Course Specification

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Produced By:	Laura Clode
Status:	Validated

Core Information

Awarding Body / Institution:	University of Wolverhampton		
School / Institute:	Wolverhampton School of Sciences		
Course Code(s):	CH001T01UV CH001T31UV	Full-time Part-time	4 Years 8 Years
UCAS Code:	F104		
Course Title:	BSc (Hons) Chemistry with Foundation Year		
Hierarchy of Awards:	Bachelor of Science with Honours Chemistry Bachelor of Science Chemistry Diploma of Higher Education Chemistry Certificate of Higher Education Chemistry Foundation and Preparatory Studies Chemistry University Statement of Credit University Statement of Credit		
Language of Study:	English		
Date of DAG approval:	01/Sep/2017		
Last Review:	2017/8		
Course Specification valid from:	2013/4		
Course Specification valid to:	2023/4		

Academic Staff

Course Leader:	Dr Catherine Duke
Head of Department:	Georgina Manning

Course Information

Location of Delivery:	University of Wolverhampton
Category of Partnership:	Not delivered in partnership
Teaching Institution:	University of Wolverhampton
Open / Closed Course:	This course is open to all suitably qualified candidates.

Entry Requirements:

Entry requirements are subject to regular review. The entry requirements applicable to a particular academic year will be published on the University website (and externally as appropriate e.g. UCAS

2017 Entry

- DD from A level
- BTEC QCF Extended Diploma grade PPP, BTEC QCF Diploma grade MP
- Pass Access to HE Diploma (Full Award)
- If you've got other qualifications or relevant experience, please contact The Gateway for further advice before applying.
- International entry requirements and application guidance can be found here

Other Requirements

Students must have studied a minimum of two years post GCSE level. However, it is expected that some applicants will be mature students with work experience, who wish to further their career development. These applicants will be processed through standard procedures, which may involve an interview as part of the process. Please see http://wlv.ac.uk/mature for further information.

Applicants who do not meet the entry requirements may be offered an alternative course.

Distinctive Features of the Course:

The substantial practical element of this course will be based in the brand new £25m state of the art Science Laboratory Building. Much of the equipment required will also be new. The cohort size will be reasonably small (25-50 students), at least in the early years of the course, facilitating more personal attention, per student, from the cadre of experienced chemistry staff. Our staff complement boasts two experienced research professors; a significant number for a relatively small department.

The academic development plan outlines how further chemistry staff (REF-able) shall be employed as the course grows over the first three years of operations. This, together with the industrial input into the design of the course, ensures that the programme contains current, relevant cutting edge research topics to underpin the course.

The course has been designed with both the QAA subject benchmark statements in Chemistry and the RSC accreditation criteria in mind. A group of industrial “stakeholders” has also been consulted to provide advice on relevance to local chemical industry.

As mentioned in section 5 of this document, we are currently working with the RSC to achieve accreditation of the new chemistry degree. This will be an on-going process over the first two years of the course, starting in September 2014, and shall mean that our first cohort of graduates in July 2017 shall be eligible for associate membership of the RSC.

You can develop the skills and knowledge that you need to study at undergraduate level, building on your strengths and working on your weaknesses, so that you can feel confident that by the end you are ready to commence a degree course, and to apply the skills to undertake the directed and independent learning which will help you to achieve your potential. This will allow you to embark on Level 4 study in an appropriate

undergraduate discipline or combined award, confident that you have developed the skills and chosen the most relevant subject area(s) to specialise in, which will allow you to perform strongly at degree level and enhance your career aims.

Educational Aims of the Course:

The Chemistry degree aims to:

- Develop your skills and knowledge in the main areas of chemistry (organic, inorganic, physical and analytical chemistry) in an integrated manner with areas of specialism such as pharmaceutical chemistry, forensic chemistry, biochemistry, polymer chemistry, environmental chemistry and aspects of industrial chemistry. In addition, if you choose to undertake a sandwich degree, the course will allow you to acquire technical skills in the workplace and enable you to integrate knowledge gained in the theoretical aspects of the course into the professional environment.
- Produce a graduate who is "fit for purpose", who satisfies the academic and professional requirements for associate membership of the Royal Society of Chemistry, who is ready for employment in the chemistry or related industry, or who can progress to teaching, further study or research aspirations.

Intakes:

September

Major Source of Funding:

Office for Students (OFS)

Tuition Fees:

Tuition fees are reviewed on an annual basis. The fees applicable to a particular academic year will be published on the University website.

Year	Status	Mode	Amount
2020/1	H	Full Time / Sandwich	£9250.00
2020/1	Overseas	Full Time / Sandwich	£12250.00
2020/1	H	Part Time	£3050.00
2020/1	Overseas	Part Time	£6125.00

PSRB:

None

Course Structure:

September (Full-time)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Year 1

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60

credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
3CC004	Problem Solving in Science and Technology	20	SEM1	Core
3PY002	Communication and study skills	20	SEM1	Core
3MM003	Foundation Mathematics I	20	SEM1	Core
3CH002	Chemistry for Foundation Sciences	20	SEM2	Core

For this option group you must choose a minimum of 40 credits and a maximum of 40 credits

Choose 2 option modules.

3MM004	Foundation Mathematics II	20	SEM2	
3PY003	Orientation to Pharmaceutical Science	20	SEM2	
3AB003	Fundamentals of Bioscience	20	SEM2	
3ET007	Practical Engineering Science for Electro-Mechanical design	20	SEM2	
3AP004	Physics	20	SEM2	

September (Full-time)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Year 2

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
4CH001	Concepts in Inorganic Chemistry	20	SEM1	Core
4CH003	Fundamentals of Organic Chemistry	20	SEM1	Core
4CH002	Principles of Physical Chemistry	20	SEM2	Core
4CH004	Introduction to Analytical Chemistry	20	SEM2	Core

Linked Option Group Rule: Select a minimum of 40 credits and a maximum of 40 credits from the linked (*) groups.

*** For this option group you must choose a minimum of 0 credits and a maximum of 40 credits**

Full Time students must select 4CH008 and 4A007.
Part Time students employed in relevant industry should select 4CH006 and 4CH007.

4CH006	Skills for Chemistry	20	SEM1	
4CH007	Work-based learning and development 1	20	SEM1	

*** For this option group you must choose a minimum of 0 credits and a maximum of 20 credits**

Full Time students must select 4CH008 and 4MA007.
Part Time students employed in relevant industry should select 4CH006 and 4CH007.

4CH008	Skills for Chemistry (Year long)	20	YEAR	

*** For this option group you must choose a minimum of 0 credits and a maximum of 20 credits**

4MA007	Engineering Mathematics	20	YEAR	

September (Full-time)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Year 3

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
5CH003	Physical Chemistry	20	SEM1	Core
5CH004	Inorganic Chemistry	20	SEM1	Core
5CH001	Chemical Analysis	20	SEM2	Core
5CH002	Organic Chemistry (Structure and Mechanism)	20	SEM2	Core
5CH009	Integrated Chemistry 1	20	SEM1	Core
5CH008	Integrated Chemistry 2 (Organic and Analytical)	20	SEM2	Core

For this option group you must choose a minimum of 0 credits and a maximum of 20 credits

DR part-time option

5CH007	Work-based Learning and Development 2	20	SEM2	

September (Full-time)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Year 4

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Module	Title	Credits	Period	Type
6CH001	Advanced Organic and Inorganic Chemistry	20	SEM1	Core
6CH003	Quality Assurance and Laboratory Management	20	SEM1	Core
6CH002	Advanced Chemical Analysis	20	SEM2	Core
6CH004	Advanced Physical and Materials Chemistry	20	SEM2	Core
6CH007	Chemistry Research Project	40	YEAR	Core

Please note: Optional modules might not run every year, the course team will decide on an annual basis which options will be running, based on student demand and academic factors, to create the best learning experience.

Learning, Teaching and Assessment

Academic Regulations Exemption:

None

Reference Points:

UK Quality Code for Higher Education https://www.qaa.ac.uk/quality-code

UK Quality Code for Higher Education Advice & Guidance https://www.qaa.ac.uk/en/quality-code/advice-and-guidance

Subject Benchmark Statements https://www.qaa.ac.uk/en/quality-code/subject-benchmark-statements

Qualifications and Credit Frameworkshttps://www.qaa.ac.uk/en/quality-code/qualifications-and-credit-frameworks

Learning Outcomes:

Foundation Year Course Learning Outcome 1 (UCCLO1)

Solve real world problems using mathematical and statistical techniques.

Foundation Year Course Learning Outcome 2 (UCCLO2)

Communicate scientifically using oral and written skills to provide information to a variety of audiences.

Foundation Year Course Learning Outcome 3 (UCCLO3)

Demonstrate and apply problem solving skills to a range of scientific and technological scenarios.

Foundation Year Course Learning Outcome 4 (UCCLO4)

Demonstrate and apply knowledge of a range of scientific and technological subjects.

Foundation Year Course Learning Outcome 5 (UCCLO5)

Demonstrate personal development in terms of career choice.

CertHE Course Learning Outcome 1 (CHECLO1)

Show knowledge and understanding of fundamental concepts of organic, inorganic, physical and analytical chemistry.

CertHE Course Learning Outcome 2 (CHECLO2)

Demonstrate practical skills (including safe working practice) and ability to make and record experimental observations and report results.

CertHE Course Learning Outcome 3 (CHECLO3)

Demonstrate an awareness of the importance of chemical science to a selection of related disciplines, e.g. toxicology, forensic chemistry, polymer science, environmental chemistry, medical and industrial/manufacturing applications.

CertHE Course Learning Outcome 4 (CHECLO4)

Demonstrate the qualities and transferable skills necessary for professional development requiring the exercise of some personal responsibility

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DipHE Course Learning Outcome 1 (DHECLO1)

Demonstrate practical skills, work safely in the laboratory and be fully conversant with standard chemical techniques, instrumentation and use of appropriate computer software.

DipHE Course Learning Outcome 2 (DHECLO2)

Survey and review scientific information, communicate effectively both orally and in writing, apply numerical skills to scientific data, and work in teams and independently.

DipHE Course Learning Outcome 3 (DHECLO3)

Demonstrate a systematic understanding of physical chemistry and physicochemical principles.

DipHE Course Learning Outcome 4 (DHECLO4)

Demonstrate knowledge of a range of inorganic and organic chemical materials (including structure, bonding, properties, synthesis, isolation, purification and characterisation techniques).

DipHE Course Learning Outcome 5 (DHECLO5)

Demonstrate and apply knowledge of a range of analytical techniques, evaluate and interpret analytical data (including appropriate statistical analysis).

DipHE Course Learning Outcome 6 (DHECLO6)

Demonstrate the qualities and transferable skills necessary for professional development requiring: an awareness of a range of issues within chemistry that overlap with other related disciplines

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Ordinary Degree Course Learning Outcome 1 (ORDCLO1)

Demonstrate practical skills, work safely in the laboratory and be fully conversant with standard chemical techniques, instrumentation and use of appropriate computer software.

Ordinary Degree Course Learning Outcome 2 (ORDCLO2)

Survey and review scientific information, communicate effectively both orally and in writing, apply numerical skills to scientific data, and work in teams and independently.

Ordinary Degree Course Learning Outcome 3 (ORDCLO3)

Demonstrate a systematic understanding of physical chemistry and physicochemical principles.

Ordinary Degree Course Learning Outcome 4 (ORDCLO4)

Demonstrate and apply knowledge of a range of inorganic and organic chemical materials (including structure, bonding, properties, synthesis, isolation, purification and characterisation techniques).

Ordinary Degree Course Learning Outcome 5 (ORDCLO5)

Demonstrate and apply knowledge of a range of analytical techniques, evaluate and interpret analytical data (including appropriate statistical analysis).

Ordinary Degree Course Learning Outcome 6 (ORDCLO6)

Demonstrate the qualities and transferable skills necessary for professional development requiring: an awareness of a range of issues within chemistry that overlap with other related disciplines

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Honours Degree Course Learning Outcome 1 (DEGCLO1)

"Demonstrate practical skills, work safely in the laboratory and be fully conversant with standard chemical

techniques, instrumentation and use of appropriate computer software"

Honours Degree Course Learning Outcome 2 (DEGCLO2)

"Survey and critically review scientific information, communicate effectively both orally and in writing, apply numerical skills to scientific data, and work in teams and independently"

Honours Degree Course Learning Outcome 3 (DEGCLO3)

Demonstrate a systematic understanding of physical chemistry and physicochemical principles and apply that knowledge to theoretical and practical problem solving

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Honours Degree Course Learning Outcome 4 (DEGCLO4)

"Demonstrate and apply knowledge of a range of inorganic and organic chemical materials (including structure, bonding, properties, synthesis, isolation, purification and characterisation techniques)"

Honours Degree Course Learning Outcome 5 (DEGCLO5)

"Demonstrate and apply knowledge of a range of analytical techniques, evaluate and interpret analytical data (including appropriate statistical analysis)"

Honours Degree Course Learning Outcome 6 (DEGCLO6)

Demonstrate the qualities and transferable skills necessary for professional development requiring: a)an awareness of a range of issues within chemistry that overlap with other related disciplines b)the exercise of initiative and personal responsibility and decision-making in complex and unfamiliar contexts

Overview of Assessment:

Module	Title	Course Learning Outcomes
3AB003	Fundamentals of Bioscience	UCCLO2, UCCLO4, UCCLO5
3AP004	Physics	UCCLO3, UCCLO4, UCCLO5
3CC004	Problem Solving in Science and Technology	UCCLO1, UCCLO3
3CH002	Chemistry for Foundation Sciences	UCCLO2, UCCLO4, UCCLO5
3ET007	Practical Engineering Science for Electro-Mechanical design	UCCLO2, UCCLO4, UCCLO5
3MM003	Foundation Mathematics I	UCCLO1, UCCLO3, UCCLO4, UCCLO5
3MM004	Foundation Mathematics II	UCCLO1, UCCLO3, UCCLO4, UCCLO5
3PY002	Communication and study skills	UCCLO2, UCCLO4, UCCLO5
3PY003	Orientation to Pharmaceutical Science	UCCLO2, UCCLO4, UCCLO5
4CH001	Concepts in Inorganic Chemistry	CHECLO1, CHECLO2
4CH002	Principles of Physical Chemistry	CHECLO1, CHECLO2
4CH003	Fundamentals of Organic Chemistry	CHECLO1, CHECLO2
4CH004	Introduction to Analytical Chemistry	CHECLO1, CHECLO2
4CH008	Skills for Chemistry (Year long)	CHECLO2, CHECLO3, CHECLO4
4MA007	Engineering Mathematics	CHECLO4
5AB017	Sandwich Placement	DHECLO6
5CH001	Chemical Analysis	DHECLO1, DHECLO5
5CH002	Organic Chemistry (Structure and Mechanism)	DHECLO1, DHECLO4
5CH003	Physical Chemistry	DHECLO1, DHECLO3
5CH004	Inorganic Chemistry	DHECLO1, DHECLO4
5CH008	Integrated Chemistry 2 (Organic and Analytical)	DHECLO1, DHECLO2, DHECLO6
5CH009	Integrated Chemistry 1	DHECLO1, DHECLO2
6CH001	Advanced Organic and Inorganic Chemistry	DEGCLO1, DEGCLO2, DEGCLO4, DEGCLO5, ORDCLO1, ORDCLO2, ORDCLO4, ORDCLO5
6CH002	Advanced Chemical Analysis	DEGCLO2, DEGCLO5, ORDCLO2, ORDCLO5
6CH003	Quality Assurance and Laboratory Management	DEGCLO2, DEGCLO5, DEGCLO6, ORDCLO2, ORDCLO5, ORDCLO6
6CH004	Advanced Physical and Materials Chemistry	DEGCLO3, DEGCLO6, ORDCLO3, ORDCLO6
6CH006	Research Project	ORDCLO1, ORDCLO2, ORDCLO5, ORDCLO6
6CH007	Chemistry Research Project	DEGCLO1, DEGCLO2, DEGCLO5, DEGCLO6

Teaching, Learning and Assessment:

There will be a range of learning activities, some of which will be blended learning (see section 10), as indeed there will be a range of assessment patterns (see section 11). The typical learning activities that will be employed can be listed as follows:

Traditional face to face lectures with some e-lecture/podcasts.

Traditional tutorial activity with some e-tutorial work.

Hands on “in the laboratory” practical activity (working singly, in pairs and in groups where appropriate), with some e-preparation for laboratory skills.

Workshop/seminars (working in groups and including problem solving, problem-based learning).

Typically, students will be presented with theoretical information in lecture sessions and then will use workshops, group tutorials, seminars, on-line fora, electronic tutorials, directed reading and a range of IT-based activities and formative assessments to develop these concepts.

Practical skills will similarly be developed throughout the course. The Level 4 practical work will be directed towards developing basic laboratory skills, which are subsequently built upon at levels 5 and 6. Thus, as the student develops, there is a gradual shift from students carrying out simple practical work, where the practical schedules are provided to them, towards more extensive (multiple week) problem solving practical exercises, and typically culminating in a significant research project. At level 6, students will be expected to apply many of the practical skills that they have learned throughout the course to a research project in their area of interest.

The learning activities shall be focused on moving from a more tutor-centred approach in the earlier parts of the course towards a student-centred learning approach in the latter stages.

Thus, Level 4 modules tend to involve tutor-led sessions, with defined student directed activities, whereas Level 6 modules are more student-centred, with tutors acting to facilitate students’ learning. Some of the latter theory modules will involve key note lectures only, with students being required to undergo significant independent research and learning to work up selected advanced topics, of direct relevance to industry and/or our research programmes.

The Development of Graduate Attributes

Global Citizenship

It is important that students should be aware of several key industrial, environmental and other applied and research aspects of chemistry. Throughout the course, students will consider the role that chemistry plays in the broader context of chemistry-related disciplines, and the impact of chemistry upon many walks of life. This will be achieved through several integrated and specialist topic modules, for example, pharmaceutical and forensic chemistry, environmental chemistry, aspects of industrial chemistry etc.

Digital Literacy

Throughout the course students will use a range of standard and specialist software to prepare and present reports, assignments, presentations, etc across a wide range of modules, with increasing sophistication. Students will be expected to make use of the Universities virtual on-line learning framework (currently CANVAS) for accessing module information, submitting assignments, formative self-testing, engaging in module fora, etc. Students will be expected to make use of email for module and other University communications. One aspect of the course will encompass the use of chemistry based software such as Knowitall, molecular modelling packages and use of packages such as Excel or Graphpad Prism to manipulate data.

By the end of the course, students should be comfortable with, and be competent in, the digital world and have the flexibility to adapt to a wide range of digital activities.

Knowledgeable and Enterprising

The course develops students’ knowledge base and skills in Chemistry using the subject specific module content of all modules. In addition, the development of transferable skills improves and enhances employability beyond the field of chemistry, and indeed science in general. There are many instances of trained chemists switching to careers in chemistry-related disciplines, teaching or further research.

The emphasis on the students moving to a student centred learning approach simultaneously fosters the development of transferrable skills, together with group learning and problem solving approaches. Students are encouraged to reflect upon their learning experience and to extrapolate from this the skills that would make them stand out in their respective career pathways. As part of the project planning and advanced practical module, students need to consider CV's, job applications, and how best to present themselves, by making a formal written application for an Honours project. Students will also be directed to the relevant careers support services in the University. In addition, the RSC offers extensive careers support.

Assessment Methods:

At the University of Wolverhampton, a variety of modes of assessment will be used to support and test your learning and progress and to help you develop capabilities that are valued beyond your University studies and into your working life. Your course may include a variety of assessment activities:

Written examinations (including online examinations, open and closed book examinations and quizzes)
Coursework (for example, essays, reports, portfolios, project proposals and briefs, CVs, poster presentation)
Practical (for example, oral and video presentations, laboratory work, performances, practical skills assessment)

In the final year of your undergraduate degree, and at the end of your postgraduate degree, you are likely to be expected to write an extended piece of work or research, such as a dissertation or a practice-based piece of research.

Student Support:

General University support:

University Learning Centres are the key source of academic information for students. Learning Centres provide physical library resources (books, journal, DVDs etc.) and offer a range of study areas to allow students to study in the environment that suit them best: Social areas, quiet and silent areas. Learning Centres also provide access to wide range of online information sources, including eBooks, e-Journals and subject databases.

Learning Centres also provide students with academic skills support via the Skills for Learning programme. Students on campus can attend workshops or ask for one-to-one help on a range of skills such as academic writing and referencing. Students can access a range of online skills material at: www.wlv.ac.uk/lib/skills

The University Student Support website offers advice on a variety of matters (careers, counselling, student union advice, etc.) Students can also access these services by booking appointment with the SU, careers, counselling services, etc.

Employability in the Curriculum:

Employability:

Consider the importance of medicines and pharmaceutical technology, industrial chemistry, hospital-based chemistry, forensic-based chemistry, environmental-based chemistry, the food and drinks industry and many other aspects of chemistry in the modern world. The UK's "chemical industry" is one of the leading industrial contributors to the national economy. There are many opportunities to apply chemical knowledge, principles and skills to a successful career in chemistry or chemistry-related discipline. "Chemistry will underpin economic growth, say industry leaders", it was recently reported in the Royal Society of Chemistry (RSC) publication, Chemistry World, on the "Strategy for delivering chemistry-fuelled growth of the UK economy".

Outcomes

You will have studied what can perhaps be considered to be "the central science". You will have an integrated

and holistic knowledge of the main areas of chemistry, good practical skills, be literate, numerate, have high level of IT skills and be capable of logical, scientific, critical thinking and problem solving. These skills will make you well equipped for the workplace, be it in a chemistry environment or the wider world of work in general, or for further study and/or research if you so choose.

Further training

The chemistry graduate will be fully capable of further study and training at masters level or research at PhD level in an appropriate chemistry (or related) subject.