Programme Specification

Programme Title and Name of Award	**BSc (Hons) Applied Chemistry**		
Professional Qualifications / Accreditation	The programme has been aligned with the QAA Subject Benchmark Statement for Chemistry. The programme has been designed to meet accreditation standards of the Royal Society of Chemistry which will be applied for within two years of full delivery.		
Academic Level	6	**Total Credits**	120
UCAS Code	F113	**JACS Code**	F110
Criteria for Admission to the Programme	The University's standard criteria for admissions apply. Please refer to the Applicant Information pages of the University website for more information. For APL, please refer to the University website. Detailed criteria for admission to this programme can be found on the programme webpage: http://www.cumbria.ac.uk/study/courses/undergraduate/applied-chemistry-top-up/ Applicants should have chemistry or applied chemistry foundation degree from a recognised Higher Education institution in the UK, or its equivalent. Applicants from courses based at institutions other than University of Cumbria will be assessed on their suitability depending upon the modules they have studied. Alternatively, applicants should have successfully completed an HND in chemistry or applied chemistry – other HNDs will be considered assessed on their suitability depending upon the modules they have studied. Applicants with non-standard entry requirements must have a post-A level qualification in chemistry or in a subject containing a high proportion of chemistry and GCSE's at a minimum of Grade C or equivalent Level 2 qualifications to include Maths, English and Science.		
Teaching Institution	University of Cumbria		
Owning Department	Science, Natural Resources and Outdoor Studies (SNROS)		
Programme delivered in conjunction with	N/A		

Principal Mode of Delivery	Face to Face, Blended Learning
Pattern of Delivery	Part Time only
Delivery Site(s)	University of Cumbria Fusehill Street campus Approved Gateway sites and partner locations
Programme Length	Part time: 2 years Maximum Registration period: 5 years
Higher Education Achievement Report (HEAR)	Upon successful completion of this programme, you may receive a Diploma Supplement/Higher Education Achievement Report (HEAR).
Exit Awards	You may be awarded one of the following Exit Awards if you fail to achieve the requirements of the full programme. • BSc Applied Chemistry

Programme Features

Chemistry is the branch of science concerned with the composition of matter is composed, the investigation of their properties and reactions, and the use of such reactions to form new substances. Applied chemistry is a multi-disciplinary subject which interacts with all life, natural sciences and engineering. The applied chemistry programme has been designed with employers to build upon subject knowledge and develop an understanding of the application of chemistry to industrial processes, focusing on practical applications, problem solving, transferable and key skills in order to progress in their prospective career.

The BSc (Hons) programme has been designed with consideration to the QAA Benchmark statements for Chemistry and the Royal Society of Chemistry academic standards. It is aimed to develop a systematic and coherent knowledge and skills in different branches of Chemistry – nuclear, polymer, environmental, materials science and medicinal and upscaling the programme to meet the industrial demands.

Aims of the Programme

The overall aims of the Programme are:

1. To instil in students an enthusiasm for applied chemistry and involve them in an intellectually stimulating experience of learning.
2. To develop an inter-disciplinary approach to science and technology and appreciation of applied chemistry in an industrial, academic, economic and social context.
3. To develop critical awareness of advances at the forefront of applied chemistry and provide students with the ability to plan and conduct experiments independently.

4. To develop the ability to apply standard methodology to solve chemistry problems in work environments.
5. To provide students with a knowledge and skills base from which they can seek progression in employment or postgraduate study.

Level Descriptors

Level Descriptors describe in general terms the expected outcomes you will achieve at each level of study as you progress through your programmes. They describe the relative demand, complexity, depth of learning and learner autonomy associated with a particular level of learning and achievement. The University's Level Descriptors are aligned to the national Framework for Higher Education Qualifications (FHEQ) and are a key mechanism for ensuring the academic standards of the University's provision.

At Level 5: (Usually Year 2 undergraduate), you will be able to demonstrate that you have the ability:

- To apply and evaluate key concepts and theories within and outside the context in which they were first studied.
- Select appropriately from and deploy a range of subject-specific, cognitive and transferable skills and problem solving strategies to problems in the field of study and in the generation of ideas effectively communicate information and arguments in a variety of forms.
- Accept responsibility for determining and achieving personal outcomes.
- Reflect on personal and work place experience in the light of recent scholarship and current statutory regulations.

At Level 6: (Usually Year 3 undergraduate), you will be able to demonstrate that you have the ability:

- To critically review, consolidate and extend a systematic and coherent body of knowledge.
- Critically evaluate concepts and evidence from a range of resources.
- Transfer and apply subject-specific, cognitive and transferable skills and problem solving strategies to a range of situations and to solve complex problems.
- Communicate solutions, arguments and ideas clearly and in a variety of forms.
- Considerable judgement in a range of situations.
- Accept accountability for determining and achieving personal and group outcomes.
- Reflect critically and analytically on personal and work place experience in the light of recent scholarship and current statutory regulations.

Programme Outcomes – Knowledge and Understanding

The programme provides opportunities for you to develop and demonstrate the following:

K1 Demonstrate understanding of safe working practice, health and safety environment in terms of managing chemical toxicity, chemical stability and chemical reactivity, through knowledge-based risk assessments.

K2 Comprehension and critical evaluation of the application of materials, nanomaterials in specific industries.

K3 A critical appreciation of the complex and advanced analytical techniques which affect the structure and identification of various materials and nanostructure materials.

K4 Knowledge in the methods of acquiring, interpreting and analysing information with a critical understanding of the appropriate contexts for their use through the study of texts, papers, reports and data sets; and their application to research projects.

K5 Knowledge of key practices and theories relevant to specific topics in applied chemistry.

K6 A critical appreciation of the complex relationships which affect the structure, composition and behaviour of materials.

Programme Outcomes – Skills and other Attributes (including Employability Skills)

The programme provides opportunities for you to develop and demonstrate the following:

S1. An ability to conduct experiments and chemical reactions in a safe manner in line with appropriate risk assessments.

S2. Proficient use of advanced chemical instrumentation in conducting laboratory procedures

S3. The ability to plan and carry out experimental procedures to solve qualitative and quantitative problems.

S4. Competence in relation to applied chemistry in a work place.

S5. Team working, performing different roles, interact positively within groups and teams, and applying a variety of strategies.

S6. Comprehensive skills in the monitoring and assessment by observation and measurement, of chemical properties, processes, and the systematic and reliable recording and documentation.

S7. Effective communication skills, covering scientific writing, oral communication, presenting of material and arguments to a variety of audiences.

S8. Professional employment standards of common conventions and standards in scientific writing, data presentation, and referencing literature.

External and Internal Reference Points

The following Subject Benchmark Statements and other external and internal reference points have been used to inform the Programme Outcomes:

The Royal Society of Chemistry, http://www.rsc.org/Education/courses-and-careers/accredited-courses/bsc-accreditation.asp

QAA Subject Benchmark Statement (2014) Chemistry; http://www.qaa.ac.uk/en/Publications/Documents/SBS-consultation-chemistry.pdf

Internal drivers having informed the development include:-

- University Academic Strategy 2014-20;
- Departmental Business Plan for Science, Natural Resources and Outdoor Studies;

- Departmental response to Learning, Teaching and Assessment Strategy 2014-17

Teaching, Learning and Assessment Strategies employed to enable the Programme Outcomes to be Achieved and Demonstrated

The programme of teaching and learning is designed to enable you to demonstrate the attainment of the stated learning outcomes of the programme and assessment strategies are as such matched to these outcomes. You will be supported in a progressive acquisition of subject knowledge and skills, gradually advancing towards more independent learning whilst developing a reflective approach to personal progress.

Overarching considerations are the demonstrable acquisition by you of a clear appreciation of the scientific approach, and of the knowledge, skills and capacities needed for employment or further study. Above all, learning, teaching and assessment are designed to engage you in experiences that are enriching, enjoyable and intellectually stimulating.

Our learning and teaching strategy has been developed in line with the University's Learning, Teaching and Assessment Strategy 2014-17. Encapsulated within the first aim of the programme is a drive to engage all students in learning experiences that are enriching, enjoyable and intellectually stimulating. All modules therefore include opportunities for engagement and participation.

Campus based learning is the predominant experience with attendance at all scheduled sessions seen as imperative to student progression. This is further enhanced by the use of 'virtual learning environments' (VLE) for example Blackboard where each module studied has a designated blackboard site providing not only standard lecture and practical material but supplementary reading, virtual exercises and the capacity for online forums. The utilisation of VLE allows for flexibility in learning whereby materials may be accessed at an individual's convenience on site or via remote access.

A variety of learning and teaching methods are used to both reflect the variety of learning styles that inevitably exist within a group and ensure the acquisition and development of appropriate concepts, knowledge and skills. This will enable you to experience teaching methods best suited to your own preferred learning style. Enhancing employability is a core theme throughout the programme therefore our learning and teaching methods are designed to support the move to autonomy and independent learning. Learners are expected and encouraged to be reflective in their learning and as such the strategies adopted focus on deep and experiential learning and typically include:

- lectures
- laboratory classes
- individual and group tutorials
- the utilisation of case studies
- seminars and workshops
- directed and independent study involving electronic resources (VLE), textbooks and other self-study materials
- problem-based learning
- training and practice in the use of IT and software packages
- project work, both individually and in teams
- reading and interpreting research publications

Assessment Strategy

Our assessment strategy has also been developed to be in line with the University's Learning, Teaching and Assessment Strategy 2014-17.

The main drivers of this strategy are to:

- provide innovative, challenging and stimulating assessment which will enable you to develop the knowledge and professional skills required for employment.
- be student-centred, flexible and modern in both content and approach.
- be fully supported by, and integrated with technological approaches such as the Blackboard virtual learning environment (VLE).
- impart academic rigour to the teaching and learning processes.
- support the development of independence, autonomy and self-reflection.
- support learners' needs at different stages of development.

Within a balanced scheme, assessment methods will include:

- unseen examinations
- Short note class tests.
- laboratory reports
- computer-based assessments
- problem solving exercises (both of a practical and written format)
- critical analysis of case studies
- oral, audio-visual and poster presentations
- dissertations
- peer and self-assessment
- group work

Formative assessment is also used extensively throughout the programme for and as learning. Whilst elements of assessment will test your knowledge and ability, the emphasis is on a more developmental approach to building the knowledge and skills you utilise within employment. Formative assessment will involve you being actively engaged in the assessment to encourage you to think about the learning process, to develop your ability to learn independently and to develop your employability. It will also be used to evaluate teaching.

Personal development and reflective practice will take place throughout the programme and will be implemented through the wide range of activities (both formative and summative) as well as via the personal tutorial process.

Student Support

The Programme team is aware of the need for structured support systems to help guide students through their learning and to support students as independent learners. For example, there will be a programme induction which introduces you to the University systems and resources available to make your studies more enjoyable and more successful. The sessions are informative and cover a range of topics including: getting to know each other; using the library; expectations; introduction to the Personal Tutor system (see below); health and safety; working in a laboratory; and so forth.

There are a number of support mechanisms embedded within this programme, details of which are provided below:

Library and Student Services (LiSS)

Library and Student Services (LiSS) offer a wide range of support, including; access to library learning resources, academic skills, careers and employability, financial help, counselling, health and wellbeing and support for disabled students and those with specific learning requirements. We know that you want to get the most out of your programme, make the best use of your time and find or continue in the career you always dreamed of. Access university support and facilities easily and quickly via our help is at hand search.

The Skills@Cumbria service can help support your academic skills and success throughout your programme. The service is delivered by a team of professional Learning Enhancement Advisers within LiSS. It includes a suite of online self-help resources accessible 24/7 via the University's website and Blackboard site. It also provides group and individual advice and guidance accessible through and alongside your course and by different means such as face to face, email or virtual.

Module leaders will collaborate with LiSS advisers to ensure that your reading lists are current and items are available via the library collections. In order to maximise access, availability and usefulness, ebooks and electronic journal titles will, in most cases, be prioritised. You can access a wide range of great electronic and print content using OneSearch and you can find out more about key texts and journals for your subject by accessing the library's subject resources webpages. Where appropriate, module reading lists will be made available to you electronically using the university's online reading list system.

As you move through different levels of study the expectations of academic ability will change and LiSS can help you understand and achieve the requirements for this level of study. You will have embedded skills interventions from LiSS as part of your induction experience and beyond. Typically the interventions have taken the form of workshops but equivalent online input could be chosen through liaison. Embedded induction input will cover IT network passwords, basic intro to Blackboard and webmail, library services and electronic resources (ebooks, ejournals, image collections etc). Later input will cover more advanced information fluency and critical reading and writing skills.

You can access individual support from LiSS via email guidance and by face to face advice throughout your student journey. Further LiSS Learning and Skills development workshops may be requested by tutors or directly by you. These sessions focus on a range of skills including planning for dissertations. In addition, you will have access to online tutorials and the skills@cumbria support area on Blackboard and on the LiSS website.

Personal Tutor System

We know from experience that students, who communicate with their personal tutor, tend to enjoy their studies more and feel more supported. In view of this every student is allocated a personal tutor. You will be allocated a personal tutor when you start your programme. Your personal tutor will be a member of the teaching team and will have a good working knowledge of your programme. Their name and contact details will be made available to you, via Blackboard, at the start of the academic year. The role of the personal tutor encompasses:

- academic monitoring and advice
- support for personal development planning
- non-academic guidance and personal support
- communication with other programme staff concerning the student experience of the programme

You are entitled to a minimum of three meetings a year involving at least 1 hour of contact in total as outlined in the Personal Tutor Policy. These meetings may take place in groups, provided that individual students may also request an individual tutorial time. There will be opportunity on a weekly basis to raise concerns within a group, you will be scheduled for individual tutorials throughout the year and you are encouraged to schedule further individual tutorial time should the need arise. Should your personal tutor become unavailable for more than two weeks (e.g. illness, sabbatical leave), an alternative contact will be allocated and you will be informed of the temporary measures. The Personal Tutor (PT) role is seen as being crucial to student retention, success and satisfaction.

Employability Plan

Enhancing your employability is embedded within the programme aims, outcomes, learning activities and assessments. For example, each module works towards developing key transferable skills as well as deepening the level of scientific knowledge accrued. The employability skills targeted are highlighted within the learning outcomes of the module or individual assessment piece allowing for transparency.

Specialist Teaching Accommodation and Equipment

The development of laboratory skills is central to the programme and you will have access to well-equipped modern science laboratories, which host a range of equipment that may be utilised in scientific investigation allowing for the development of skillsets that are transferable to industry.

Head Start Plus

Head Start Plus is also an online skills development course, designed to support students who are about or who have just started study at level 5 or 6 (2nd and 3rd year undergraduate). This course is particularly recommended to students who may not have studied at HE level for some time or who are transitioning into the higher HE levels. The course provides a useful refresh on academic skills and practice and an insight into the expectations of tutors at those levels.

This course is free and available via the Open Education Platform powered by Blackboard. To access the course, follow the link to https://openeducation.blackboard.com/cumbria and set-up a free account with Open Education. Once logged on, select the course free of charge and work through it at your own pace.

PASS

PASS is a group mentoring scheme running in a number of programmes at the university. It matches first year students with second and third year PASS Leaders who are able to offer a unique source of support in helping new students through the transition into university study. PASS Leaders undergo specific training that gives them an excellent opportunity to widen their skill-set, whilst also allowing for student-led study sessions that are mutually beneficial to PASS participants and PASS Leaders alike. Contact your course tutor to find out if PASS is available on your programme. If you are interested in setting-up PASS on your course or would like to become a PASS Leader then contact pass@cumbria.ac.uk

Career Ahead

Career Ahead is the University's Employability Award that is accessible to all of our students regardless of level or programme of study. Available free through the Careers Team in LiSS, the award gives students the opportunity to make their graduate CV stand out. Based on what employers look for in an ideal candidate, this award works with students to identify any gaps in their skill set and reflect on their experiences. It also offers the opportunity to participate in exclusive programmes and activities with real life employers. The University of Cumbria's employability award is split into three stages: Bronze, Silver and Gold, with a further Career Ahead + Platinum level. Students' engagement in extra curricula activities such as volunteering, project and charity work and

peer mentoring are recognised within Career Ahead. To find out more or to register email careerahead@cumbria.ac.uk.

Programme Curriculum Map[1]					
Academic Level	**Module Code**	**Module Title[2]**	**Credits**	**Module Status[3]**	**Map to Programme Outcomes[4]**
6	HSOS6012	Advanced Analytical Applications	20	Compulsory	K1, K3, K4, K5 S1, S2, S3, S4, S5, S6, S7 & S8
6	HSOS5106	Exploring Research	20	Compulsory	K1, K4, K5 S1, S3, S4, S6, S7 & S8
6	HSOS6016	Nuclear Chemistry	20	Optional Block 1 (Students can only choose ONE MODULE form the three modules.)	K1, K2, K3, K4, K5 & K6 S1, S2, S3, S4, S5, S6, S7 & S8
6	HSOS6015	Drugs and Medicinal Chemistry	20		K1, K2, K3, K4, K5& K6 S1, S2, S3, S4, S5, S5, S7 & S8
6	HSOS6017	Polymer Chemistry	20		K1, K2, K3, K4, K5 & K6 S1, S2, S3, S4, S5, S6, S7 & S8
6	HSOS6013	Chemistry in the Environment - Industry	20	Optional Block 2 (Students can only choose ONE MODULE form the three modules.)	K1, K2, K3, K4, K5 & K6 S1, S2, S3, S4, S5, S6, S7 & S8
6	HSOS6014	Materials Science and Nanomaterials	20		K1, K2, K3, K4, K5 & K6 S1, S2, S3, S4, S5, S6, S7 & S8
6	HSOS6018	Work Based – Negotiated Learning	20		K1, K2, K3, K4, K5 & K6 S1, S2, S3, S4, S5, S6, S7 & S8
6	HSOS6106	Dissertation	40	Core	K1, K2, K3, K4, K5 & K6 S1, S2, S3, S4, S5, S6, S7 & S8

Programme Curriculum Map[1]					
Academic Level	**Module Code**	**Module Title[2]**	**Credits**	**Module Status[3]**	**Map to Programme Outcomes[4]**
Notes					
Students can undertake the dissertation once completed the Exploring Research module plus an Optional Subject Specific Module HSOS5106 Exploring Research is a Level 5 module co-opted to this Level 6 programme. It should be noted that this module will be assessed according to the Level 5 Grading Criteria and identified as such in the Module Handbook.					

[1] This programme operates in accordance with the University's Academic Regulations and Academic Procedures and Process.

[2] Please refer to the relevant programme webpage on the University's website for summaries of the individual Module Aims.

[3] **Core Modules** must be taken and must be successfully passed.

Compulsory Modules must be taken although it may possible to carry as a fail (if the award permits).

Optional Modules are a set of modules from which you will be required to choose to study. Once chosen, unless indicated otherwise in the table above, an optional module carries the same rules as a compulsory module as per the Academic Regulations.

Qualificatory Units. These are non-credit bearing pass/fail components that are used to satisfy relevant professional, statutory or regulatory body professional requirements that are associated with the programme.

[4] This column references the Programme Outcomes that will be achieved through successful completion of each module (i.e. through successful completion of the module summative assessment)

Programme Delivery Structure: Part Time **This programme commences in January (UoC Semester 2)**				
Module Code	**Module Title**	**Delivery Pattern** **Autumn Semester / Spring Semester**	**Method(s) of Assessment**	**Approximate Assessment Deadline**
HSOS6012	Advanced Analytical Applications	Autumn (Sept-Year1)	30% oral assessment/presentation 70% Report	End semester 1 End semester 1
HSOS5106	Exploring Research	Spring (Jan-Year1)	60% written assignment 40% Project work	End semester 2 Mid semester 2
HSOS6016	Nuclear Chemistry	Spring (Jan-Year 2)	40% written assignment 60% written exam	End semester 2 End semester 2
HSOS6015	Drugs and Medicinal Chemistry	Spring (Jan-Year 2)	40% written assignment 60% written exam	End semester 1 End semester 1
HSOS6017	Polymer Chemistry	Spring (Jan-Year 2)	40% written assignment 60% written exam	End semester 2 End semester 2
HSOS6106	Dissertation	Year long (September Year 1, to April Year 2)	80% Dissertation 20% oral assessment/presentation	January (Year 2) December (Year1)
HSOS6014	Materials Science and Nanomaterials	Autumn (Sept-Year 2)	50% project work 50% written assignment	End semester 1 End semester 1
HSOS6013	Chemistry in the Environment - Industry	Autumn (Sept-Year 2)	50% written assignment 50% Project work	End semester 1 End semester 1

HSOS6018	Work Based - Negotiated Learning	Autumn (Throughout year- Years 1 & 2)	30% oral assessment/presentation 70% Project work	End semester 1 End semester 1

Methods for Evaluating and Improving the Quality and Standards of Learning	
Mechanisms used for the Review and Evaluation of the Curriculum and Learning, Teaching and Assessment Methods	• Annual Evaluatory Review (AER) • Departmental Quality Committees (DQCs) • External Examiner reports • Formative assessment • National Student Survey (NSS) • Penultimate Year Survey (PYS) • Peer review and internal staff moderation • Student and staff module evaluation • Student/staff forums
Mechanisms used for gaining and responding to feedback on the quality of teaching and the learning experience – gained from: **Students, graduates, employers, WBL venues, other stakeholders, etc.**	• Alumni • Group tutorials and informal student feedback • Module Assessment Board • National Student Survey NSS • Penultimate Year Survey (PYS) • Programme evaluation • Student/staff forums • Academic Quality and Standards Committee (AQSC) • University Assessment Board • University Board

Date of Programme Specification Production:	September 2016
Date Programme Specification was last updated:	02/03/2022
For further information about this programme, refer to the programme page on the University website	