

Programme Specification

1	Awarding body	University of London
2	Teaching Institution	Birkbeck College
3	Programme Title(s)	MSc Analytical Chemistry Postgraduate Diploma Analytical Chemistry
4	Programme Code(s)	TMSCHANL_C MSc Analytical Chemistry TPDCHANL_C PG Dip Analytical Chemistry
5	UCAS code (if applicable)	N/A
6	Home Department	Biological Sciences
7	Exit Award(s)	Postgraduate Diploma Analytical Chemistry Postgraduate Certificate Analytical Chemistry Alternative exit award of <i>MSc Biological Sciences</i> awarded for any 180 credits at level 7 from modules in home department (limited to a max. of one project module).
8	Duration of Study (number of years)	MSc full-time: normally 1 year MSc part-time: normally 2 years PG Diploma full time: normally 1 year PG Diploma part-time: normally 2 years
9	Mode of Study	FT X PT X DL
10	Level of Award (FHEQ)	7
11	Other teaching depts or institution	N/A
12	Professional, Statutory Regulatory Body(PSRB) details	N/A
13	QAA Benchmark Group	N/A

14	Programme Rationale & Aims
	<p>The overall aim of the programmes (MSc and PG Dip) is to provide the training and education in analytical science and technology required for the graduate chemist to reach high professional level in the practice of analytical chemistry. This includes training in the essential tools of analytical science, their appropriate application and an understanding of the broader professional issues involved in practicing analytical chemistry in a professional environment.</p> <p>The programmes combine face-to-face teaching with practical training and a research project in a flexible modular format. ^[SEP]Progression from postgraduate diploma to MSc is by completion of the requisite modules.</p> <p>The key aims are to provide:</p>

	<ul style="list-style-type: none"> • An understanding of the science underlying key areas of analytical science and their practical applications. • An in-depth understanding in at least one specialised area in the discipline. • Practice with chemical manipulations and instrumentation. • Practice in the visual and statistical analysis of data. • Practice in the written and oral presentation of information. • Use of computers in searching for information, in the analysis of data, and preparation of reports. • A critical and professional approach to quality in analytical science. <p>A range of optional specialist modules are available allowing students to obtain specialist skills and a degree in a specific areas of analytical science, these options are reviewed annually and if appropriate revised or replaced to reflect current trends. MSc students must complete one of these modules.</p> <p>Indicative established topics for taught specialist modules (2020/21) include:</p> <p style="text-align: center;">Techniques in Clinical Analysis Environmental Analytical Chemistry</p> <p>Candidates fulfilling the requirements for a Degree or Diploma who pass an appropriate specialist module approved by the College, and undertake the project/dissertation in an appropriate area of study, and who so wish, can on request be awarded specially designated Degrees or Diplomas, for example “MSc Analytical Chemistry (Specialising in Clinical Analysis)”. Other successful candidates will be awarded a generic Degree or Diploma, for example “MSc Analytical Chemistry”. The designation of a Degree or a Diploma is at the discretion of the Board of Examiners.</p>
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15	<p>Entry Criteria</p> <p>Good honours degree in a scientific subject.</p> <p>Less qualified students may be accepted if they have appropriate work experience, or through registration on the Postgraduate Diploma with the possibility of upgrading to the MSc after achieving appropriate results in the first set of examinations.</p>
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16	<p>Learning Outcomes</p> <p>On successful completion of this programme a student will be expected to be able to:</p> <p>Subject specific learning outcomes:</p> <ol style="list-style-type: none"> 1) Demonstrate a sound knowledge and understanding of the science underlying the key areas of analytical methodology and its practical applications. 2) Show a critical understanding of recent advances in their field of study. 3) Critically assess current literature in the discipline. 4) Formulate a research or method development plan and carry out the appropriate literature and data searches. 5) Demonstrate a critical and professional approach to quality of analysis.
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Intellectual learning outcomes:

- 6) Select the most appropriate analytical method.
- 7) Analyse a wide range of data types.
- 8) Show critical reasoning.
- 9) Gather and evaluate information.
- 10) Solve problems.
- 11) Formulate and test basic hypotheses.
- 12) Show independent reasoning and defense of ideas.

Practical learning outcomes:

- 13) Carry out chemical manipulations and operate advanced analytical equipment.
- 14) Work safely and efficiently in a laboratory carrying out risk assessments where appropriate.
- 15) Access a variety of subject-specific and more generic databases and information sources.
- 16) Use molecular visualisation tools.
- 17) Apply skills to practical problems and, where appropriate develop new skills.
- 18) Use different forms of IT confidently.

Personal and social learning outcomes:

- 19) Work as part of a team both in person and via virtual interaction.
- 20) Manage time efficiently to balance the face-to-face and distance learning aspects of the programme.
- 21) Present and communicate material and ideas in both written (including electronic communication) and oral formats.
- 22) Learn independently.
- 23) Show a professionalism in analytical science.

17 Learning, teaching and assessment methods

Learning is directed by the use of a range of teaching and assessment methods. Methods used include: tutorials, formal lectures, problem classes, computer based problems, computer aided learning, and laboratory assignments. The underlying principles of the core topics are reinforced by considerable time spent performing a wide range of analysis methods in the laboratory, thus also developing practical laboratory and data analysis skills. The hands-on research project provides the opportunity to gain in-depth training in specialist and advanced methods either in world-class research laboratories or industry.

A variety of assessment methods are used. The taught modules are assessment by a combination of unseen written examination and coursework, striking a balance between assessing knowledge, understanding and skills. The coursework includes a wide and varied range of activities such as practical work, presentations, essays, assignments, in-class tests and computer based analysis but this list is not exhaustive.

The research project is assessed by a written report, oral presentation and poster presentation.

The pass mark for all modules is 50% overall with no minimum mark for the individual elements of the assessment for the module.

Programme Description

The Analytical Chemistry programme aims to provide students with a comprehensive training in chemical analysis, covering a wide range of analytical techniques with hands-on experience and a project in one of our excellent research laboratories. The teachers are all expert analytical scientists who are leaders in their fields and constantly in touch with the mainstream of their subject, including industrial/public service contacts in analytical science as well as academic colleagues from other institutions that teach the subject. The programme conforms broadly to the Royal Society of Chemistry's Study Guide for the Register of Analytical Chemists, and currently holds external accreditations as follows: exemption from the Part A examination for the MChemA of the Royal Society of Chemistry.

The content of the programme is under constant review and capable of responding dynamically to demand and current events by the introduction of new specialist and elective modules.

The programme is very flexible and is based around three components:

- 1) Six 15-credit modules taught face-to-face (total 90 credits). These cover a range of topics. The lectures are held during the afternoon (2- 5 pm) or evening (6 – 9 pm) on a Monday and a Wednesday during the Autumn, Spring and Summer terms. Students must also complete a number of laboratory practicals associated with these modules. One of these modules will be an optional specialist module focusing on the application of analytical methods to a specialist area of analytical science.
- 2) A 30-credit fundamental module that covers the core background material required by analytical scientists 4 – 6 hours of study per week for this course, which runs for a full year.
- 3) A research project (60 credits). Students must agree with their supervisor when to work on the project. They should spend roughly one third of their time in total on this component.

Full-time MSc students take all three components, as above, in one year. A full-time student is expected to devote around 40 hours a week to their MSc studies.

Part-time MSc students usually complete two of the face-to-face 15-credit modules in year 1 plus the fundamentals module. In year 2 they take a further four face-to-face 15-credit modules and complete their research project. The timing of the face-to-face modules alternates yearly between afternoon and evening slots so part-time students can attend during the evening only (6 - 9 pm) over two years to complete the MSc.

To be awarded an MSc a student must successfully obtain 180 credits. A Post-Graduate Diploma is awarded for successful completion of 120 credits from any of the above three components. A Post-Graduate Certificate may be awarded for successful completion of 60 credits of taught courses BUT the successful completion of the Research Project alone does not lead to an award.

Candidates fulfilling the requirements for a Degree or Diploma who pass an appropriate specialist module approved by the College, and undertake the project/dissertation in an appropriate area of study, and who so wish, can on request be awarded specially designated Degrees or Diplomas, for example "MSc Analytical Chemistry (Specialising in Clinical Analysis)". Other successful candidates will be awarded a generic Degree or

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19	Programme Structure
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Full Time programme - 1 year				
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Year 1				
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Level	Module Code	Module Title	Credits	Status*
7	BCBC001S7	Fundamental Concepts of Analytical Science and Instrumentation plus Research Skills	30	Core
7	SCBS003H7	Analysis of Solids and Surfaces, Electroanalysis and Sensors	15	Compulsory
7	SCBS009H7	NMR Spectroscopy and Mass Spectrometry	15	Compulsory
7	SCBS008H7	Optical Spectroscopy and Atomic Spectrometry	15	Compulsory
7	SCBS006H7	Separation Science	15	Compulsory
7	SCBS004H7	Statistics and Data Quality	15	Compulsory
7	SCBS025D7	Analytical Chemistry Research Project	60	Core
		and		
7	SCBS010H7	Techniques in Clinical Analysis	15	Option
		or		
7	SCBS011H7	Environmental Analytical Chemistry	15	Option

Part Time programme – 2 years				
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Year 1				
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Level	Module Code	Module Title	Credits	Status*
Evenings Only (even years)				
7	BCBC001S7	Fundamental Concepts of Analytical Science and Instrumentation plus Research Skills	30	Core
7	SCBS008H7	Optical Spectroscopy and Atomic Spectrometry	15	Compulsory
7	SCBS004H7	Statistics and Data Quality	15	Compulsory
		and		
7	SCBS010H7	Techniques in Clinical Analysis	15	Option
		or		
7	SCBS011H7	Environmental Analytical Chemistry	15	Option
Evenings Only (odd years)				
7	BCBC001S7	Fundamental Concepts of Analytical Science and Instrumentation plus Research Skills	30	Core
7	SCBS006H7	Separation Science	15	Compulsory
7	SCBS003H7	Analysis of Solids and Surfaces, Electroanalysis and Sensors	15	Compulsory
7	SCBS009H7	NMR Spectroscopy and Mass Spectrometry	15	Compulsory

Year 2				
Level	Module Code	Module Title	Credits	Status*
		Evenings Only (even years)		
7	SCBS025D7	Analytical Chemistry Research Project	60	Core
7	SCBS008H7	Optical Spectroscopy and Atomic Spectrometry	15	Compulsory
7	SCBS004H7	Statistics and Data Quality	15	Compulsory
		and		
7	SCBS010H7	Techniques in Clinical Analysis	15	Option
		or		
7	SCBS011H7	Environmental Analytical Chemistry	15	Option
		Evenings Only (odd years)		
7	SCBS025D7	Analytical Chemistry Research Project	60	Core
7	SCBS006H7	Separation Science	15	Compulsory
7	SCBS003H7	Analysis of Solids and Surfaces, Electroanalysis and Sensors	15	Compulsory
7	SCBS009H7	NMR Spectroscopy and Mass Spectrometry	15	Compulsory

Status*

CORE – Module must be taken and passed by student; COMPULSORY – Module must be taken, mark can be reviewed at sub-exam board; OPTIONAL – Student can choose to take this module

20	Additional Programme Information
	<p>Specially designated Degrees or Diplomas</p> <p>Candidates fulfilling the requirements for a Degree or Diploma who pass an appropriate specialist module approved by the College, and undertake the project/dissertation in an appropriate area of study, and who so wish, can on request be awarded specially designated Degrees or Diplomas, for example “MSc Analytical Chemistry (Specialising in Clinical Analysis)”. Other successful candidates will be awarded a generic Degree or Diploma, for example “MSc Analytical Chemistry”. The designation of a Degree or a Diploma is at the discretion of the Board of Examiners.</p>

21	Programme Director	Dr Jonathan Slater
22	Start Date (<i>term/year</i>)	Pre 1985
23	Date approved by TQEC	Pre 1985
24	Date approved by Academic Board	Pre 1985
25	Date(s) updated/amended	08 July 2020. Added additional exit award of MSc Biological Sciences