PROGRAMME SPECIFICATON

1	**Awarding body**	Glyndŵr University
2	**Teaching institution**	Glyndŵr University
3	**Award title**	
	BSc (Hons) Chemistry with Education	
4	**Final awards available**	
	BSc (Hons) Chemistry with Education	
	BSc Chemistry with Education	
	Diploma of Higher Education in Chemistry with Education	
	Certificate of Higher Education in Chemistry with Education	
5	**Professional, Statutory or Regulatory Body (PSRB) accreditation**	
	We plan to seek Royal Society of Chemistry accreditation. Under RSC regulations, programmes must have run for a minimum of three years before consideration.	
	Please list any PSRBs associated with the proposal	
	RSC accreditation to be sought at a later date	
	Accreditation available	
	Please add details of any conditions that may affect accreditation (eg is it dependent on choices made by a student?)	
6	JACS3 **code**	F100
7	UCAS **code**	G7F5 G7F6 (with Foundation Year)
8	**Relevant QAA subject benchmark statement/s**	
	QAA Subject Benchmark Statement: Chemistry http://www.qaa.ac.uk/en/Publications/Documents/SBS-consultation-chemistry.pdf	
9	**Other external and internal reference points used to inform the programme outcomes**	
	The proposal has been informed by the Royal Society of Chemistry criteria for programme accreditation	
10	**Mode of study**	Full time
11	**Language of study**	English

Office use only
Enter the date of the validation event May 2016
Enter the date of any subsequent revisions
Enter the date of any subsequent revisions

12 Criteria for admission to the programme

Entry requirements are in accordance with the University's admissions policy
http://www.glyndwr.ac.uk/en/media/Media,49536,en.pdf

Standard entry criteria	
UK entry qualification	Applicants for undergraduate bachelor Degrees require 240+ UCAS tariff points This programme will also be offered as a four year kick-start degree (an introductory foundation year plus this three year degree programme). The kick-start will be offered where an applicant does not meet the entry requirements for the three year honours degree or where the department / applicants feel they would benefit from an additional year to gain some additional experience before progression to the full three year degree. Upon successful completion of foundation year the student will automatically progress to the BSc (Hons) Chemistry with Education degree course. Entry to the four year kick-start programme will be conditional on interview and review of applications to confirm that students are able to satisfactorily complete the programme. The principal criteria for entry will be based on the academic judgement of the admissions tutor and members of the programme team in the relevant subject area. All applicants however must be able to demonstrate a minimum level of competence in English/Welsh Language and in Mathematics/Science, with a pass at Grade C or above in GCSE or an equivalent qualification. Therefore, this route is aimed at: • Those who do not meet the entry requirements for a full degree. • Those who have been out of education for a while and feel they would benefit from the extra year of preparation. • Those looking to undertake a degree in an entirely new subject area and do not have the subject specific experience necessary to go straight to a degree. ***Students who are unsure if they meet the criteria should contact the Admissions Tutor for advice.***
International entry qualification • *Qualifications outlined on the National Academic Recognition and Information Centre (NARIC) as equivalent to the above UK entry qualification.*	
Programme specific requirements	Level 3 science, preferably chemistry. GCSE (or equivalent) in maths and English / Welsh at grade C or above normally expected. Applicants will be required to present evidence of a period (minimum 5 days) of working in or observing teaching in a school or similar setting. Support in finding a suitable setting, if required, will be provided by our Partnership Office.

	All applicants will require enhanced Disclosure and Barring Service (DBS) clearance administered by Glyndŵr University to confirm their suitability to work with children, young people and vulnerable adults.
Non-standard entry criteria (e.g. industry experience)	Equivalent experiential learning will be considered for applicants with insufficient or no formal qualifications. An example of typical equivalent experiential learning would be 2-3 years working in a relevant scientific position, such as a laboratory technician. Candidates with no formal education must demonstrate evidence of an ability to study at the higher education level. The Admissions Tutor will require candidates to undertake a piece of written work, assessing their literacy and numeracy skills, and basic scientific knowledge, to demonstrate their capacity to study at the appropriate level. Those candidates who satisfactorily complete the written exercise will be invited to attend a formal interview with programme staff to assess their motivation, experience and readiness to study.

English language requirements

Applicants for whom English or Welsh is not their first language, will be required to have attained an overall IELTS 6.0 with no component below 5.5 or an equivalent recognised qualification.

13 Recognition of Prior (Experiential) Learning

Applicants may enter the programme at various levels with Recognition of Prior Learning (RPL) or Recognition of Prior Experiential learning (RPEL) in accordance with the University General Regulations. Any programme specific restrictions are outlined below

Programme specific requirements	None

14 Aims of the programme

The programme aims to prepare students to become professional scientists with a broader understanding of communication, especially in the areas of teaching and training. Graduates will be equipped with the knowledge and skills to enter a range of careers such as those normally afforded by a degree in chemistry but enhanced by a grounding in education. The education element of this degree will give graduates a sound platform should they wish to enter careers in teaching or science communication.

Modules have been designed to cover the specific criteria of the QAA Chemistry Benchmarks (2014) as well as aligned to the Royal Society of Chemistry accreditation standards (accreditation pending). The programme is structured so as to provide a logical, coherent progression through the modules.

Specifically the programme aims to equip students with:

A sound background in all areas of chemistry including aspects at the leading edge of current research.

The practical skills and appreciation of health and safety procedures required to work in a modern chemistry laboratory.

The ability to critically evaluate, analyse, discuss and present scientific data/information.

A broad knowledge of science in the workplace, education and society.

A grounding in educational theory and practice, preparing students to progress to careers in teaching (via additional QTS route) or broader science communication/training.

The generic, transferable skills demanded by employers such as communication, numeracy, information technology, research and team working.

The opportunity to experience an educational setting, such as a secondary school or other teaching /training provider to work with teachers and to conduct work-based research.

15 Distinctive features of the programme

This programme has not been designed to produce qualified teachers but rather aims to provide students with three main attributes:

- A solid foundation in the theories of chemistry and education
- The practical skills and knowledge required to work in the chemical sector or in educational settings
- Transferable skills valued by employers

The BSc (Hons) degree in Chemistry with Education has been designed for those students with a strong interest in chemistry and a desire to work in teaching or training. The emphasis of the course is chemistry and graduates will be well equipped to enter careers traditionally associated with that science. Additionally students will gain an appreciation of those skills and knowledge required to become a teacher / trainer. This programme does not lead to Qualified Teacher Status (QTS) but does provide a sound grounding to proceed to QTS via Postgraduate Certificate in Education or other QTS awarding route.

There is a well-documented UK shortage of teachers of STEM subjects. Each year there is a shortfall of 40,000 STEM graduates and schools experience significant difficulty in appointing well-qualified teachers for such subjects. (http://graduates.teachfirst.org.uk/why-teach-first/problem/science-technology-engineering-and-maths)
Figures (http://www.theguardian.com/education/2015/sep/15/not-enough-teachers-science-shortage-teaching-jobs) show that, for the year 2015-16, against the Department for Education's target of 1,053 trainee chemistry teachers only 920 were recruited, a shortfall of 133. This shortage is reflected in the fact that chemistry graduates can qualify for bursaries / scholarships of up to £25,000 to train to become a teacher. Currently just 4% of chemistry graduates undertake a PGCE immediately following graduation and this may reflect a lack of appreciation of teaching as a career or a feeling that the single subject chemistry degree does not equip graduates with

the confidence to enter the teaching profession. Longitudinal studies have shown that approximately 10% of STEM graduates enter the education sector within two years of graduating, perhaps indicating that new graduates lack awareness and confidence to pursue a career in that sector. The BSc (Hons) Chemistry with Education provides a solid base of chemistry but also provides sufficient education underpinning to enable graduates to make an informed decision about their choice of career. Whilst the BSc does not carry Qualified Teacher Status, it will provide a superior foundation for those wishing to undertake PGCE or other QTS route following graduation.

Key benefits of the programme

Provides students with a sound knowledge of the theories and practice of chemistry along with the knowledge and skills to work within the education sector.

Dedicated chemical and instrumental analysis laboratories to allow students' hands-on practical experience.

Provides students with placements within an educational setting with the opportunity to work with teachers and to undertake work-based research.

Well-qualified, research-active staff and a dedicated, long established, placement team.

16 Programme structure narrative

Programme Structure

The BSc (Hons) Chemistry with Education is studied full-time over three years.

All modules, with the exception of the Professional Practice module (40 credits, Level 6), carry 20 credits with the expectation that students study 120 credits in each of the three years of full-time study.

Students are, except for absence with good cause, expected to attend all elements of the programme including lectures, tutorials, laboratory sessions, field trips and placement.

The programme will operate a single entry point of September of each academic year.

For students who are unable or do not wish to continue with their studies possible exit awards are listed below:

Certificate in Higher Education in Chemistry with Education
This qualification is available to students who achieve 120 credits or more at Level 4 or above.

Diploma in Higher Education in Chemistry with Education
This qualification is available to students who achieve 240 credits or more with a minimum of 120 credits at Level 5 or above.

BSc Chemistry with Education (Ordinary Degree)

This qualification is available to students who achieve at least 300 credits with a minimum of 60 credits at Level 6.

BSc (Hons) Chemistry with Education
This qualification is available to students who achieve 360 credits with a minimum of 120 credits at Level 6.

Placements

All placements are arranged and managed by the Partnership Office.

In the first year students undertake placements in a secondary school or similar educational setting equivalent to 100 hours. This will consist of ‘day release’, where students spend one day a week in the placement for 8 days in semester 1 and a two week block placement in semester 2. These placements are aligned to the modules Introduction to the Psychology of Education (Learning Theories) and Academic Study Skills and Personal Development and inform part of the assessment for those modules.

In the second year students undertake short (8 x 1 day in semester 1 plus a two week block in semester 2) placements in a secondary school or similar educational setting. These placements are aligned to the modules "Supporting Children and Young People: Behavioural, Emotional and Social Differences" and ‘Research Methods: Theory and Practice’ and inform part of the assessment for those modules.

In the final year students undertake a placement module (Professional Practice) which, following an induction period, requires attendance for a minimum of one day a week over two semesters. Placements will be within a secondary school or similar educational setting. Whilst on placement students may be expected to undertake school or work-based activities outside the normal timetable, for example parents’ evenings etc. Such activities do not directly carry credit but form an important part of the professional development of the student and inform the research assignment.

Education modules may be delivered as 'long and thin' modules over two semesters; this may result in a slight imbalance in workload between semesters. The final year placement module takes place over both semester 1 and 2.

17 Programme structure diagram

Level Four						
Trimester 1	Mod title	Introduction to Chemistry	Mod title	Academic Study Skills and Personal Development	Mod title	Introduction to the Psychology of Education (Learning Theories)
	Mod code	SCI414	Mod code	SCI421	Mod code	EDP419
	New/Exist	Existing	New/Exist	Existing	New/Exist	Existing
	Credit value	20	Credit value	20	Credit value	20
	Core/Opt	Core	Core/Opt	Core	Core/Opt	Core
	Mod leader	Jixin Yang	Mod leader	Amiya Chaudhry	Mod leader	Judith Dalton-Morris
Trimester 2	Mod title	Laboratory Chemical Analysis	Mod title	Maths and Statistics for Science	Mod title	Inorganic and Materials Chemistry
	Mod code	SCI416	Mod code	SCI415	Mod code	SCI423
	New/Exist	Existing	New/Exist	Existing	New/Exist	Existing
	Credit value	20	Credit value	20	Credit value	20
	Core/Opt	Core	Core/Opt	Core	Core/Opt	Core
	Mod leader	Amiya Chaudhry	Mod leader	Jixin Yang	Mod leader	Clive Buckley

	Level Five					
Trimester 1	Mod title	Analytical Methods	Mod title	The Physical World	Mod title	Research Methods: Theory and Practice
	Mod code	SCI509	Mod code	SCI521	Mod code	SCI522
	New/Exist	Existing	New/Exist	New	New/Exist	New
	Credit value	20	Credit value	20	Credit value	20
	Core/Opt	Core	Core/Opt	Core	Core/Opt	Core
	Mod leader	Jixin Yang	Mod leader	Jixin Yang	Mod leader	Clive Buckley
Trimester 2	Mod title	Instrumental Analysis	Mod title	Laboratory Instrumental Analysis	Mod title	Supporting Children and Young People: Behavioural, Emotional and Social Differences
	Mod code	SCI512	Mod code	SCI513	Mod code	EDC524
	New/Exist	Existing	New/Exist	Existing	New/Exist	Existing
	Credit value	20	Credit value	20	Credit value	20
	Core/Opt	Core	Core/Opt	Core	Core/Opt	Core
	Mod leader	Jixin Yang	Mod leader	Jixin Yang	Mod leader	Judith Dalton-Morris

	Level Six					
Trimester 1	Mod title	Chemical Education and Skills	Mod title	Structure and Synthesis	Mod title	Learning and Teaching with Technology
	Mod code	SCI619	Mod code	SCI620	Mod code	SCI621
	New/Exist	New	New/Exist	New	New/Exist	New
	Credit value	20	Credit value	20	Credit value	20
	Core/Opt	Core	Core/Opt	Core	Core/Opt	Option
	Mod leader	Ian Ratcliffe	Mod leader	Jixin Yang	Mod leader	Clive Buckley
Trimester 2	Mod title	Professional Practice	Mod title	Polymer Chemistry and Formulations	Mod title	Science and Society
	Mod code	SCI622	Mod code	SCI614	Mod code	SCI623
	New/Exist	New	New/Exist	New	New/Exist	New
	Credit value	40	Credit value	20	Credit value	20
	Core/Opt	Core	Core/Opt	Core	Core/Opt	Option
	Mod leader	Clive Buckley	Mod leader	Ian Ratcliffe	Mod leader	Clive Buckley

18 Intended learning outcomes of the programme

Knowledge and understanding					
		Level 4	**Level 5**	**Level 6**	**Level 6 Honours Degree**
A1	*Concepts, principles and theories in chemistry*	On completion of level 4 students will be able to demonstrate knowledge of the fundamental concepts, principles and theories in chemistry including selected topics in material / solid state science.	On completion of level 5 students will be able to demonstrate knowledge of concepts of physics and physical chemistry.	On completion of level 6 students will be able to demonstrate a critical understanding and explanation of the concepts, principles and theories in chemistry.	On completion of level 6 students will be able to demonstrate a critical understanding and application of the central concepts, principles and theories in chemistry.
A2	*Laboratory chemical and instrumental analysis*	On completion of level 4 students will be able to demonstrate competence of working safely in a chemistry laboratory and being able to conduct documented laboratory procedures and measurement of chemical properties under the guidance of a tutor.	On completion of level 5 students will be able to demonstrate safe working in a chemistry laboratory and being able to conduct documented laboratory procedures and measurement of chemical properties.	On completion of level 6 students will be able to demonstrate the ability to devise and develop chemistry learning objects (e.g. laboratory exercises) for use in a school or other training environment.	On completion of level 6 students will be able to demonstrate a critical understanding of how to work safely and independently in a chemistry laboratory and able to plan laboratory procedures and measurement of chemical properties.
A3	*Mathematics, statistics and research skills*	On completion of level 4 students will be able to demonstrate basic numeracy, algebraic and statistical competence and the ability to manipulate data related to scientific problems.	On completion of level 5 students will be able to discuss the relative merits and applicability of various approaches to research design; data collection and analysis, and the concepts which underpin such approaches.	On completion of level 6 students will be able to critically apply a range of research skills and ethical protocols to collect and analyse data relating to an issue relevant to chemistry education.	On completion of level 6 students will be able to critically apply a range of research skills and ethical protocols to collect and analyse data relating to an issue relevant to chemistry education.

Knowledge and understanding					
		Level 4	**Level 5**	**Level 6**	**Level 6 Honours Degree**
A4	*Concepts, principles and theories in learning and teaching*	On completion of level 4 students will be able to demonstrate knowledge of developmental and / or learning theories and their application with a range of learning and teaching contexts.	On completion of level 5 students will be able to evaluate the effectiveness of programmes, interventions and strategies used to support children and young people with behavioural, social and emotional differences in educational settings.	On completion of level 6 students will be able to analyse and demonstrate critical understanding of the fundamental principles of education, development and well-being with reference to developmental and / or learning theories and their application with a range of learning and teaching contexts and demonstrate skills in applying technologies to support and enhance learning within a school or training context.	On completion of level 6 students will be able to analyse and demonstrate critical understanding of the fundamental principles of education, development and well-being with reference to developmental and / or learning theories and their application with a range of learning and teaching contexts and demonstrate advanced skills in applying technologies to support and enhance learning within a school or training context.

Intellectual skills					
		Level 4	**Level 5**	**Level 6**	**Level 6 Honours Degree**
B1	*Knowledge application (chemistry)*	On completion of level 4 students will be able to demonstrate ability to organise and appraise the knowledge and understanding of the essential scientific facts, concepts and theories relating to chemistry.	On completion of level 5 students will be able to demonstrate increasing ability to organise and appraise the knowledge and understanding of the essential scientific facts, concepts and theories relating to chemistry.	On completion of level 6 students will be able to organise efficiently and appraise the knowledge and understanding of the essential scientific facts, concepts and theories relating to chemistry.	On completion of level 6 students will be able to organise efficiently and critically appraise the knowledge and understanding of the essential scientific facts, concepts and theories relating to chemistry.
B2	*Knowledge application (teaching and learning)*	On completion of level 4 students will be able to identify the factors that influence the psychology of education and learning and critique the learning theories which support these.	On completion of level 5 students will be able to critique the roles and responsibilities of multi-agency approaches (to include professional practitioners and parents) in supporting children and young people with behavioural, social and emotional differences in educational settings.	On completion of level 6 students will be able to critically analyse, compare and apply key theories from learning and teaching.	On completion of level 6 students will be able to critically analyse, compare and apply key theories from learning and teaching. Will be able to apply appropriate teaching strategies within a professional context.
B3	*Information Assembly and Evaluation*	On completion of level 4 students will be able to demonstrate the ability to assemble information from a variety of sources and discuss and evaluate different viewpoints.	On completion of level 5 students will be able to demonstrate the ability to assemble and evaluate information from a variety of sources and discuss and evaluate different viewpoints.	On completion of level 6 students will be able to assemble efficiently, evaluate and critically assess information from a variety of sources and discuss and evaluate different viewpoints.	On completion of level 6 students will be able to assemble efficiently, evaluate and critically assess scientific and educational data/information from a variety of sources and discuss and evaluate different viewpoints.

Intellectual skills					
		Level 4	**Level 5**	**Level 6**	**Level 6 Honours Degree**
B4	*Database research and literature*	On completion of level 4 students will be able to demonstrate an awareness of the scientific database and the ability to perform basic academic literature searches under the guidance of tutor.	On completion of level 5 students will be able to demonstrate a comprehensive awareness of the scientific and educational databases and the ability to perform independent academic literature searches.	On completion of level 6 students will be able to critically evaluate the usefulness of the scientific and educational databases and perform independent literature searches at a skilled level. On completion of level 6 students will be able to critically analyse, synthesise and evaluate qualitative and quantitative materials.	On completion of level 6 students will be able to critically evaluate the usefulness of the scientific and educational databases and show the advanced ability of literature searching to locate key information. On completion of level 6 students will be able to critically analyse, synthesise and evaluate qualitative and quantitative materials, including data collected from their own independent research project.
B5	*Academic communication and presentation*	On completion of level 4 students will be able to demonstrate basic academic presentation skills (oral and written) in the subject of study.	On completion of level 5 students will be able to demonstrate essential academic communication skills (oral and written) in the subject of study.	On completion of level 6 students will be able to apply extensive academic communication skills (oral and written) in the subject of study.	On completion of level 6 students will be able to apply professional academic writing and oral presentation skills in the subject of study.
B6	*Methodology and approaches*	On completion of level 4 students will be able to demonstrate an appreciation of methodology in laboratory work.	On completion of level 5 students will be able to demonstrate a comprehensive understanding of methodology in laboratory work.	On completion of level 6 students will be able to demonstrate criticality in the development and application of learning approaches and supporting materials.	On completion of level 6 students will be able to critically understand methodology in laboratory work with the ability to formulate and plan experiments.

Subject skills					
		Level 4	**Level 5**	**Level 6**	**Level 6 Honours Degree**
C1	*Risk assessment*	On completion of level 4 will be able to demonstrate awareness of the health and safety issues of laboratory experiments. Perform proper risk assessment under guidance from the tutor.	On completion of level 5 students will be able to demonstrate a comprehensive appreciation of the health and safety issues of laboratory experiments. Perform appropriate risk assessment.	On completion of level 6 students will be able to demonstrate a safe working practice within a classroom or training environment.	On completion of level 6 students will be able to demonstrate ability to select, develop and set up safe laboratory exercises. Demonstrate safe working practice within a classroom or training environment.
C2	*Analytical Skills*	On completion of level 4 will be able to demonstrate a basic understanding of the use of possible techniques and tools for the analysis of chemical substances.	On completion of level 5 students will be able to demonstrate a comprehensive understanding of the use of possible techniques and advanced instruments for the analysis of chemical substances.	On completion of level 6 students will be able to demonstrate skills in the use of technologies for research and in the production of teaching materials.	On completion of level 6 students will be able to demonstrate advanced skills in the use of technologies for research and in the production of teaching materials.
C3	*Experimental procedure*	On completion of level 4 will be able to demonstrate a basic knowledge on recording and appraising experimental observations and processing data results.	On completion of level 5 students will be able to record and appraise experimental observations in a logical, comprehensive and contemporaneous manner.	On completion of level 6 students will be able to debate, practise, reflect upon and apply effective professional skills such as communication, ICT, problem-solving, decision-making, teamwork, interpersonal relationships.	On completion of level 6 students will be able to critique and demonstrate understanding and application of research methodology, including that related to their own independent research project.

Subject skills					
		Level 4	**Level 5**	**Level 6**	**Level 6 Honours Degree**
C4	*Research*	On completion of level 4 will be able to appreciate the importance of research work in science and education.	On completion of level 5 students will be able to critically interpret and evaluate data, comparing and contrasting competing explanations and theories to develop informed judgments about the relationship between theory, policy and practice.	On completion of level 6 students will be able to undertake observation of practice, undertake a short research project and critically evaluate findings in order to develop insight.	On completion of level 6 students will be able to undertake observation of practice, undertake a short research project and critically evaluate findings in order to develop perceptive insight.

Professional and employability skills					
		Level 4	**Level 5**	**Level 6**	**Level 6 Honours Degree**
D1	*Communication and Presentation Skills*	On completion of level 4 students will be able to communicate in a clear and concise way, in writing and orally, in particular demonstrating some competence in academic writing.	On completion of level 5 students will be able to communicate in a clear, systematic and concise way, in writing and orally, in more formal academic and professional styles, and in longer pieces of scientific writing.	On completion of level 6 students will be able to engage effectively in a variety of roles; debate in writing and orally; produce clear, structured reports and other extended pieces of work in a variety of contexts.	On completion of level 6 students will be able to engage effectively in independent roles; engage effectively in debate in a professional manner, in writing and orally; produce detailed critiques and coherent documents and research paper(s).
D2	*IT Skills*	On completion of level 4 students will be able to apply their IT skills to enable the appropriate presentation of a wide range of information.	On completion of level 5 students will be able to demonstrate more advanced IT skills and use online databases effectively to gain information.	On completion of level 6 students will be able to conduct effective searches for information using a range of online resources.	On completion of level 6 students will be able to conduct effective searches for information using a range of online resources. Apply IT skills in the interpretation and analysis of data.
D3	*Learning Skills and time management*	On completion of level 4 students will be able to demonstrate good skills in using the Internet and particularly the University's virtual learning environment. Access data and information from University and other resources.	On completion of level 5 students will be able to demonstrate the ability to learn in an increasingly effective and purposeful way, with beginning of development as an autonomous learner. Demonstrate a responsible, ethical, professional approach to work.	On completion of level 6 students will be able to adopt a broad-ranging and flexible approach to study; identifies learning needs; pursues activities designed to meet these needs in increasingly autonomous ways. Work independently, setting and achieving appropriate goals.	On completion of level 6 students will, with minimal guidance, manage own learning using a wide range of resources appropriate to profession; seek and make effective use of feedback. Effectively manage their time, and work within a framework where there are competing priorities and values.

Professional and employability skills					
		Level 4	**Level 5**	**Level 6**	**Level 6 Honours Degree**
D4	*Interactive and Group Skills*	Interact with tutors and fellow students; participate in clearly defined group situations.	On completion of level 5 students will be able to demonstrate more advanced interactive and group skills including effective participation in more demanding group tasks.	On completion of level 6 students will be able to debate, practise, reflect upon and apply professional skills such as communication, ICT, problem-solving, decision making and teamwork.	On completion of level 6 students will be able to interact effectively within learning or professional groups; recognise, support or be proactive in leadership, negotiating in a professional context and manage conflict.
D5	*Problem-Solving*	Apply basic theory and methods to a well-defined problem and appreciate the complexity of the issues in the subject.	Identify key areas of problems and choose appropriate tools/methods for their solution in a considered manner.	On completion of level 6 students will be confident and flexible in identifying and defining complex problems and apply appropriate knowledge and skills to their solution.	On completion of level 6 students will be confident and flexible in identifying and defining complex problems and apply appropriate knowledge, innovation and skills to their solution.

19 Curriculum matrix

To demonstrate how the overall programme outcomes are achieved and where skills are developed and assessed within individual modules.

Guidance - Identify which module covers the programme learning outcomes above by ticking the appropriate box. Please note that the programme learning outcomes must be differentiated by award, including all final and exit awards proposed

	Module Title	*Core or option?*	***A1***	***A2***	***A3***	***A4***	***B1***	***B2***	***B3***	***B4***	***B5***	***B6***	***C1***	***C2***	***C3***	***C4***	***D1***	***D2***	***D3***	***D4***	***D5***
Level 4	Introduction to Chemistry	Core	■	□	■	□	■	□	■	■	■	□	□	□	□	■	■	■	■	□	□
	Academic Study Skills and Personal Development	Core	□	□	■	□	□	□	■	■	■	□	□	□	□	■	■	■	■	■	■
	Introduction to the Psychology of Education (Learning Theories)	Core	□	□	□	■	□	■	■	□	■	□	□	□	□	■	■	■	■	■	■
	Laboratory Chemical Analysis	Core	□	■	■	□	■	□	■	■	■	■	■	■	■	□	■	■	■	■	□
	Maths and Statistics for Science	Core	□	□	■	□	□	□	■	□	□	□	□	□	□	□	■	■	□	□	■
	Inorganic and Materials Chemistry	Core	■	□	■	□	■	□	■	■	■	□	□	□	□	■	■	■	■	■	■

	Module Title	*Core or option?*	***A1***	***A2***	***A3***	***A4***	***B1***	***B2***	***B3***	***B4***	***B5***	***B6***	***C1***	***C2***	***C3***	***C4***	***D1***	***D2***	***D3***	***D4***	***D5***
Level 5	Analytical Methods	Core	■	■	■	□	■	□	■	■	□	■	■	■	■	□	■	■	■	■	■
	The Physical World	Core	■	■	■	□	■	□	■	■	□	□	□	□	□	□	■	■	■	■	■
	Research Methods: Theory and Practice	Core	□	□	■	□	□	□	■	■	□	□	□	□	□	■	■	■	■	■	■
	Instrumental Analysis	Core	■	■	■	□	■	□	■	■	■	■	■	■	■	□	■	■	□	■	■
	Laboratory Instrumental Analysis	Core	■	■	■	□	□	□	■	■	■	■	■	■	■	□	■	□	□	■	■
	Supporting Children and Young People: Behavioural, Emotional and Social Differences	Core	□	□	□	■	□	■	■	■	■	□	□	□	□	■	■	□	□	■	□

	Module Title	*Core or option?*	***A1***	***A2***	***A3***	***A4***	***B1***	***B2***	***B3***	***B4***	***B5***	***B6***	***C1***	***C2***	***C3***	***C4***	***D1***	***D2***	***D3***	***D4***	***D5***
Level 6	Chemical Education and Skills	Core	■	■	■	■	■	□	■	■	■	■	■	■	■	■	□	■	■	□	■
	Structure and Synthesis	Core	■	□	■	□	■	□	□	■	■	□	□	□	□	□	□	■	■	□	□
	Learning and Teaching with Technology	Option	□	□	□	■	□	□	□	■	■	□	□	■	■	□	□	■	■	□	□
	Professional Practice	Core	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Polymer Chemistry and Formulations	Core	■	□	□	□	■	□	□	■	■	□	□	□	□	□	□	■	■	□	□
	Science and Society	Option	■	□	■	■	□	□	■	■	■	□	□	□	□	□	■	■	■	■	■

20 Learning and teaching strategy

The programme will be delivered using a range of learning and teaching approaches, placing the learner at the centre and promoting equality, diversity and respect for the individual.

The programme will commence with an induction week, which enables students to get to know each other, the staff and the programmes. Students are issued with programme handbooks and guides which provide detail on modules and assessment tasks. Students are introduced to colleagues from across the University, who provide a wider range of support networks.

The programme team value and endeavour to draw upon students' past and current experiences and provide the chance to enhance those experiences in the light of new learning. To facilitate this, module delivery includes a range of learning and teaching strategies:

Modules will be taught *via* a range of delivery methods, appropriate to the material covered:

- Lectures
- Seminars and workshops
- Laboratory classes
- Tutorials
- Independent study
- IT supported learning
- Placement-related learning

Lectures
Lectures will be used to provide students with an introduction to each topic, covering the fundamental factual and theoretical material. This delivery method ensures all students gain a common, firm basis on which to build. During the course of lectures students will also develop key transferable skills such as active listening and note taking.

Seminars and workshops
Seminars and workshops will be used to support lecture material, providing opportunities for more student-centred, interactive learning and the development of problem solving skills. Seminars and workshops deepen students' knowledge and understanding of a particular subject, and their ability to sort and critically evaluate information. Students will also have the opportunity to develop presentation, communication and team working skills.

Laboratory classes
In laboratory classes, students will gain hands-on experience of the various experimental techniques used in chemical and instrumental analysis. Laboratory classes enable students to develop their practical skills in a simulated work environment. Practical and problem solving skills will be strongly developed, as will students' written communication skills. The Department has a wide range of instrumentation such as Fourier Transform Infrared Spectrometers, Fluorescence Spectrometer, High Performance Liquid Chromatography, Gas Chromatography, Ion Exchange Chromatography, Atomic Absorption Spectrophotometer, Ultraviolet/Visible Spectrometers, Particle Sizers, Particle Image Analysers, Constant Stress Rheometers, Extensional Rheometer, Controlled

Strain Rheometer, Scanning Electron Microscope, Electron Spin Resonance Spectrometer, Matrix Assisted Laser Desorption Ionisation Time of Flight (MALDITOF) Mass Spectrometer, Differential Scanning Calorimetry and Isothermal Titration Calorimetry.

The Programme Team also has close links with Glyndŵr University's 'Advanced Composite Training and Development Centre' at Broughton (http://www.glyndwr.ac.uk/en/campusesandfacilities/advancedcompositetrainingganddevelopmentcentre/) and students may have the opportunity to visit and conduct practical experiments using the facilities there.

Tutorials
Small group tutorials provide students with the opportunity to explore themes and ideas in an in-depth, self-directed, but staff guided fashion. Tutorials play a pivotal part in the personal development of students, building confidence and developing communication skills.

Independent study
Independent study is a key element in any degree programme promoting self-discipline and reflective learning at a pace set by the learner, which is essential to their employability skills. Initial staff-directed self-study will, as the student progresses, give way to student-directed self-study, which enables the learners to expand their knowledge and explore the subject matter to the full limit of their abilities. It also facilitates the development of students' peer and self-assessment skills.

IT supported learning
Virtual learning environment (VLE) will be extensively used to support the teaching and learning of all the modules in this programme, with the emphasis of student's independent study. Through Moodle VLE, students will be able to access all the course materials (including lecture notes, PowerPoint slides, e-books, e-journals and software *etc*.), try exercises and quizzes, use the virtual learning chemistry software LabSkills and participate in online forums and discussion boards. The reading of e-journals, available from Science Direct, enhances knowledge and helps students evaluate information critically.

Students will be given an introduction to all of the available learning resources during Induction. The Programme handbook is available electronically and is updated annually and supplemented with other materials during the programme such as Module Handbooks that contain detailed assessment tasks and grading criteria (including penalties for late submission and plagiarism). It contains advice about writing assessments and scholarly requirements for the presentation of work and the code of ethics which students will be expected to adhere to for example in relation to boundaries of confidentiality.

21 Work based/placement learning statement

The work-based / placement learning principles and practice have been informed by the QAA's Quality Code for Higher Education.

As students undertake placements that involve working with children and young people they will be required to complete a Disclosure and Barring Service (DBS) check upon entry to the programme. This entry condition will be administered by the

University and will be funded by individual students. Safeguarding of children, young people and vulnerable adults and ethical issues such as confidentiality and appropriate lines of communication, will be included in taught programme to ensure students understand their legal obligations and responsibilities in the work place.

Procedures and expectations relating to placement will be reviewed annually and included in a placement handbook which will be issued to students, placement providers and visiting tutors. The placements at each level of the programmes, give students professional and practical experience to draw from, enabling them to link and apply theory with practice, which is an integral part of the discussion in taught sessions and an important aspect of module assessments.

Each placement is usually undertaken within a single setting, which may be a school or other learning environment such as an interactive science centre, unless specific issues arise, when alternative arrangements may be made. Where the student or placement staff raise a significant issue, a “Cause for Concern” form is completed. This process is included in the placement handbook. Students will undertake introductory visits to placements in order to meet their mentor and familiarise themselves with the setting. At this time they will also complete a health, safety and welfare declaration and setting permission/ethics sheet. The programmes operate within the University’s framework for meeting legislative requirements regarding health and safety. Placement are organised and managed by our Partnership Office.

At Level 4 students are required to attend placements in a secondary school or similar educational setting. These placements are aligned to the Level 4 modules “Introduction to the Psychology of Education (Learning Theories) and Academic Study Skills and Personal Development

At Level 5 students are required to attend placements in a secondary school or similar educational setting. This placement is aligned to the modules "Supporting Children and Young People: Behavioural, Emotional and Social Differences" and Research Methods: Theory and Practice and forms part of the assessment for those modules.

At Level 6 students undertake a longer-term placement of 1 day (minimum) a week over the academic year. This placement is preceded by an induction period. Placements will be within a secondary school or similar educational setting. The placement provides a means by which the student can conduct active research which in turn informs the assessment of the Professional Practice module (a research paper). Whilst on placement students may be expected to undertake school or work-based activities outside the normal timetable, for example parents’ evenings, after school clubs etc. Such activities do not carry credit but form an important part of the professional development of the student and contribute to the assessed research task

The placement will enable students to gain confidence in communicating chemistry and allied science subjects and help them develop professional and interpersonal skills that will enhance their employability and prepare them to progress to PGCE or other QTS route such as Teaching Direct. Students will put into practice strategies and approaches learnt from taught modules. They will develop their teaching skills and, with teacher support, design learning activities such as laboratory exercises appropriate to the age group they are working with. Key skills gained during placement will enhance employability whether that be in teaching or other careers.

While on placement, students will act as 'ambassadors' for both the University and more broadly for the promotion of science. As ambassadors of Glyndŵr University, there is an expectation that students will conduct themselves professionally at all times.

Placements are arranged by our placement officers, who maintain links with staff and students on the programme. The placement handbook and supporting documentation outline the responsibilities of those involved in the facilitation and monitoring of the placement experience, including the student, University visiting tutor and setting. The Placement Office has extensive experience in the co-ordination, management and quality assurance of student placements.

Confidentiality and professional conduct is emphasised during the induction programme and modules linked to placement. When undertaking the Level 6 Professional Practice module, all students will be required to complete an ethical considerations pro-forma. This will be countersigned by the University supervising tutor and designated person at the placement. During placement, students will work closely with named mentors (nominated by the setting) who have the relevant skills and experience. Mentors will not be required to carry out formal student assessments. However, as a critical friend, they will provide help and advice, facilitate access to documentation and activities, support students in achieving placement-based tasks and reflective practice. Mentors are experienced practitioners and are given guidance on their role in the form of a mentor's handbook. Practitioners new to mentoring are visited and given one-to-one training on the role and their responsibilities. Additionally, mentors are invited to an annual meeting which acts as a forum to feedback on processes and to disseminate good practice

Feedback on placement experiences from settings and students is quality assured through questionnaires and used to inform future placements.

For students who have declared any additional needs/requirements and/or disabilities, the Placement Office would liaise with the setting and make reasonable adjustments accordingly.

22 Welsh medium provision

The programmes will be delivered through the medium of English. Students are entitled to submit assessments in the medium of Welsh.

23 Assessment strategy

The assessment strategy for this programme has been informed by (i) the UK Quality Code for Higher Education - Chapter B6: "Assessment of students and the recognition of prior learning" (QAA, 2013) and Glyndŵr's "A Guide to Good Practice in Assessment" (2013).

Assessment has three primary aims:

(i) To provide a framework for the assessment of students' competence, knowledge and understanding and a method for evaluating a student's abilities for the purposes of progression and certification.

(ii) To provide a vehicle for the promotion of student learning, during the stages of both preparing for the assessment and reading feedbacks from the tutors afterward.

(iii) To provide information to teaching staff and external examiners on the quality of the provision and to ensure equity of standards across the HE sector.

The most appropriate methods of assessment vary between modules. The methods of assessment used will reflect the content and learning objectives of each module, ensuring that students get different opportunities to showcase their ability, knowledge, understanding and transferable skills. Students will be made fully aware of the methods of assessment and the weighting of individual components to be used in each module from the outset, as well as the marking criteria etc.

The following methods of assessment will be used:

i. Unseen written examination
ii. Problem solving (open-book)
iii. Short question assignments
iv. Written reports/research essay
v. Practical tests
vi. Oral presentations
vii. Poster presentations
viii. Portfolio
ix. Research paper

Unseen written examinations

Unseen written examinations test a student's knowledge and understanding of the subject matter, along with their ability to develop lines of argument, solve problems and work independently. Assessment by unseen written examinations is expected by professional bodies, such as the Royal Society of Chemistry, and will be used as part of the assessment process in modules with a substantial lecture component.

Problem solving (open-book)

In open-book problem solving assessments students will be asked to apply their knowledge and understanding to solving new problems, testing their critical thinking, and analysis of data, rather than their ability to recall information.

Written reports/assignments

Report writing is another key skill for scientists. Data must be correctly noted and presented in a logical, coherent fashion, understandable to both fellow scientists and lay persons. Written assignments enable a student to develop a fuller understanding and explore ideas in more depth. Written reports and assignments test a student's critical thinking, information collection, management and communication skills. Group assignments also develop team working and interpersonal skills.

Practical tests

Employers demand science graduates with a high degree of practical skill. Practical tests enable these skills to be assessed. In addition to testing a student's ability to perform specific tasks, practical tests also assess a student's ability to evaluate a

problem and form a plan of action, collect and process data/information, manage their time effectively and learn independently.

Oral presentations

Oral presentations promote self-confidence, and develop verbal and visual communication skills. Other skills developed/assessed include time management, critical thinking, planning, research, and, of group projects, team working and interpersonal skills.

Poster presentations

Scientific information is often disseminated in the form of a poster presentation. It is therefore important that students are able to compile information and present it in a cogent fashion *via* this medium. A student's critical thinking and judgement, time management, information management and communication skills are also challenged by this form of assessment.

Portfolio

Typically, a portfolio will contain a number of pieces of work, usually connected by a topic or theme. A practice-based portfolio requires signing-off by a mentor or supervisor.

All assessments are peer reviewed for consistency of standard and layout before issuing to students. All module assessments for level 5 and 6 will be approved by the Programme Leader, Academic Head and sent to the External Examiner in line with university regulations, to ensure that each assessment is explicit in its intent, and that it is valid and reliable. Samples of student assessments for each module are double marked by a tutor in the same subject area in order to ensure the correct standard of marking. Samples of marked assessments are then sent to the External Examiner for further scrutiny. All stages of peer review and double marking are recorded on a proforma for each module.

Students will receive formative assessment, particularly during the practical and self-study elements of the programme to ensure they can keep track of their progress and development. This will also be a key factor in ensuring student engagement and retention on the programme of study. In the case of practical assessment, there may be a final summative assessment, so more frequent formative assessment provides academic rigour and increases student awareness and confidence in the subject.

Module leaders will collate work and are responsible for presenting this at assessment boards, to enable ratification of results. External Examiners will attend assessment boards and contribute to the process, to ensure external validity of assessment. Students will be informed of provisional results prior to an assessment board, and in writing following ratification of the results, with re-submission dates if needed.

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	Module Code & Title	Assessment type and weighting	Assessment loading	Indicative submission date
LEVEL FOUR	SCI414 Introduction to Chemistry	50% Coursework 50% In class test	2,000 words 2 hours	Week 12, Tri 1 Week 13, Tri 1
	SCI415 Maths and Statistics in Science	50% Coursework 50% In class test	1,500 words 2 hours	Week 13, Tri 2 Week 13, Tri 2
	SCI421 Academic Study Skills and Personal Development	100% Portfolio	3,000 words	Week 12, Tri 1
	SCI416 Laboratory Chemical Analysis	50% Laboratory practical and written report 50% Examination	2 hours 1 hour	Week 13, Tri 2 Week 14, Tri 2
	EDP419 Introduction to the Psychology of Education (Learning Theories)	Practical - Micro teach (and Teaching File) (100%) - plan, deliver and evaluation of a teaching session.	20 minutes c,1,500	Week 11, Tri 2
	SCI423 Inorganic and Materials Chemistry	50% Exam 50% Poster Presentation	2 hours 1,500 words	Week 13, Tri 2 Week 11, Tri 2
LEVEL FIVE	SCI509 Analytical Methods	50% Coursework 50% Examination	1,500 words 2 hours	Week 10 ,Tri 1 Week 14, Tri 1
	SCI521 The Physical World	50% Coursework 50% Examination	1,500 words 2 hours	Week 9,Tri 1 Week 14, Tri 1
	SCI522 Research Methods: Theory and Practice	100% Portfolio	4,000 words	Week 14, Tri 1
	SCI512 Instrumental Analysis	50% In class test 50% Examination	2 hours 2 hours	Week 12, Tri 2 Week 14, Tri 2
	SCI513 Laboratory Instrumental Analysis	100% Laboratory Portfolio	3,500 words	Week 13, Tri 2
	EDC524 Supporting Children and Young People: Behavioural, Emotional and Social Differences	Report - 100% Project policies and strategies used to support young people with behavioural, emotional and social differences	c 4,000 words	Week 13 Tri 2
LEVEL SIX	SCI619 Chemical Education and Skills	100% Portfolio	c4,000 words	Week 13 Tri 1
	SCI620 Structure and Synthesis	40% Report 60% Examination	1,500 words 2 hours	Week 10, Tri 3 Week 14, Tri 3
	SCI621 Learning and Teaching with Technology (Optional)	100% E-Portfolio	c4,000 words	Week 13, Tri 2
	SCI622 Professional Practice	80% Report 20% Poster Presentation	5,000 words c1,000 words	Week 12, Tri 2
	SCI623 Science and Society (Optional)	50% Poster Presentation 50% Report	2,000 2,000	Week 9, Tri 1 Week 13, Tri12
	SCI614 Polymer Chemistry and Formulations	50% Examination 50% Report	2hours 2,000 words	Week 14 ,Tri 1 Week 12, Tri 1

24 Assessment regulations

Glyndŵr University regulations for Bachelor Degrees, Diplomas, Certificates and Foundation Degrees will apply to this programme.

Derogations

None

Non-credit bearing assessment

The Professional Practice module involves an extended placement in a school or similar setting. Students will be expected to complete the placement in a professional manner and to the satisfaction of both the placement organisation and the placement officer. Although the placement itself is not assessed, completing the placement is an essential aspect of the associated research task which is assessed.

Borderline classifications (for undergraduate programmes only)

Requirement for raising classification in borderline cases:

- At least 50% of the credits at level 6 fall within the higher classification.
- All level 6 modules must have been passed at the first attempt.
- The mark for the 40 credit Professional Practice module at level 6 must fall within the higher classification.

25 Programme Management

Programme leader

Dr Clive Buckley

Programme team

Dr Amiya Chaudhry (Senior lecturer in science)
Dr Jixin Yang (Senior lecturer in chemistry)
Dr Ian Ratcliffe (Senior lecturer in science)
Judith Dalton-Morris (Senior lecturer in education)

The team will also be assisted by the Placement Office based in the School of Social and Life Sciences under the management of Kevin Hughes.

The Programme will be managed under the auspices of the School of Applied Science, Computing and Engineering with close collaboration with the School of Social and Life Sciences.

A designated Programme Leader for this programme will be responsible for the day-to-day running of it. Responsibilities and duties of the Programme Leader include the following:

- The management and development of curriculum and the course portfolio;
- Student tracking and student records;
- Management/co-ordination of overall assessment activities across the programme;
- Collation of results, presentation of data at assessment boards;
- Liaison with external bodies and agencies;
- Quality assurance and annual monitoring, including compilation of the Annual Monitoring Report;
- Co-ordination of admissions activities, including student induction;
- Co-ordination of other recruitment activities, including relevant publicity activities.

At module level there is devolved responsibility (Module Leader) for the following:

- The maintenance and development of teaching and learning materials for all students enrolled on the module;
- The publishing and updating of module timetables, which shall include a weekly schedule of module sessions and required reading, to be distributed to students at the start of all modules;
- The setting, marking and collation of marks for all module assessments and examination papers, including resit assessments, and submission of student results to the Programme Leader;
- Tutorial support for students taking the module which they are responsible for;
- Quality monitoring, including processing of annual student feedback questionnaires and, where appropriate, student feedback for individual modules;
- Liaison with part-time members of staff involved in module teaching.

Placement will be managed by the Placement Office of the School of Social and Life Sciences.

Quality management

Programme board meetings are held three times a year. The board consists of the programme team noted above. In addition to the matters raised by the programme team, the meetings consider the minutes from Staff-Student consultative committee (SSCC) meetings which are held two times a year, and are attended by student representatives from each level of the programme. Minutes of the SSCC meetings and team responses to the outcomes raised are published on Moodle available to all students.

Minutes from the Programme Boards then go forward to the relevant Academic School board, which the programme team also attend.

The formal mechanisms used to evaluate student perception of quality include the Student Evaluation of Module (SEM) form on each module, the feedback from the

SSCC meetings noted above, and the NSS completed by final year students. Information from each of these is considered firstly at the programme board, and can if necessary also go to the academic subject board. Whilst the management of the programme lies within the School of Applied Science, Computing and Engineering, copies of minutes of SSCCs and Programme Board meetings will be provided to the School of Social and Life Sciences. If any education–specific issues arise, the Head of the School of Social and Life Sciences will be informed for consideration.

Assessment outcomes for the Level 4 and Level 5 modules, EDP419 Introduction to the Psychology of Education (Learning Theories) and EDC524 Supporting Children and Young People: Behavioural, Emotional and Social Differences, will be considered at the School of Social and Life Sciences Module Assessment Board. Assessment outcomes for all other modules will be considered at the School of Applied Science, Computing and Engineering Board. Progression and Awards for the programme will be considered at the School of Applied Science, Computing and Engineering Board.

Communication between the two Schools will be ensured through regular Programme Team meetings which are attended by all module tutors, including those from the School of Social and Life Sciences.

Quality is also monitored by the Programme Leader's annual monitoring report (AMR) and by the report of the external examiner. Issues arising from the examiner's report and from the above evaluations of student perception are responded with actions in the AMR. This is considered by the programme team and the Head of academic school at an annual meeting, and the report and minutes of the meeting are forwarded to the academic quality assurance unit of the university.

Research and scholarship activity

Dr Clive Buckley, a Senior Fellow of the Higher Education Academy, received his BSc (Applied Chemistry) in 1981 and his PhD (solid state chemistry) in 1985. He completed his MEd in 2001 and MA (Online and Distance Education) in 2009. Following the award of his PhD, Clive undertook post-doctoral research (3 years, MOD funded) on high-temperature battery systems before moving to Glyndŵr University in 1985. Clive has extensive teaching experience and has been Programme Leader for a number of courses including BSc (Hons) Chemistry and MA Education. He is currently programme leader for the MSc Learning and Technology and was seconded (0.6 FTE) to the University's Centre for Learning, Teaching and Assessment for the period 2012 – 14, where he was responsible for supporting the development of technology-enhance learning across the university. He is an External Examiner at Plymouth University (BA QTS and PGCE programmes) and External Subject Advisor for the Level 3 Award in E-Learning and Digital Technology in Education and Training at Leicester College. Clive is the coordinator of ELESIG (Evaluation of Learners' Experiences of e-learning Special Interest Group) for Wales. He held an associate lecturer appointment with the Open University from 1995 - 2014. He has also served as an External Examiner to Keele and Edge Hill Universities.

Dr Amiya Chaudhry received her BSc (Hons) (1998) in Environmental Science and a PhD (2004) in Polymer Chemistry from the University of Sussex. Her PhD, funded by the Atomic Weapons Establishment UK was based on the characterisation and degradation of a typical room temperature vulcanized (RTV) filled foamed poly (dimethyl) siloxane rubber. Her research interests lie in the broad area of polymer degradation and biopolymers. In 2004 she was appointed as an associate lecturer at

the Open University on a number of technology and science courses. In 2005 she joined the Materials Science Research Centre at Glyndŵr University as a knowledge transfer associate on a two-year research project funded by the Department of Trade and Industry and Almetron Ltd. In 2007 she took a permanent academic position teaching on the BSc (Hons) Environmental Science and Forensic Science degree programmes and now she is the Fellow of Higher Education Academy (FHEA).

Dr Jixin Yang received his BSc in Nanjing University (China) in 1996 and MSc in Chinese Academy of Sciences (Beijing) in 1999. Since then he studied his PhD at University of Nottingham on transient species in conventional and supercritical fluid solutions by time-resolved infrared spectroscopy. After graduating in 2003, he worked as a postdoctoral research fellow at Nottingham, focusing on the area of materials chemistry. Dr Yang took the academic position at Glyndŵr University in 2009. Now he is actively involved in undergraduate/postgraduate teaching and research activities. Dr Yang is Chartered Chemist (CChem), member of Royal Society of Chemistry (MRSC) and fellow of Higher Education Academy (FHEA). He has extensive research experience in nanotechnology and green chemistry (including metal and semiconductor nanoparticles and polymer nanocomposites *etc*.) gained over the last 10 years and has published 28 research papers so far in peer-reviewed journals, including some high-impact ones such as Advanced Materials and Advanced Functional Materials. He is acting as a peer reviewer for a number of RSC journals in this area.

Dr Ian Ratcliffe has over 10 years industrial experience in product formulation across sectors including coatings, lubricants, cleaning products, personal care and pharmaceuticals. Subsequently he has gained over 13 years' experience within the Centre for Water Soluble Polymers, mostly in research oriented positions, working on projects concerning controlled release, rheology, polymer synthesis, and latterly biopolymer modification and analysis. He is a member of the RSC Formulation Special Interest Group and committee member of the RSC North Wales Section. His research interests are within the 'green chemistry' field, particularly in the areas of biopolymers and their modification and characterisation. Ian was appointed as a lecturer in science in 2011 and also Programme Leader for postgraduate courses in Chemistry.

Judith Morris

After graduating with a B.Ed. Honours degree from Lancaster University, Judith Morris began her teaching career in the secondary sector, transferring to primary education some eleven years later. Subsequently, Judith was an Inspector/Adviser for two years supporting schools and colleagues across the sectors in North East Wales, then Head teacher in three primary schools in the Wrexham area. Particular areas of interest are learning and teaching, the curriculum and its assessment and learners with additional learning needs. Judith has been in post at Glyndŵr University since April 2009, where she teaches across a range of full time and part time undergraduate Education programmes. She is Programme Leader for the BA (Hons) Education (Additional Learning Needs/Special Educational Needs) and the BA (Hons) Education (Counselling Skills and Psychology). In 2013, she collaborated with a colleague on a school-based research project, culminating in the publication of an article in an education practice-based journal. Judith gained her MA Education in 2015.

Judith is an External Examiner at Manchester Metropolitan University on the B.A (Hons) Primary Education with QTS programme.

26 Learning support

Institutional level support for students

The University has a range of departments that offer the support for students as:

- Library & IT Resources
- The Assessment Centre
- DisAbility Support Team
- Irlen Centre
- Careers Centre and Job Shop
- Zone Enterprise hub
- Chaplaincy
- Counselling & Wellbeing
- Student Funding and Welfare
- International Welfare
- Student Programmes Centre
- Glyndŵr University Students' Guild

School support for students

Many students find adjusting to higher education difficult and/or stressful. Support will be available to students from a variety of sources, both at programme level and at the School/University level.

All students will be allocated a Personal Tutor at the beginning of the programme to whom they can turn to for help and support in academic contexts. The Personal Tutor or Programme Leader is typically the first person to be approached by a student experiencing difficulties. If the problem cannot be resolved by the team, they may then be referred to the Head of Academic School or to Student Services, as necessary. Staff members also operate an "open door" policy to promptly resolve students' queries and difficulties.

Students' attendance will be monitored at all classes using electronic registers, which enables the tutors to quickly identify any students with a poor engagement record in that module. Additionally, registers from different modules will be cross-referenced to ascertain if students are missing from Individual modules or from the programme as a whole, which is monitored by the administrators from the Student and Programmes Centre. Students whose attendance gives cause for concern will be contacted by the Programme Leader in order to discuss the situation.

Students' academic progress will be monitored constantly throughout each module, through in-class quizzes and assessments. Students struggling academically are thus quickly highlighted, enabling appropriate remedial support to be offered.

An induction week will take place prior to the commencement of the programme where the team will set out to ensure that the students are informed and understand the programme requirements, the processes in place, such as student handbooks and Personal Tutor roles.

Placements will be managed and monitored by the Placement Office. Procedures and expectations relating to placement will be reviewed annually and included in a

placement handbook which will be issued to students, placement providers and visiting tutors.

Programme specific support for students

Student learning activities will be strongly supported by the use of Moodle. The electronic resources are an important part of the programme. A number of electronic books and journals can be accessed by students as well as the lecture material which is available on Moodle. The multiple functions of Moodle, such as news, forum, texting, Turnitin *etc*. are fully utilised to assist the programme delivery. We have also chemistry virtual learning software embedded in Moodle for students to use. Regular drop-in sessions for the support on maths and chemistry are also offered to students requiring additional help on Wednesday afternoons.

27 Equality and Diversity

Glyndŵr University is committed to providing access to all students and promotes equal opportunities in compliance with the Equality Act 2010 legislation. This programme complies fully with the University's policy on Equality and Diversity, ensuring that everyone who has the potential to achieve in higher education is given the chance to do so, irrespective of age, gender, disability, sexuality, race or social background.