

University of Plymouth

Faculty of Science and Engineering
School of Geography Earth and Environmental Sciences

Programme Specification

MChem Analytical Chemistry (5846)

September 2018

1 MChem

Final award title:	MChem Analytical Chemistry
Level 4 Intermediate award title:	Certificate of Higher Education 120 credits at level 4
Level 5 Intermediate award title:	Diploma of Higher Education 120 credits at level 5
Level 6 Intermediate award title:	BSc (Honours) Chemistry 120 credits at level 6
UCAS code:	F181
JACS code:	F180

2 Awarding institution: University of Plymouth

Teaching institution(s): University of Plymouth

3 Accrediting body: Royal Society of Chemistry

Accreditation provides access to qualified membership of the RSC and forms a basis for satisfying the academic requirements for the RSC's award of Chartered Chemist (CChem) through further study or continuing professional development. Further information on the accreditation scheme can be found at www.rsc.org/Education/courses-and-careers/accredited-courses/

Date of re-accreditation: June 2023

4 Distinctive Features of the Programme and the Student Experience

The key features of the MChem Analytical Chemistry programme at Plymouth are:

- The provision of a pathway for progression through a broadly based undergraduate degree in Chemistry with increasing specialisation in Analytical Chemistry after level 4;
- University of Plymouth is the only University which requires students to work in ISO9001:2015 certified laboratories. Practical work to the ISO 17025 standard is a requirement at level 7 for obtaining the MChem Analytical Chemistry qualification.
- The University also offers BSc (Hons) Chemistry with a foundation year which allows students with non-traditional qualifications to progress to the MChem Analytical Chemistry programme.

- It is one of only six universities to offer RSC-accredited undergraduate degrees with a significant analytical chemistry component at undergraduate level. The programme includes 120 credits of analytical chemistry modules at Stages 1 to 4, and a 60-credit analytical chemistry-focussed research project at Stage 5.
- The programme focuses on producing practical professional chemists through a *hands-on* approach to learning.
- The development of the skills required for future employment is at the centre of our teaching.
- The theoretical aspects of chemistry are combined with relevant practical laboratory experience.
- The course places the professional skills of communication, problem solving, information and data retrieval and project management at its heart.
- Small group teaching provides students with the opportunity to acquire a richer chemical experience through the 'hands-on' use of state-of-the-art analytical instrumentation from Stage 1 onwards.
- The programme emphasises a practical approach to solving analytical problems, with extensive use of case-studies and group work.
- University of Plymouth is the only University to offer Chemistry Programmes west of Bristol and Southampton.

Skills Development – the main focus of the programme is the development of skills to a high level of ability. A student-centred learning approach is introduced at undergraduate Stage 1, and developed through to Stage 5. Employability, professional and transferable skills are embedded within the curriculum. In this way, progress in six key programme outcomes is constantly monitored, and targeted feedback allows progression from year to year. At Stage 5 the emphasis is on problem solving analytical chemistry problems by extensive use of case studies and teamwork.

Guided Learning – students benefit from an extensive support network including academic staff, fellow students, research students, technical staff and library/IT staff. Students are taught in small groups by a committed team of academic staff, many of whom have received national awards for their teaching. This ensures that the latest pedagogic developments are embedded in the curriculum.

Research Informed Teaching – the Centre for Chemical Sciences (CCS) is part of the School of Geography, Earth and Environmental Sciences and CCS staff all work within world-renowned research groups. CCS staff offer particular strengths in analytical chemistry, marine chemistry, organic geochemistry, and solid-fluid interactions. Working alongside CCS staff, PhD students and post-doctoral fellows, students have an opportunity to play a part in our research programmes, which will provide them with excellent skills and experience for a career in

chemistry. Full and up-to-date details of research activity can be accessed on the SoGEES, Staff PDP and Research Group web pages.

Practical Experience - the programme is designed to address the techniques and chemical instrumentation used in the 21st century, and the application of chemistry at the forefront of developments in the chemical sciences. Students gain practical experience of using modern instrumentation in modern laboratory facilities, which are **ISO9001 certified**.

Employability - the employment record of graduates from the BSc (Hons) Chemistry programme is outstanding, with over twice the national average entering employment in Chemistry. The practical nature of the degree programme means that a wide range of companies identify Plymouth graduates for positive recruitment. There are opportunities to take advantage of work placements or exchange visits. Accreditation by the **Royal Society of Chemistry** is currently being applied for and is expected in 2017. In addition, our partnership programme agreement (<http://www.rsc.org/Membership/Networking/Partnership/>) confers benefits such as access to a continuing professional development support network. Latest statistics show that 90% of chemistry graduates from University of Plymouth were in work or undertaking further study, with 70% in a professional or managerial job 6 months after graduating (www.unistats.direct.gov.uk; accessed 14th September 2016).

5 Relevant QAA Subject Benchmark Group(s)

The Chemistry programmes at graduate and masters level have been developed in accordance with QAA 2014 Chemistry Subject Benchmark Statements and the generic guidelines for Master's Degrees. A copy of these documents can be found at www.qaa.ac.uk/assuring-standards-and-quality/the-quality-code/subject-benchmark-statements . These benchmark statements are referred to throughout the intended learning outcomes for this programme.

6 Programme Structure

The MChem Analytical Chemistry programme is delivered in five stages. Stages 1, 2, 4 and 5 are core to the programme, with an optional, zero-credited placement year of at least 26 weeks at Stage 3.

MChem students who wish to progress onto Stage 5 of the MChem Analytical Chemistry programme must have attained a Stage 2 aggregate mark of 55% or higher and a Stage 4 aggregate mark of 60% or higher.

Students registered for the MChem programme but attaining an overall Stage 2 mark of less than 55%, will be considered for progression onto Stage 4 on the BSc (Honours) Chemistry programme.

Students registered for the MChem programme but attaining an overall Stage 4 aggregate mark of less than 60%, will not be allowed to progress on Stage 5 of the MChem Analytical Chemistry programme but will instead be considered for the award of BSc (Honours) Chemistry.

Students registered for the BSc (Honours) Chemistry programme can transfer onto the MChem Analytical Chemistry programme either at Stage 2 or 4. If they transfer during Stage 2 then the standard MChem rules for progression apply. If a student wishes to transfer onto the MChem Analytical Chemistry programme at Stage 4 they must make this choice prior to the Easter recess and also achieve a Stage 4 aggregate mark of 60% or higher..

Modules are 20 credits, the exceptions being the Stage 4 Research/Work Based Learning project module (40 credits) and the Stage 5 Research Project (60 credits). Students must complete 120 Credits of assessment in each stage, other than the placement year, to form a programme of work. All modules are credit-rated and are fully compatible with the University's Credit Accumulation and Transfer Scheme (CATS) and European Schemes.

Full details of each module are available in the individual Module Records

Stage 1 students will be able to choose the Chemistry Plymouth Plus module as part of their programme and this is strongly recommended by the accrediting body. In addition, a number of interdisciplinary Plymouth Plus modules in mathematics and languages have been identified which would be appropriate for Stage 1 chemistry students to take if they wish to choose a Plymouth Plus module delivered outside the programme.

Level 4 includes a significant proportion of analytical chemistry in CHM1011, CHM1012, CHM1014 and CHM1015 (equivalent to at least 20 credits). At level 5 students specialise in analytical chemistry by taking CHM2014 and CHM2015 (40 credits). At level 6 students specialise further by taking CHM3013 (20 credits) and choosing an analytical chemistry project in CHM3011 or CHM3012 (40 credits). At level 7 the focus is entirely on analytical chemistry in modules CHM5001, CHM5004 and CHM5005 (100 credits in total). Over the course of the programme this totals to at least 220 credits of specialisation in analytical chemistry.

Direct entry students into stage 4 may be required to take CHM3017 instead of CHM3013, in order to meet level 6 learning outcomes for Physical Chemistry.

The overall programme structure is shown below:

MChem Analytical Chemistry

Stage 1 (Level 4)

Semester 1

CHM1011 Practice of Chemistry 20 Credits	CHM1012 Organic and Inorganic Chemistry 1 20 Credits	CHM1013 Physical and Computational Chemistry 1 20 Credits
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Semester 2

Plymouth Plus Choice from: CHM1014PPP SPNX100PP 20 Credits	CHM1015 Organic and Inorganic Chemistry 2 20 Credits	CHM1016 Physical and Computational Chemistry 2 20 Credits
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Stage 2 (Level 5)

Semester 1	CHM2011 Inorganic Chemistry	CHM2012 Organic Chemistry	CHM2013 Physical Chemistry
	20 Credits	20 Credits	20 Credits
Semester 2	CHM2014 Analytical Chemistry 1	CHM2015 Analytical Chemistry 2	CHM2016 Research Skills
	20 Credits	20 Credits	20 Credits
Semester 1 & 2 (optional)	APIE218 Preparation for the Chemical Industry Work Placement		
	0 credits		

Optional Stage 3 (Level 6)

Semester 1 & 2	APIE318 Placement in Chemistry
	0 credits

Stage 4 (Level 6)**Semester 1**

CHM3011 Research Project 40 Credits	CHM3013 Advanced Analytical Techniques 20 Credits	CHM3014 Advanced Inorganic Chemistry 20 Credits
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OR**OR**

CHM3012 Chemistry Project incorporating Work Based Learning 40 Credits	CHM3017 ¹ Physical Chemistry 20 Credits
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Semester 2

CHM3011 cont'd. Or CHM3012 cont'd.	CHM3015 Advanced Organic Chemistry 20 Credits	CHM3016 Advanced Physical Chemistry 20 Credits
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¹ Required pathway for International direct entry students only

Stage 5 (Level 7)

Semester 1	GEES514 Research Skills for Science	CHM5004 Quality Assurance and Accreditation	CHM5005 Analytical Chemistry Advanced Problems and Practice for MChem
	20 Credits	20 Credits	20 Credits

Semester 2	CHM5001 MChem Analytical Chemistry Project
	60 Credits

7 Programme Aims

The main aims of the programme are to:

1. provide a pathway for progression through a broadly based undergraduate degree in Chemistry with increasing specialisation in Analytical Chemistry from levels 4 to 7;
2. develop the theoretical and practical skills necessary for employment as professional chemist in a range of chemical and allied fields, including research, teaching and industry;
3. develop the theoretical and practical skills, and provide training necessary for employment as an analytical chemist with experience of working to ISO 17025, the international standard for all testing and calibration laboratories;
4. provide training of working in ISO9001:2015 certified analytical laboratories;
5. gain a broad knowledge and understanding of and the ability to critically investigate advanced concepts in chemistry and analytical chemistry;
6. develop the ability to communicate chemical information to a level commensurate with professional standards in the field;
7. develop skills in experimental design; use of advanced analytical instrumentation to generate quality data; record keeping and safe laboratory practice
8. develop the ability to apply a structured problem solving approach to a range of advanced problems in chemistry and analytical chemistry, both individually and in teams;
9. develop the ability to generate an idea then plan, execute and review an extended research project in chemistry and analytical chemistry;
10. develop the ability to select and apply appropriate methods of chemical information retrieval, critical evaluation, interpretation and analysis, commensurate with professional standards in the field
11. receive training of working to ISO 17025 in ISO 9001 certified laboratories, and apply these principles to real-world problems in analytical chemistry;
12. enable students to generate an idea then plan, execute and review an extended research project in analytical chemistry in accordance with the ISO 17025 standard.

8 Programme Intended Learning Outcomes

The programme **skills, learning outcomes** and detailed descriptors are summarised in Table 1. These can be mapped onto the **HEFCE Threshold Benchmark Statements for Chemistry** and the SEEC Descriptors (Table 2) using the codes in second column. The learning outcomes are also mapped against individual modules in Table 4.

Table 1 Programme learning outcomes mapped against the HEFCE benchmark statements (Table 2) at levels 6 and 7.

Programme Skill	Mapping Code	Sub-skill	Level 6	Level 7
Knowledge and Understanding	KU (A, B, V) CAS (E, G) KTS (Q)	<ul style="list-style-type: none"> • Organic Chemistry • Inorganic Chemistry • Physical Chemistry • Analytical Chemistry 	Demonstrate a sound knowledge and understanding and ability to critically investigate advanced chemical concepts.	Demonstrate an advanced knowledge and understanding and ability to critically investigate advanced concepts in analytical chemistry.
Communication	CAS (F,V) KTS (M, P,R) ERS (T)	<ul style="list-style-type: none"> • Report writing • Oral presentation • Interpersonal communication 	Communicate chemical information to a high level of professional ability; adjust working practise in response to feedback and self-reflection.	Communicate chemical information to a level commensurate with professional standards in the field; demonstrate a professional attitude to working with colleagues.
Laboratory Skills	PS (H, I, J, K, L, W, X)	<ul style="list-style-type: none"> • Experimental Planning • Use of Instrumentation & lab equipment • Observation and record keeping • Safe working 	Demonstrate a professional level of ability in: experimental design; the appropriate use of laboratory equipment to generate quality data; record keeping and safe laboratory practice.	Demonstrate a level of ability commensurate with ISO 17025 in: experimental design; use of using advanced analytical instrumentation to generate quality data; record keeping and safe laboratory practice.
Problem Solving	CAS (C, D,) KTS (N, O, P, Y, Z)	<ul style="list-style-type: none"> • Working on problems • Making decisions 	Take ownership of the problem solving process and deliver solutions to simple and	Demonstrate ability to apply a structured problem solving approach to a range of

	PS (W)	<ul style="list-style-type: none"> • Developing a problem solving strategy 	complex real-world chemical problems, both individually and in teams.	advanced problems in analytical chemistry, both individually and in teams.
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Table 1 Programme learning outcomes continued . . .

Programme Skill	Mapping Code	Sub-skill	Level 6	Level 7
Project Management	CAS (C,V) KTS (R, S) PS (W)]	<ul style="list-style-type: none"> • Project planning • Task Management • Team Work 	Define the objectives when planning and executing a series of tasks for an extended chemistry project; review and communicate the outcomes; work both individually and in teams to achieve an objective.	Demonstrate the ability to generate an idea then plan, execute and review an extended research project in analytical chemistry.
Information and Data Management	CAS (D, G, U) PS (J, L) KTS (O, P)	<ul style="list-style-type: none"> • Data manipulation and presentation • Data interpretation and analysis • Information search, retrieval, assessment and use 	Select and apply appropriate methods of chemical information retrieval, critical evaluation, interpretation and analysis, all to a professional standard.	Select and apply appropriate methods of chemical information retrieval, critical evaluation, interpretation and analysis, commensurate with professional standards in the field.

Table 2 Subject Benchmarks

SEEC2 descriptor	Code		Threshold Benchmark Statement
KU	A	Cognitive abilities and skills (CAS)	ability to demonstrate knowledge and understanding of essential facts, concepts, principles and theories based on the taught programme
	B ³		ability to adapt and apply methodology to the solution of unfamiliar problems
CAS	C		ability to recognise and analyse problems and plan strategies for their solution
	D		ability to evaluate, interpret and synthesise chemical information and data
	E		ability in the practical application of theory using computer software and models
	F		ability to communicate scientific material and arguments
	G		information technology (IT) and data-processing skills, relating to chemical information and data
	U ³		ability to assimilate, evaluate and present research results objectively
	v ³		skills required to undertake a research project reporting outcomes that are potentially publishable (in a peer-reviewed publication).
PS	H		Practical skills
	I ³	competence in the planning, design and execution of experiments	
	J	ability to monitor, by observation and measurement, chemical properties, events or changes, and the systematic and reliable recording and documentation thereof	
	K ³	ability to select appropriate techniques and procedures	
	L	ability to interpret and explain the limits of accuracy of their own experimental data in terms of significance and underlying theory	

² SEEC Descriptors: KU, Knowledge and Understanding; CAS, Cognitive Abilities and Skills; PS, Practical Skills; KTS, Key Transferable Skills; ERS, Employment Related Skills.

³ Masters level

	W ³		skills required to work independently and be self-critical in the evaluation of risks, experimental procedures and outcomes
	X ³		ability to use an understanding of the uncertainty of experimental data to inform the planning of future work

Table 2 Subject Benchmarks continued . . .

KTS	M	Generic skills	ability in written and oral communication
	N		ability to solve problems relating to qualitative and quantitative information
	O		numeracy and mathematical skills, including such aspects as error analysis order-of-magnitude estimations, correct use of units and modes of data presentation
	P		ability to retrieve information, in relation to primary and secondary information sources, sources, including information retrieval through online computer searches including information retrieval through online computer searches
	Q		IT skills
	R ³		the ability to work in multi-disciplinary and multi-skilled teams
	S		ability to manage time and organise, as evidenced by the ability to plan and implement efficient and effective modes of working
	Y ³		the ability to make decisions in complex and unpredictable situations
	Z ³		the ability to think critically in the context of data analysis and experimental design
ERS	T		ability to plan and embark on a career and undertake further professional training

9 Admissions Criteria, including APCL, APEL and DAS arrangements

The admissions criteria for MChem Analytical Chemistry are detailed in Table 3.

All applicants must have GCSE (or equivalent) Maths and English at Grade C or above.

Table 3 Admissions criteria for MChem Analytical Chemistry.

Entry Requirements for MChem Analytical Chemistry	
A-level/AS-level	Normal minimum entry requirements are between 112-120 points, all from three (3) A-levels to include at least a B in Chemistry. Science subjects are preferred and General Studies is excluded.
BTEC National Diploma/QCF Extended Diploma	Candidates may be interviewed before an offer is made. 18 units, Grade DDM. Science related including chemistry units.
Access to Higher Education at level 3	Candidates may be interviewed before an offer is made. Pass in Access to HE Diploma in Science with at least 33 credits at Merit and / or Distinction and to include at least 12 credits in Chemistry with Merit (Level 3) including Ordinary Level Grade C Maths and English
Welsh Baccalaureate	Must have Three (3) at A Level to include Chemistry (B minimum) and other science / maths – treat as standard offer and treat as add-on, i.e. plus 120 points from WB
Scottish Qualifications Authority	Scottish Highers: 300 points, BBBB including chemistry and other science subject / maths
Irish Leaving Certificate	A1, B1, B1, B1, B1, B2 at Higher Level, to include chemistry and other science / maths at, at least B1..... plus Ordinary Level Grade C Maths and English
International Baccalaureate	28 overall to include 5 at HL Chemistry, plus two sciences subjects from Table 1. Any other combinations REFER. English and Maths accepted within If Advanced Level = 4+ (A1) or 5 (A2/B) If Standard Level = 5+ (A1) or 6 (A2/B) If overseas and not studying English within IB, must have IELTS 6.0 overall with 5.5 in all other elements.
Direct Entry	Direct entry students into Stage 5 of the MChem must hold a 2.1 classification degree in the chemical sciences.

10 Progression criteria for Final and Intermediate Awards

The University's standard regulations for progression apply. A copy of the regulations can be found at <http://www1.plymouth.ac.uk/extexam/pages/academic-regulations.aspx>

11 Exceptions to Regulations

- MChem students who wish to progress onto Stage 5 of the MChem Analytical Chemistry programme must have attained a Stage 2 aggregate mark of 55% or higher and a Stage 4 aggregate mark of at least 60 %.
- Students registered for the MChem programme but attaining an overall Stage 2 mark of less than 55%, will be considered for progression onto Stage 4 on the BSc (Honours) Chemistry programme.
- Students registered for the MChem programme but attaining an overall Stage 4 aggregate mark of less than 60%, will not be allowed to progress on Stage 5 of the MChem Analytical Chemistry programme but will instead be considered for the award of BSc (Honours) Chemistry.
- Students registered for the BSc (Honours) Chemistry programme can transfer onto the MChem Analytical Chemistry programme either at Stage 2 or 4. If they transfer during Stage 2 then the standard MChem rules for progression apply. If a student wishes to transfer onto the MChem Analytical Chemistry programme at Stage 4 they must make this choice prior to the Easter recess and also achieve a Stage 4 aggregate mark of at least 60 %.

12 Transitional Arrangements

The programme specification will be introduced from September 2017. The first cohort of students to take the programme in its entirety will graduate in 2021. Because Stages 1, 2, 3 & 4 of the MChem Analytical Chemistry programme are identical to the existing BSc (Hons) Chemistry programme, with the only substantive change being the addition of stage 5, then BSc (Hons) Chemistry students enrolling in 2014 or later will be able to transfer onto it providing they meet the criteria.

2017/18	2018/19
MATH1604PP	No replacement
MATH1607PP	No replacement

13 Mapping and Appendices:

The mapping of assessment and skills against modules is shown in Table 4.

Module assessment is by means of a combination exams, tests, coursework and practical elements as appropriate. A breakdown of the main elements of assessment for each module is given in Table 5.

Table 4 Programme learning outcomes mapped against modules

Programme Outcome	Module Code																							
	CHM 1011	CHM 1012	CHM 1013	CHM 1014	CHM 1015	CHM 1016	CHM 2011	CHM 2012	CHM 2013	CHM 2014	CHM 2015	CHM 2016	CHM 3011	CHM 3012	CHM 3013	CHM 3014	CHM 3015	CHM 3016	CHM 3017	CHM 5001	CHM 5004	CHM 5005	GEES 514	
Knowledge and Understanding																								
Organic Chemistry	2	2		2	2			2			1	1	1	1	1	1	1	2						
Inorganic Chemistry	2	2		2	2		2				1	1	1	1	1	2								
Physical Chemistry	2		2	2		2			2	1	1	1	1	1				2	2					
Analytical Chemistry	2			2			1	1			2	2	1	1	1	2	1	1	2		1	2	2	1
Laboratory Skills																								
Experimental Planning	1	1	1	1	1	1	1	2	2			1	2	2	2	1	2	2	2	2	2	2	2	2
Use of Instrumentation & lab equipment	2	2	2	2	2	2	2	2	2			2		2	2	1	1				2	2	2	
Observation and record keeping	2	2	2	2	2	2	2	2	1			2		2	2	1	2	2	2	2	2	2	1	
Safe working	2	2	2	2	2	2	1	1	1			1		2	2	1	1	1		1	2	1	1	
Problem Solving																								
Developing a problem solving strategy		1	1		1	1	1	2			2		2	2	2	1	1	1	1		2	1	1	2
Making decisions		1	1		1	1	1	1			2		2	2	2	1	1	1	1		2	2	1	2
Working on problems	1	1	1	1	1	1	2	1	2	2	2	1	2	2	2	1	2	2	2	2	2	1	1	1
Project Management																								
Project planning		1	1		1	1		1				2	2	2							2	2		2
Task Management	1	1	1	1	1	1	1	2	1	2	1	2	2	2	1	1			1		2	2	1	2
Team Work	2			2						2	1	1	2	2		1					2	2	1	1
Communication																								
Report writing	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Oral presentation	2			2						1	1	2	2	2	2						2		1	2
Interpersonal communication	2	1	1	2	1	1	1			1	1	2	2	2	1		1			2	2	1	1	2
Information search, retrieval, assessment and use	2	2	2	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Information and Data Management																								
Data manipulation and presentation	1	2	2	1	2	2	1	1	2	1	2		2	2	2	1		2	2		2	1	1	2
Data interpretation and analysis		2	2		2	2	2	1	2	2	2		2	2	2	2	2	2	2		2	2	2	2
	12	9	8	12	9	8	6	7	7	8	8	9	16	16	7	6	7	9	8	16	11	6	11	
Practised	1																			1				
Practised and assessed	2																			2				

Table 5 Main elements of assessment for each module

Code	Module title	Credit	Level	Element of assessment			
				P	C	E	T
CHM1011	Practice of Chemistry	20	4		100%		
CHM1012	Organic and Inorganic Chemistry 1	20	4		50%		50%
CHM1013	Physical and Computational Chemistry 1	20	4		75%	25%	
CHM1014PP	Solving Chemical Problems	20	4	40%	60%		
SPNX100PP	Spanish 1	20	4	100%			
CHM1015	Organic and Inorganic Chemistry 2	20	4		50%		50%
CHM1016	Physical and Computational Chemistry 2	20	4		75%	25%	
APIE218	Preparation for the Chemical Industry Work Placement	0	5				
CHM2011	Inorganic Chemistry	20	5		50%	50%	
CHM2012	Organic Chemistry	20	5		50%	50%	
CHM2013	Physical Chemistry	20	5		50%	50%	
CHM2014	Analytical Chemistry 1	20	5		50%	50%	
CHM2015	Analytical Chemistry 2	20	5		100%		
CHM2016	Research Skills	20	5		100%		
APIE318	Placement in Chemistry	0	6	P/F			
CHM3011	Research Project	40	6	15%	85%		
CHM3012	Chemistry Project incorporating Work Based Learning	40	6	15%	85%		
CHM3013	Advanced Analytical Techniques	20	6		50%		50%
CHM3014	Advanced Inorganic Chemistry	20	6		50%	50%	

CHM3015	Advanced Organic Chemistry	20	6		50%	50%	
CHM3016	Advanced Physical Chemistry	20	6		50%	50%	
CHM3017	Physical Chemistry	20	6		50%		50%
Code	Module title	Credit	Level	Element of assessment			
				P	C	E	T
CHM5001	MChem Analytical Chemistry Project	60	7	15%	85%		
CHM5004	Quality Assurance and Accreditation	20	7		50%	50%	
CHM5005	Analytical Chemistry Advanced Problems and Practice for MChem	20	7		50%		50%
GEES514	Research Skills for Science	20	7	50%	50%		