nutritional requirements and propose appropriate nutritional guidance for optimum health, malnutrition and nutritional disorders</p> <p>Discuss the mechanisms of action and evidence for the safe and effective</p>			PHAB60 09Y						

<p>therapeutic use of nutraceuticals commonly used in the prevention and treatment of common diseases and establish and recommend appropriate non-pharmaceutical interventions for the treatment and prevention of common diseases</p> <p>Explain the aetiology and management of common gastrointestinal symptoms, including dysphagia, nausea, constipation and diarrhoea</p>									
<p>Discuss the epidemiology, aetiology and pathophysiology of common upper and lower gastrointestinal diseases, liver diseases and malabsorption syndromes, and select the most appropriate treatment for these diseases and describe stoma care</p> <p>Discuss the mechanisms of action and in conjunction with the chemical and physical aspects of drugs evaluate the rationale for the safe and effective therapeutic use of drugs commonly used in the treatment of nutritional and gastrointestinal diseases</p> <p>Explain the physico-chemical and engineering principles underpinning oral controlled-release and targeted delivery technologies</p> <p>Explain the process of enteral and parenteral feeding</p> <p>Develop an understanding of the basic biology of cancer</p> <p>Explain the principles underlying the mechanism of action of commonly used anti-tumour agents and debate the drawbacks associated with them</p> <p>Explain the clinical use of these anti-tumour agents and evaluate the drawbacks associated with them</p> <p>Discuss the clinical uses of radiopharmaceuticals in diagnosis and cancer treatment</p>				<p>PHAB60 09Y</p>					
<p>Explain the mechanisms of antimicrobial action</p> <p>Describe the molecular design and mode of action of different classes of antimicrobial drugs</p> <p>Describe and explain the pathophysiology, epidemiology and aetiology of infectious disease e.g. bacterial, viral, fungal, and protozoal mediated infectious diseases.</p> <p>Identify and recommend appropriate pharmaceutical and non-pharmaceutical interventions for the treatment and prevention of common bacterial, viral and fungal infections</p>			<p>PHAB60 10Y</p>						
<p>Explain how the immune system works and its association with diseases, their treatment and prevention</p>				<p>PHAB60 10Y</p>					

<p>Distinguish the different epidemiology, aetiology and pathophysiology of respiratory diseases like asthma and COPD                  Using knowledge of the mechanism of action and pharmacology and current evidence based national guidelines select and identify the most appropriate treatments for common diseases of the immune system, RA, asthma, COPD and skin diseases.                  Critically appraise the prescribed management and monitoring of patients with common diseases of the immune system, including asthma, RA, COPD , skin and hypersensitivity reactions and recommend suitable alternative courses of action.                  Distinguish the different epidemiology, aetiology and pathophysiology of diseases of the skin and recommend appropriate interventions for the treatment of the diseases</p>									
<p>Skills of literature searching, critical appraisal, scientific writing and presentation will be utilised and developed.</p>					<p>PHAB60 08Y</p>				
<p><b>Other:</b> please give details</p>									

<b>PS3 PROGRAMME COHERENCE AND FEEDBACK CYCLES</b>		<i>note PS3</i>
<b>PS3.1 learning progression</b>		
How will progression in terms of skills, knowledge and understanding be reflected in the programme between modules in any one year and across the years as students progress through their course of study?		<i>note PS3.1</i>
<p>The course is designed to be fully integrated, both horizontally and vertically.</p> <p>Vertical integration is achieved through modules requiring knowledge from previous years. From year two all modules have pre-requisite modules. Assessments from year two will assume and require transferral of previous knowledge. Cognate area leads are responsible for ensuring that subject progress in both knowledge and complexity throughout the years.</p> <p>Horizontal integration is achieved through a number of means. A year lead ensures horizontal integration by organising yearly meetings between module leaders to ensure that subjects are integrated and faculty teach across modules to ensure integration.</p>		
<b>PS3.2 feedback cycle</b>		
Please explain how assessments and feedback / feed forward support the coherence of the programme. Comment on number and types of assessment, both formative and summative; the types and format of feedback students will receive; and their sequencing. How will assessments and feedback impact on subsequent modules?		<i>note PS3.2</i>
<p>The school's assessment strategy is in line with current UEA requirements with respect to the provision of feedback and the need for a feed-forward approach.</p> <p>Each module provides many opportunities for feedback through a variety of methods including interactive lectures, workshops and drop-in sessions.</p> <p>Students are provided with opportunities for feedback on all formative assessments ahead of the summative assessment. This will be in a form appropriate to the assessment undertaken.</p> <p>Group feedback will be provided on all summative assessments (course tests and examinations) and student requiring reassessment will have the opportunity to receive individual feedback.</p>		

<b>PS4</b>	<b>EXAMINATIONS</b>		<i>note PS4</i>
	<b>Written</b>	<b>Practical (e.g. OSCES and OSPES)</b>	
How many modules will include an exam element?	10		
How many hours of exams are there in Stage 1?	8		
How many hours of exams are there in Stage 2?	6		
How many hours of exams are there in Stage 3?	6		
How many hours does the programme (as a whole) include?	20		

<b>PS5</b>	<b>EQUALITY &amp; WIDENING PARTICIPATION</b>		<i>note PS5</i>
PS5.1	How do the admissions criteria specifically for this course ensure equality of opportunity for all applicants?		
	N/A		
PS5.2	What steps have been taken to ensure an inclusive curriculum?		
	<p>The BSc Pharmaceutical Sciences is taught almost exclusively within the framework of the MPHARM degree programme. Pharmacy is a health science discipline that is of relevance across all social, gender and ethnic populations and by virtue of this, the curriculum is designed to be inclusive. The Pharmacy curriculum is designed to meet the requirements of the GPhC accreditation where standard 3 states that initial education and training must be based on principles of equality, diversity and fairness. It must meet all requirements of legislation. In terms of teaching and assessment, all examinations and course work are marked anonymously, and a concession has to be obtained for pharmacy projects and portfolios.</p> <p>All students have 2 lectures detailing equality and diversity as part of Foundations in Pharmacy Practice module.</p> <p>Any student who feels that they have been unfairly discriminated against or harassed by another student, can report these concerns and these will be investigated by the Fitness to Practise committee (FTP). Likewise if staff identify any behaviour which is considered to be in breach of the universities equality and diversity policies they will be reported to FTP.</p>		
PS5.3	In what ways do learning and teaching and assessment methods ensure inclusivity, reasonable adjustment and equality of opportunity?		
	<p>The faculty of the School of Pharmacy have extensive experience dealing with the development of teaching and assessment methodology that ensures inclusivity. By using multiple teaching methods (from lectures through practicals to workshops and to team based learning), we are able to work to the strengths of all of the students rather than those who do not benefit from an entirely didactic or an entirely interactive approach. The use of different assessment methodology, including the extensive use of formative assessment and coursework and in course tests, allows both the faculty and the student to monitor and maintain progress throughout the degree.</p>		

<b>PS6</b>	<b>EMPLOYABILITY</b>	<i>note PS6</i>
	<p>How is employability embedded into the delivery of the course?</p> <p>Students create CVs with extensive guidance in year one.</p> <p>Emphasis of transferable skills throughout the course.</p> <p>At the start of Year 3 students discuss employability with the course director.</p> <p>Students are encouraged to make full use of Careers Central.</p>	



**KEY INFORMATION SET (KIS) DATA**

<b>KIS</b>	<b>KEY INFORMATION SET data (undergraduate courses only)</b>							<i>Note KIS</i>
<b>KIS1</b>	<b>Quantitative KIS data</b>							<i>Note KIS1</i>
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	
1.1	Percentage of assessment by written exams		56	37.5	45			
1.2	Percentage of assessment by practical exams		0	0	0			
1.3	Percentage of assessment by coursework		44	62.5	55			
1.4	Percentage of time in scheduled learning and teaching activities		30	25	20			
1.5	Percentage of time in guided independent study		70	75	80			
1.6	Percentage of time on placements		0	0	0			
<b>KIS2</b>	<b>Professional Accreditation</b>							<i>Note KIS2</i>
2.1	Name of accrediting body (if applicable)							
2.2	Please give details, including any memberships, exemptions etc that the award confers. Please also give accrediting body website URL.							
2.3	Is the accreditation dependent on specific module choices? If so, please include URL of web pages where these details are outlined.							

UP1 Programme Specification Update Record						
Faculty	Science		School		Pharmacy	
Academic Year	2014/5	2015/6	2016/7	<u>2017/8</u>	2018/9	2019/0
Degree Award (e.g. BSc/MA)		BSc				
Course Title(s)		Pharmaceutical Sciences				
Course Code(s)		U1B231302				
Has the KIS data been changed?	Yes/No					
Course Director sign off	Name	Dr Julie Sanderson				
	Date	28/3/17				

IM1 IMPLEMENTATION ACTIONS – ADMIN USE ONLY		
ACTION	DATE	Name
Course Profile updated in Evision ( <a href="#">LTS Team Leader</a> )		
Programme Specification placed in shared drive folder ( <a href="#">LTS Team Leader</a> )		
Web link to External Examiner information added ( <a href="#">LTS Web Administrator</a> )		
Programme Specification uploaded onto website ( <a href="#">LTS Web Administrator</a> )		
Planning Office informed of upload of Programme Specification onto website (copy of this page to <a href="mailto:cams.records@uea.ac.uk">cams.records@uea.ac.uk</a> ) ( <a href="#">LTS Web Administrator</a> )		
Programme Specification Code ( <a href="#">LTS Team Leader</a> ) (SCH/YEAR/Level/Sequence)	Eg MTH14UG001	
Full route code(s) covered by this Programme Specification ( <a href="#">LTS Team Leader</a> )	U1B231302 U1B231301	