

PROGRAMME HANDBOOK FOR

CHEMISTRY / PHARMACEUTICAL CHEMISTRY BSc & MSci

DEGREE PROGRAMMES

Academic Year 2019-20

(1) WELCOME & OVERVIEW

Welcome to the School of Biological & Chemical Sciences (SBCS), and specifically to one of the Chemistry degree programmes: Chemistry BSc (F100), Chemistry MSci (F103), Chemistry with a Year in Industry/Research BSc (9A32), Pharmaceutical Chemistry BSc (F154), Pharmaceutical Chemistry MSci (F152), and Pharmaceutical Chemistry with a Year in Industry/Research BSc (2L22).

The BSc and MSci degrees in Chemistry and Pharmaceutical Chemistry offered by SBCS are all externally accredited by the Royal Society of Chemistry (RSC) (<http://www.rsc.org/>), confirming that the BSc and MSci programmes each include content relevant to professional chemists and pharmaceutical chemists. Further careers information and guidance is available from the RSC website at <http://www.rsc.org/careers/future/>.

Chemistry is often termed the central science as it connects mathematics, physics, biology and medicine. It is concerned with all aspects of the physical and chemical properties of matter, including the nature of atoms and molecules, their structure and composition, their reactions and the ways in which they are be used to produce useful products and materials. Chemistry at QMUL offers excellent and highly regarded training in both theoretical and practical chemistry, together with interdisciplinary modules such as spectroscopy, analytical chemistry and biological chemistry.

All of the Chemistry degree programmes (F100, F103 & 9A32) aim to provide a thorough training in the field of chemistry, appropriate for those students seeking professional employment in the field of Chemistry. The three undergraduate programmes in Chemistry parallel each other and the first two years are identical. For this reason, you may choose to switch from the 3 year Chemistry BSc programme (F100) on to the 4 year Chemistry MSci programme (F103) prior to the start of Year 3 (*subject to meeting the appropriate progression criteria, see Sections 7 and 14 of this handbook*).

The 4th and final year of the Chemistry MSci programme provides you with the opportunity to undertake a major research project, and experience of working in a research environment. The project also typically includes training in more advanced practical and/or

instrumental techniques. The Chemistry MSci degree is therefore particularly suitable if you wish to pursue a career as a professional research chemist.

The 3 year Chemistry BSc programme (F100) differs from the 4 year Chemistry BSc programme (9A32) in so far as the latter incorporates a year-long placement in an industrial organisation or other research environment, taken between the second year and final year of the standard BSc programme.

The Pharmaceutical Chemistry degree programmes (F152, F154 and 2L22) also aim to provide a comprehensive training in the field of chemistry, but with an introduction to key principles of biochemistry, physiology and pharmacology. Emphasis is given to molecular concepts of complex biological systems and the relevance of all the above to the development of medicinal drugs. If you read one of the pharmaceutical chemistry degrees, you will therefore learn about important chemical principles and their relationship to biological systems, and become well-trained for careers in the pharmaceutical industry.

As with the Chemistry degrees, the three undergraduate programmes in Pharmaceutical Chemistry parallel each other and the first two years are identical to each other (but differ slightly in the 2nd year of the Chemistry BSc/MSci programmes). For this reason, you may choose to switch from the 3 year Pharmaceutical Chemistry BSc programme (F154) on to the 4 year Pharmaceutical Chemistry MSci programme (F152) prior to the start of Year 3 (*see Sections 7 and 14*).

The final year of the Pharmaceutical Chemistry MSci programme provides you with the opportunity to undertake a major research project, and experience of working in a research environment. The project also typically includes training in more advanced practical and/or instrumental techniques. The Pharmaceutical Chemistry MSci degree is therefore particularly suitable if you wish to pursue a career as a professional research chemist, especially one in the pharmaceutical industry.

The 3 year Pharmaceutical Chemistry BSc programme (F154) differs from the 4 year Pharmaceutical Chemistry BSc programme (2L22) in so far as the latter incorporates a year-long placement in an industrial organisation or other research environment, generally taken between the second year and final year of the standard BSc programme.

Due to the common content of the first two years, up until the end of Year 2, you can request a Change of Programme (CoP) between any of the three Chemistry BSc/MSci programmes or between any of the three Pharmaceutical Chemistry degree programmes (*see Section 14*). (*Should you wish to request a change between a Chemistry and Pharmaceutical Chemistry programme, or vice versa, your request would have to be received by **the start of Year 2** since Year 1 students enrolled on the Chemistry BSc/MSci study different modules to those on the Pharmaceutical Chemistry BSc/MSci in the 2nd year*). Because of the option to switch between chemistry/pharmaceutical chemistry programmes for your third (and fourth) year of study, this handbook details each of the chemistry and pharmaceutical chemistry degree programmes.

In closing, can I reiterate my welcome to QMUL, to SBCS, and specifically to one of the six chemistry degree programmes. I hope that you find this programme handbook useful and that, over the next 3 or 4 years, you find your undergraduate degree to be as enjoyable as it is educational. I hope that you will make the most of the opportunities for personal and professional development offered by the wide range of compulsory and elective modules that each build on the breadth of expertise offered by academic colleagues in the Department of Biochemistry & Chemistry. All of the staff involved in your degree wish you **good luck** with your studies and look forward to supporting your personal and career aspirations over the course of your degree and, beyond that, when you graduate and become an alumnus of QMUL.



Dr Tippu S Sheriff

Director of Teaching & Learning (Chemistry)

September 2019

(2) KEY NAMES / CONTACTS

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(3) PROGRAMME AIMS

Each of the three Chemistry degree programmes (F100, F103 and 9A32) aims to provide a thorough training in the field of chemistry, yielding graduates who are well versed in all the main areas of the subject. More specifically, you will be suitably-trained for professional employment or further study through having:

- wide-ranging knowledge of organic, inorganic and physical chemistry, including aspects of each up to an advanced level;
- skills in solving problems of a chemical nature, and in the interpretation and assessment of chemical data;
- well-developed practical skills in the conduct of chemical reactions/experiments and in a range of analytical/preparative techniques.

By the addition of a fourth year in which you would undertake a major research-based project, the Chemistry MSci programme (F103) aims to foster advanced (rather than “well-developed”) practical skills. The 4 years Chemistry BSc (9A32) aims to produce graduates who, in addition to the aims stipulated above for the Chemistry BSc and MSci programmes,

have also benefitted from the experience of working on an extended project in a professional organisation.

Each of the three Pharmaceutical Chemistry degree programmes (F154, F152 and 2L22) aims to provide a thorough training in the field of chemistry, yielding graduates who are well versed in all the main areas of the subject. More specifically, you will be suitably-trained for professional employment or further study through having:

- wide-ranging knowledge of organic, inorganic and physical chemistry, including selected areas up to an advanced level;
- an understanding of basic principles of human physiology, biochemistry and drug action;
- knowledge of the drug-development process;
- skills in solving problems of a chemical nature, and in the interpretation and assessment of chemical data;
- well-developed practical skills in the conduct of chemical reactions/experiments and in a range of analytical/preparative techniques.

By the addition of a fourth year in which you would undertake a major research-based project, the Pharmaceutical Chemistry MSci programme (F152) aims to foster advanced (rather than “well-developed”) practical skills. The 4 year Pharmaceutical Chemistry BSc (2L22) aims to produce graduates who, in addition to the aims stipulated above for the Pharmaceutical Chemistry BSc and MSci programmes, have also benefitted from the experience of working on an extended project in a professional organisation.

In addition to the programme aims defined above, each of the Chemistry / Pharmaceutical Chemistry BSc/MSci programmes aims to:

- Provide a rational, flexibly structured and coherent programme of study which is relevant to the needs of employers, facilitates your professional development and lays the foundations for a successful career which is to the benefit of the economy and society;
- Provide a sound knowledge base in the fields studied and develop key transferable skills in the areas of communication, numeracy, information technology, working with others, problem solving, time and task management;
- Foster the development of an enquiring, open-minded and creative attitude, tempered with scientific discipline and social awareness, which encourages lifelong learning.

(4) WHAT WILL YOU BE EXPECTED TO ACHIEVE?**(4.1) CHEMISTRY BSc (F100) *and* CHEMISTRY WITH A YEAR IN INDUSTRY/RESEARCH BSc (9A32)**

Academic Content	<p>On successful completion of your BSc programme, you will have studied:</p> <ol style="list-style-type: none"> 1. Basic essential facts, fundamental concepts, principles and theories of chemistry. 2. Facts, concepts, principles and theories at an advanced level across a wide range of chemical topics, typically including many of the following areas: <ul style="list-style-type: none"> • Organic Chemistry: including organic structures and functional groups, stereochemistry, reactions and mechanisms, molecular synthesis, biological aspects of organic chemistry. • Inorganic Chemistry: including structure and bonding, chemistry of selected elements, solid-state chemistry, metal complexes and organometallics, applications of inorganic chemistry. • Physical Chemistry: including chemical thermodynamics and kinetics, quantum theory and molecular bonding, spectroscopic techniques, interfaces and solution chemistry. • Analytical Chemistry: including chemical analysis, molecular spectroscopy, separation techniques, advanced analytical instrumentation. 3. Understanding of scientific methodology. 4. Knowledge of common methods and techniques in practical chemistry.
Disciplinary Skills	<p>On successful completion of your BSc programme, you will be able to:</p> <ol style="list-style-type: none"> 1. Identify problems, and apply chemical principles to the solution of problems. 2. Retrieve, filter and collate chemical data from a variety of information sources. 3. Evaluate existing knowledge and produce analyses based upon evidence. 4. Plan and conduct laboratory-based practical work, efficiently and with due regard for safety. 5. Use a range of laboratory and analytical equipment. 6. Analyse, evaluate and interpret the results of controlled experiments. 7. Prepare scientific/technical reports of an appropriate professional standard. 8. Use a range of scientific software and computational tools. 9. Plan, undertake and report on a bibliographically-based piece of research. 10. Communicate scientific results clearly and in a manner appropriate for the audience and setting. 11. Progress a research project in chemistry, including the ability to assimilate published knowledge.

Attributes	<p>On successful completion of your BSc programme, you will be able to:</p> <ol style="list-style-type: none"> 1. Communicate effectively by written and/or verbal means. 2. Manage time, prioritise workloads and work to deadlines. 3. Capacity for independent learning and for further personal development. 4. Work independently, with minimal supervision. 5. Participate constructively as a member of a group/team. 6. Apply scientific knowledge and problem-solving skills in a wide range of theoretical and practical situations. 7. Assess the relevance, importance and reliability of the ideas of others. 8. Use IT/computer-based technology to effectively locate information and to analyse, manipulate and data. 9. Be aware of the role and impact of science in society. 10. Reason critically, so as to make appropriate deductions, based on the assessment of available evidence and data.
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(4.2) CHEMISTRY MSci (F103)

Academic Content	<p>On successful completion of your MSci programme, you will have studied:</p> <ol style="list-style-type: none"> 1. Basic essential facts, fundamental concepts, principles and theories of chemistry. 2. Facts, concepts, principles and theories at an advanced level across a wide range of chemical topics, typically including most (if not all) of the following areas: <ul style="list-style-type: none"> • Organic Chemistry: including organic structures and functional groups, stereochemistry, reactions and mechanisms, molecular synthesis, biological aspects of organic chemistry. • Inorganic Chemistry: including structure and bonding, chemistry of selected elements, solid-state chemistry, metal complexes and organometallics, applications of inorganic chemistry. • Physical Chemistry: including chemical thermodynamics and kinetics, quantum theory and molecular bonding, spectroscopic techniques, interfaces and solution chemistry. • Analytical Chemistry: including chemical analysis, molecular spectroscopy, separation techniques, advanced analytical instrumentation. 3. Understanding of scientific methodology and approaches to the design of experiments. 4. Knowledge of advanced methods and techniques in practical chemistry. 5. Research and communication skills: including detailed knowledge on accessing, manipulating, interpreting and presenting chemical information.
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Disciplinary Skills	<p>On successful completion of your MSci programme, you will be able to:</p> <ol style="list-style-type: none"> 1. Identify and formulate problems; plan strategies for their solution; apply chemical principles to the solution of unfamiliar problems. 2. Retrieve, filter and collate chemical data from a variety of information sources. 3. Evaluate existing knowledge and produce analyses based upon evidence. 4. Plan and conduct laboratory-based practical work (including research-led experiments), efficiently and with due regard for safety. 5. Use a range of laboratory and analytical equipment, including advanced analytical instrumentation. 6. Analyse, evaluate and interpret the results of controlled experiments, and research results. 7. Prepare scientific/technical reports (including extended dissertations) of an appropriate professional standard. 8. Use a range of scientific software and computational tools. 9. Plan, undertake and report on a bibliographically-based piece of research. 10. Communicate scientific results clearly and in a manner appropriate for the audience and setting. 11. Design experiments to acquire relevant scientific data /test scientific hypotheses; propose plausible schemes for the experimental synthesis of chemical products and/or computational approaches for advanced investigations. 12. Progress an extended research project in chemistry, including the ability to assimilate published knowledge and advance a subject area through research.
Attributes	<p>On successful completion of your MSci programme, you will be able to:</p> <ol style="list-style-type: none"> 1. Communicate effectively by written and/or verbal means. 2. Manage time, prioritise workloads and work to deadlines; make decisions in complex and unpredictable situations. 3. Capacity for independent learning, using a wide range of learning resources, and for further personal development. 4. Work independently, with minimal or no supervision. 5. Participate constructively as a member of a group/team. 6. Apply scientific knowledge and problem-solving skills in a wide range of theoretical and practical situations. 7. Assess the relevance, importance and reliability of the ideas of others. 8. Use IT/computer-based technology to effectively locate information and to analyse, manipulate and data. 9. Be aware of the role and impact of science in society; explain and discuss such topics. 10. Reason critically, so as to make appropriate deductions, based on the assessment of available evidence and data.

(4.3) PHARMACEUTICAL CHEMISTRY BSc (F154) *and* PHARMACEUTICAL CHEMISTRY WITH A YEAR IN INDUSTRY/RESEARCH BSc (2L22)

Academic Content	<p>On successful completion of your BSc programme, you will have studied:</p> <ol style="list-style-type: none"> 1. Basic essential facts, fundamental concepts, principles and theories of chemistry and pharmacology. 2. Facts, concepts, principles and theories at an advanced level across a wide range of chemical topics, typically including many of the following areas: <ul style="list-style-type: none"> • Organic Chemistry: including organic structures and functional groups, stereochemistry, reactions and mechanisms, molecular synthesis, biological aspects of organic chemistry. • Inorganic Chemistry: including structure and bonding, chemistry of selected elements, solid-state chemistry, metal complexes and organometallics, applications of inorganic chemistry. • Physical Chemistry: including chemical thermodynamics and kinetics, quantum theory and molecular bonding, spectroscopic techniques, interfaces and solution chemistry. • Analytical Chemistry: including chemical analysis, molecular spectroscopy, separation techniques, advanced analytical instrumentation. 3. Topics in pharmacology: including drug targets; mode of action and metabolism; pharmacokinetics; cancer chemotherapy; structure-activity relationships and methods of drug discovery. 4. Understanding of scientific methodology. 5. Knowledge of common methods and techniques in practical chemistry.
Disciplinary Skills	<p>On successful completion of your BSc programme, you will be able to:</p> <ol style="list-style-type: none"> 1. Identify problems, and apply chemical principles to the solution of problems. 2. Retrieve, filter and collate chemical data from a variety of information sources. 3. Evaluate existing knowledge and produce analyses based upon evidence. 4. Plan and conduct laboratory-based practical work, efficiently and with due regard for safety. 5. Use a range of laboratory and analytical equipment. 6. Analyse, evaluate and interpret the results of controlled experiments. 7. Prepare scientific/technical reports of an appropriate professional standard. 8. Use a range of scientific software and computational tools. 9. Plan, undertake and report on a bibliographically-based piece of research. 10. Communicate scientific results clearly and in a manner appropriate for the audience and setting. 11. Progress a research project in chemistry, including the ability to assimilate published knowledge.

Attributes	<p>On successful completion of your BSc programme, you will be able to:</p> <ol style="list-style-type: none"> 1. Communicate effectively by written and/or verbal means. 2. Manage time, prioritise workloads and work to deadlines. 3. Capacity for independent learning and for further personal development. 4. Work independently, with minimal supervision. 5. Participate constructively as a member of a group/team. 6. Apply scientific knowledge and problem-solving skills in a wide range of theoretical and practical situations. 7. Assess the relevance, importance and reliability of the ideas of others. 8. Use IT/computer-based technology to effectively locate information and to analyse, manipulate and data. 9. Be aware of the role and impact of science in society. 10. Reason critically, so as to make appropriate deductions, based on the assessment of available evidence and data.
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(4.4) PHARMACEUTICAL CHEMISTRY MSci (F152)

Academic Content	<p>On successful completion of your MSci programme, you will have studied:</p> <ol style="list-style-type: none"> 1. Basic essential facts, fundamental concepts, principles and theories of chemistry and pharmacology. 2. Facts, concepts, principles and theories at an advanced level across a wide range of chemical topics, typically including most of the following areas: <ul style="list-style-type: none"> • Organic Chemistry: including organic structures and functional groups, stereochemistry, reactions and mechanisms, molecular synthesis, biological aspects of organic chemistry. • Inorganic Chemistry: including structure and bonding, chemistry of selected elements, solid-state chemistry, metal complexes and organometallics, applications of inorganic chemistry. • Physical Chemistry: including chemical thermodynamics and kinetics, quantum theory and molecular bonding, spectroscopic techniques, interfaces and solution chemistry. • Analytical Chemistry: including chemical analysis, molecular spectroscopy, separation techniques, advanced analytical instrumentation. 3. Topics in pharmacology: including drug design and targets; mode of action and metabolism; pharmacokinetics; cancer chemotherapy; structure-activity relationships and methods of drug discovery. 4. Understanding of scientific methodology and approaches to the design of experiments. 5. Knowledge of advanced methods and techniques in practical chemistry. 6. Research and communication skills: including detailed knowledge on accessing, manipulating, interpreting and presenting chemical information.
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Disciplinary Skills	<p>On successful completion of your MSci programme, you will be able to:</p> <ol style="list-style-type: none"> 1. Identify and formulate problems; plan strategies for their solution; apply chemical principles to the solution of unfamiliar problems. 2. Retrieve, filter and collate chemical data from a variety of information sources. 3. Evaluate existing knowledge and produce analyses based upon evidence. 4. Plan and conduct laboratory-based practical work (including research-led experiments), efficiently and with due regard for safety. 5. Use a range of laboratory and analytical equipment, including advanced analytical instrumentation. 6. Analyse, evaluate and interpret the results of controlled experiments, and research results. 7. Prepare scientific/technical reports (including extended dissertations) of an appropriate professional standard. 8. Use a range of scientific software and computational tools. 9. Plan, undertake and report on a bibliographically-based piece of research. 10. Communicate scientific results clearly and in a manner appropriate for the audience and setting. 11. Design experiments to acquire relevant scientific data /test scientific hypotheses; propose plausible schemes for the experimental synthesis of chemical products and/or computational approaches for advanced investigations. 12. Progress an extended research project in chemistry, including the ability to assimilate published knowledge and advance a subject area through research.
Attributes	<p>On successful completion of your MSci programme, you will be able to:</p> <ol style="list-style-type: none"> 1. Communicate effectively by written and/or verbal means. 2. Manage time, prioritise workloads and work to deadlines; make decisions in complex and unpredictable situations. 3. Capacity for independent learning, using a wide range of learning resources, and for further personal development. 4. Work independently, with minimal or no supervision. 5. Participate constructively as a member of a group/team. 6. Apply scientific knowledge and problem-solving skills in a wide range of theoretical and practical situations. 7. Assess the relevance, importance and reliability of the ideas of others. 8. Use IT/computer-based technology to effectively locate information and to analyse, manipulate and data. 9. Be aware of the role and impact of science in society; explain and discuss such topics. 10. Reason critically, so as to make appropriate deductions, based on the assessment of available evidence and data.

(5) HOW WILL YOU LEARN?

You will acquire knowledge and develop your understanding mainly through **lectures** and directed **independent study** (see Section 6). Your understanding will be reinforced through a combination of **workshops, problem classes, tutorials** and **laboratory classes** (depending upon the modules which you study), including regular **feedback** on submitted assignments.

Additional learning support is provided through Queen Mary's online learning environment, **QMplus**, via provision of various primers and guidance notes and other supplementary learning materials. A range of chemistry software (including molecular modelling software) and other scientific software is available through the QMUL Student PC Service.

Skills in the **application** of chemical theories and concepts, including analysis and problem-solving skills, are developed by a progression of **graded problem classes** and **tutorial exercises**.

Chemistry **practical skills** are also developed in a progressive manner throughout the programme. In the first year, attention is concentrated on the **basic laboratory skills** and **safe working practice**, while at higher levels more **advanced techniques** and **non-prescribed exercises** are introduced. These practical modules thereby offer the opportunity to **develop skills** in practical laboratory chemistry, to **integrate knowledge** from other modules, and to **improve** skills relating to **data analysis and interpretation**.

Each **practical class** is likely to be repeated two or more times in the same week. You will be allocated (randomly) to a specific practical group to attend the practical class on a given date/time. If you are unable to attend on the assigned date/time **you** are required to **email the Module Organiser**. Depending on the reason for your absence you may be able to submit a claim for **extenuating circumstances** provided the reason for non-attendance is (i) unforeseeable and (ii) beyond your control, and you can provide documentary evidence to support your application.

Project work offers students the opportunity to demonstrate achievement in research skills, including collating relevant information and critical appraisal of data. In particular, the final year practical research project is important in reinforcing and extending the students' complete portfolio of professional practical skills.

(6) WHAT IS “INDEPENDENT STUDY”?

For **every hour of contact** with academic staff, you will be expected to devote **between 3 and 5 hours** to independent study. This may include **staff-directed** exercises (*e.g.* completion of coursework assignments) or **self-directed** independent study. There are various forms of independent study which include:

- **preparation** (in advance of a lecture/tutorial/practical class)
- **consolidation** of material introduced by the lecturer/tutor (*e.g.* writing up your lecture notes)
- **elaboration / extension** (*e.g.* reading around the topic after the lecture)
- **application** (*i.e.* reinforcing your understanding of a topic by applying any principles introduced in a lecture/tutorial/practical class to a new scenario)

You might be expecting to prepare and consolidate, since these activities most closely resemble the “homework” for Secondary/Further Education. However, to succeed in your undergraduate degree at university, you will have to make time to elaborate/extend and

apply new knowledge in order to develop the depth of understanding required if you are to be recommended for first or upper second class honours.

(7) HOW WILL YOU BE ASSESSED?

For each module that comprises your chemistry/pharmaceutical chemistry degree, your knowledge and understanding will generally be tested through a combination of **assessed coursework** and unseen written **examinations**. For the majority of modules, the coursework:examination weighting will be as follows:

Coursework	Examination
25%	75%
100%	0%
50%*	50%*

* for CHE305 and CHE308 (3rd year modules) containing laboratories.

For some modules, a higher proportion of marks will be derived from the coursework, and in extreme cases (*e.g.* the final year research projects), the module will be assessed by coursework only with no written exam. Please check the module details on QMPlus to confirm the exact coursework:exam weighting for each module.

The exact nature of the coursework varies from module to module and may include work in the form of laboratory experiment write-ups, essays and/or problem sheets. The coursework mark may also include a contribution from computer-based assessments and in-course tests. Project based modules include assessed oral examinations, oral presentations and extended reports/dissertations.

In Year 1, practical skills are predominantly assessed through the completion of short laboratory reports, based on a supplied report template. In later years, both practical skills and report writing skills are assessed through written laboratory reports, and includes attention to the quality of samples, reliability of data, skills of interpretation, and quantitative accuracy.

The weighting of marks available for a given component should be reflected in the amount of time that you will need to commit to working on each element. For example, where 25% of the module marks are available for coursework, you should expect to devote 25% of 150 hours (*i.e.* approximately 40 hours) to completing the coursework elements to the best of your ability. The remaining 75% of 150 hours (*i.e.* 110 hours) should be devoted to attending lectures/tutorials and independent study to ensure you understand the module content well enough to achieve a high grade in the module exam.

The exam durations and structures also differ as follows:

	Default exam duration and format	Number of sections	Section A (Compulsory Section)	Section B (Optional Section)
Year 1	1.5 hours 60 marks	2	Multiple Choice Questions and Short Answer Questions (40 marks in total)	Choose ONE Long Answer Question (20 marks) from the two offered.
Year 2	2.0 hours 80 marks	2	Multiple Choice Questions and Short Answer Questions (50 marks in total)	Choose ONE Long Answer Question (30 marks) from the two offered.
Years 3 & 4	2.5 hours 100 marks	2	Multiple Choice Questions and Short Answer Questions (50 marks in total)	Choose TWO Long Answer Question (2 x 25 marks) from the three offered.

(7.1) CHEMISTRY BSc (F100)

To **progress beyond Year 1** of the standard, 3 year Chemistry BSc programme, you must pass **at least 6 modules** x 15 credits (*i.e.* **90 credits** in total). To **progress beyond Year 2**, you must pass **at least 195 credits cumulatively** from Year 1 and 2 modules with a minimum of 90 credits in year 2. To **graduate** with a Chemistry BSc degree, you must pass **at least 315 credits** across 3 years with a minimum of 90 credits in year 3. (*An alternative way of considering these criteria is that you can fail no more than 3 x 15 credit modules across 3 years and that these three fails cannot be in any one single year.*)

(7.2) PHARMACEUTICAL CHEMISTRY BSc (F154)

The progression criteria for the Pharmaceutical Chemistry BSc programme are identical to those for the standard, 3 year Chemistry BSc programme (F100), as defined above.

(7.3) CHEMISTRY WITH A YEAR IN INDUSTRY/RESEARCH BSc (9A32)

To **progress beyond Year 1** of the Chemistry with a Year in Industry/Research BSc programme, you must pass **at least 7 modules** x 15 credits (*i.e.* **105 credits** in total) and achieve a **Year 1 average** mark of **at least 65.0%**. (*Students who fail to meet either one of these criteria at the end of Year 1 will be transferred to the F100, 3 year BSc programme and be considered for progression under the rules that apply to that programme, defined above.*) All industrial/research placements for Year 3 of this 4 year BSc programme must be approved by the School (in regard to professional suitability, and provision of a satisfactory training environment). If you fail to obtain a placement for the third year, you will be transferred onto either the F100 or F103 programme at the end of Year 2 (*subject to meeting the standard progression criteria*).

Progression from Year 3 to Year 4 of the Year in Industry/Research BSc will be subject to achieving a pass grade in the 120 credit **CHE200 Professional Placement (in Chemistry)** module. In the event that you fail the Professional Placement module at the first attempt, then the Exam Board will recommend that you:

- be permitted to **re-sit the module** CHE200 by re-submission of the student report and/or re-presentation; or
- be deemed to have **irretrievably failed** the CHE200 module.

Failure of the Professional Placement module would lead to an enforced change of programme to the F100 BSc programme, and you would return to Queen Mary to resume your studies in the final year of the F100 programme.

(7.4) PHARMACEUTICAL CHEMISTRY WITH A YEAR IN INDUSTRY/RESEARCH BSc (2L22)

The progression criteria for the Pharmaceutical Chemistry with a Year in Industry/Research BSc programme are identical to those for the Chemistry with a Year in Industry BSc programme, as defined above (9A32).

Failure of the Professional Placement module would lead to an enforced change of program to the F154 BSc programme, and you would return to Queen Mary to resume your studies in the final year of the F154 programme.

(7.5) CHEMISTRY MSci (F103) & PHARMACEUTICAL CHEMISTRY MSci (F152)

The progression criteria for the Chemistry (F103) and Pharmaceutical Chemistry (F152) MSci programme are identical to those for the standard, 3 year BSc programmes (F100 and F154), as defined above except that candidates wishing to progress from years 3 to 4 must normally have a weighted mean average of 60.0, weighted 1:3:6 (years one:two:three).

Candidates that fail to meet the progression criteria at the end of Year 3 will be classified for a BSc degree (or alternative award) based on their weighted mean average (**S3 College Mark**) at the **end of Year 3** (as for all other candidates on F100). Likewise, candidates who enter Year 4 but do not subsequently meet the requirements for the award of an MSci degree will be considered for the award of the BSc classified on the basis of their S3 College Mark at the end of Year 3 (*i.e.* discounting any marks contribution from Year 4).

(8) HOW ARE THE PROGRAMMES STRUCTURED?

In the programme outline provided on the following pages, **compulsory** modules are denoted in standard text whereas **elective** modules are denoted in *italicised* text. Those modules classified both as compulsory and as **core** (*i.e.* any modules which you must pass before you can be considered for progression to the next academic year) are denoted by the word "**CORE**". The credit value of each module is denoted in parentheses.

In each academic year, you must study **120 credits** (such that you study a total of 360 credits over the course of your 3 year BSc and 480 credits over the course of your 4 year MSci degree).

Due to the accreditation of the Chemistry and Pharmaceutical Chemistry degrees by the RSC, the programme diets comprise primarily core and compulsory modules with relatively few opportunities to select elective modules. To assist your choice of electives most appropriate to your interests and career aspirations, we want you to have every opportunity to research the elective modules available to you prior to **module pre-selection** (which normally happens in the month of **May**). We will provide you with **published information** (or videocasts) that outline the module content in Semester B. We would also encourage you to email Module Organisers and ask any questions about elective modules that you might wish to take in the next academic year, and, if in any doubt, to discuss your elective options with your Academic Advisor.

The modules listed in the programme outlines which follow are **indicative** only. Every effort will be made to run all of the modules advertised in these degree programme outlines. However, to offer you the best educational experience while at QMUL, in any one year, a module advertised on the following pages may not be offered if:

- (a) the numbers of students eligible to select a particular module (either too many or too few) would provide you with a compromised student experience;
- (b) academic staff with the requisite experience are unavailable to teach a module (*e.g.* through ill health, injury or retirement)

Likewise, dependent on staff availability and appropriate quality assurance, we may be able to add new modules to subsequent years of your degree programme and improve even further your choice of elective modules.

(8.1) CHEMISTRY BSc (F100)

	SEMESTER A	SEMESTER B
Year 1	CHE100 Essential Skills for Chemists (15) CORE	
	CHE101 Foundations of Practical Chemistry (15) CORE	
	CHE102A Fundamentals of Organic Chemistry (15)	CHE102B Fundamentals of Organic Chemistry (15)
	CHE104 Fundamentals of Spectroscopy (15) CHE113 Fundamentals of Inorganic Chemistry (15)	CHE108 States of Matter & Analytical Chemistry (15) CHE114 Fundamentals of Physical Chemistry (15)
Year 2	CHE211 Foundations of Practical Chemistry (10) CORE	
	CHE215 Applied Spectroscopy (10)	
	SBC5292 <i>Introduction to Scientific Computing</i> or SMD5252 <i>Engaging the Public</i> Elective (10)	
	CHE202A Structure & Reactivity in Organic Chemistry (15)	CHE202B Structure & Reactivity in Organic Chemistry (15)
CHE203A Solid State & Inorganic Chemistry (15)	CHE203B Solid State & Inorganic Chemistry (15)	
CHE204A Physical & Quantum Chemistry (15)	CHE204B Physical & Quantum Chemistry (15)	
Year 3	CHE300 Advanced Practical Chemistry (15)	CHE305 <i>Computational Chemistry</i> (15)
	CHE302 Organic Synthesis (15)	CHE307 <i>Bioorganic Chemistry</i> (15)
	CHE303 Topics in Inorganic Chemistry (15)	CHE308 <i>Advanced Analytical Chemistry & Spectroscopy</i> (15)
	CHE304 Topics in Physical Chemistry (15)	CHE309 <i>Topics in Biological Chemistry</i> (15)
	CHE600 <i>Chemistry Research Project</i> (30) OR	
	CHE601 <i>Chemistry Investigative Project</i> (30)	

Year 1: All Year 1 modules are compulsory to ensure that all students on the degree programme have the requisite understanding to prepare them for Years 2 and 3 of the degree programme.

Year 2: Most Year 2 modules are compulsory to ensure that all students on the degree programme have the requisite understanding to prepare them for Year 3 of the degree programme. Students have the option of studying one of two 10 credit elective modules in *Introduction to Scientific Computing* or *Engaging the Public*.

Year 3: There are 4 compulsory 15 credit Year 3 modules: **CHE300** (Advanced Practical Chemistry), **CHE302** (Organic Synthesis), **CHE303** (Topics in Inorganic Chemistry), **CHE304** (Topics in Physical Chemistry). In addition, you must select one of the two 30 credit modules: either **CHE600** (Chemistry Research Project) or **CHE601** (Chemistry Investigative Project). In order to have a free choice between these two 30 credit options, you will need to perform well in Years 1 & 2 of your degree, typically scoring in excess of 65% (if not 70%) in each of your Year 1 modules. If you are not above the 65th centile for weighted Year 1 & 2 average marks, you will have to study CHE601 in Year 3. This leaves you with a choice of 2 elective module (15 credits) from 4 potential electives in Semester B.

(8.2) CHEMISTRY WITH A YEAR IN INDUSTRY/RESEARCH BSc (9A32)

The programme for Chemistry with a Year in Industry/Research (9A32) is identical to the Chemistry BSc programme (F100) described above with the exception that you will intercalate a **year-long, 120 credit module**, CHE200 Professional Placement (in Chemistry) in **Year 3** of your programme before progressing to complete those modules listed for Year 3 of F100 in your fourth and final year of the F100 BSc programme. As indicated above, all placements must be approved by the School (in regard to professional suitability, and provision of a satisfactory training environment) and candidates failing to obtain a placement for the third year (or those that fail the Professional Placement module) will be transferred onto the F100 programme at the end of Year 2.

(8.3) CHEMISTRY MSci (F103)

The first 2 years of the Chemistry MSci programme are identical to the Chemistry BSc programme (F100) described above. Consequently, the first two years of the MSci programme are comprised almost exclusively of core or compulsory modules. Students have the option of studying one of two 10 credit elective modules in *Introduction to Scientific Computing* or *Engaging the Public*. The programme diet for Years 3 and 4 of the Chemistry MSci is as depicted below:

	SEMESTER A	SEMESTER B
Year 3	CHE300 Advanced Practical Chemistry 1 (15)	CHE305 Computational Chemistry (15)
	CHE302 Organic Synthesis (15)	CHE307 Bioorganic Chemistry (15)
	CHE303 Topics in Inorganic Chemistry (15)	CHE308 Advanced Analytical Chemistry & Spectroscopy (15)
	CHE304 Topics in Physical Chemistry (15)	CHE309 Topics in Biological Chemistry (15)
	CHE600 Chemistry Research Project (30)	
Year 4	CHE401 Professional Skills for Chemists (15)	
	CHE750 Chemistry MSci Research Project (60) CORE	
	CHE402 Advanced Biological Chemistry (15)	
	CHE403 Advanced Topics in Inorganic Chemistry (15)	
	CHE404 Advanced Topics in Physical Chemistry (15)	
	CHE405 Advanced Topics in Organic Chemistry (15)	

Year 3: There are **4 compulsory** 15 credit Year 3 modules. In addition, you **must do** the 30 credit **CHE600** (Chemistry Research Project) module. This leaves you with a choice of **2 elective** modules (15 credits) from 4 potential electives in Semester B.

Year 4: There is **1 compulsory** 15 credit Year 4 modules: **CHE401** (Professional Skills for Chemists) and in addition you **must do** the 60 credit module **CHE750** (Chemistry MSci Research Project). *The latter is a core module: you must pass CHE750 in order to graduate with an MSci, rather than a BSc, degree.* This leaves you with a choice of **3 elective** modules (45 credits) from 4 potential electives in Year 4.

(8.4) PHARMACEUTICAL CHEMISTRY BSc (F154)

The first year of the Pharmaceutical Chemistry BSc programme is identical to the Chemistry BSc programme (F100) described above. The programme diet for Years 3 and 4 of the Chemistry MSci is as depicted below:

	SEMESTER A	SEMESTER B
Year 2	CHE211 Foundations of Practical Chemistry (10) CORE CHE215 Applied Spectroscopy (10) <i>SBC5292 Introduction to Scientific Computing</i> or <i>SMD5252 Engaging the Public</i> Elective (10)	
	CHE202A Structure & Reactivity in Organic Chemistry (15) CHE204A Physical & Quantum Chemistry (15) CHE206A Pharmaceutical Chemistry (15)	CHE202B Structure & Reactivity in Organic Chemistry (15) CHE203B Solid State & Inorganic Chemistry (15) CHE206B Pharmaceutical Chemistry (15)
	CHE300 Advanced Practical Chemistry (15) CHE302 Organic Synthesis (15) CHE306 Advanced Pharmaceutical Chemistry (15) CHE303 Topics in Inorganic Chemistry (15) CHE304 Topics in Physical Chemistry (15)	CHE305 Computational Chemistry (15) CHE307 Bioorganic Chemistry (15) CHE308 Advanced Analytical Chemistry & Spectroscopy (15) CHE309 Topics in Biological Chemistry (15)
	CHE600 Chemistry Research Project (30) OR CHE601 Chemistry Investigative Project (30)	

Year 1: All Year 1 modules are compulsory to ensure that all students on the degree programme have the requisite understanding to prepare them for Years 2 and 3 of the degree programme.

Year 2: Most Year 2 modules are compulsory to ensure that all students on the degree programme have the requisite understanding to prepare them for Year 3 of the degree programme. Students have the option of studying one of two 10 credit elective modules in *Introduction to Scientific Computing* or *Engaging the Public*.

Year 3: There are 3 compulsory, 15 credit Year 3 modules: **CHE300** (Advanced Practical Chemistry), **CHE302** (Organic Synthesis) and **CHE306** (Advanced Pharmaceutical Chemistry). In addition, you must select one of the two 30 credit modules: **either CHE600** (Chemistry Research Project) **or CHE601** (Chemistry Investigative Project). In order to have a free choice between these two 30 credit options, you will need to perform well in Years 1 and 2 of your degree, typically scoring in excess of 65% (if not 70%) in each of your Year 1 and 2 modules. If you are not above the 65th centile for Year 1 and 2 average marks, you will have to study CHE601 in Year 3. This leaves you with a choice of 3 elective modules (45 credits) from 6 potential electives.

(8.5) PHARMACEUTICAL CHEMISTRY WITH A YEAR IN INDUSTRY/RESEARCH BSc (2L22)

The programme for Pharmaceutical Chemistry with a Year in Industry/Research (2L22) is identical to the Pharmaceutical Chemistry BSc programme (F154) described above with the exception that you will intercalate a **year-long, 120 credit module**, CHE200 Professional Placement (in Chemistry) in **Year 3** of your programme before progressing to complete those modules listed for Year 3 of F100 in your fourth and final year of the F100 BSc programme. As indicated above, all placements must be approved by the School (in regard to professional suitability, and provision of a satisfactory training environment) and candidates failing to obtain a placement for the third year (or those that fail the Professional Placement module) will be transferred onto the F154 programme at the end of year 2.

(8.6) PHARMACEUTICAL CHEMISTRY MSci (F152)

The first 2 years of the Pharmaceutical Chemistry MSci programme are identical to the Pharmaceutical Chemistry BSc programme (F154) described above. Consequently, the first two years of the MSci programme are comprised exclusively of core or compulsory modules with no electives. The programme diet for Years 3 and 4 of the Pharmaceutical Chemistry MSci is as depicted below:

	SEMESTER A	SEMESTER B
Year 3	CHE300 Advanced Practical Chemistry (15) CHE302 Organic Synthesis (15) CHE306 Advanced Pharmaceutical Chemistry (15) CHE303 Topics in Inorganic Chemistry (15) CHE304 Topics in Physical Chemistry (15)	CHE305 Computational Chemistry (15) CHE307 Bioorganic Chemistry (15) CHE308 Advanced Analytical Chemistry & Spectroscopy (15) CHE309 Topics in Biological Chemistry (15)
	CHE600 Chemistry Literature Project (15)	
Year 4	CHE401 Professional Skills for Chemists (15) MAT7803 Nanotechnology and Nanomedicine (15) CHE751 Chemistry MSci Research Project (60) CORE	
	CHE402 Advanced Biological Chemistry (15) CHE403 Advanced Topics in Inorganic Chemistry (15) CHE404 Advanced Topics in Physical Chemistry (15) CHE405 Advanced Topics in Organic Chemistry (15)	

Year 3: There are **3 compulsory**, 15 credit Year 3 modules. In addition, you **must do** the 30 credit **CHE600** (Chemistry Research Project) module. This leaves you with a choice of **3 elective** module (15 credits) from 6 potential electives in Semester B.

Year 4: There are **3 compulsory** Year 3 modules: **CHE401** (Professional Skills for Chemists), **MAT7803** (Nanotechnology and Nanomedicine) and the 60 credit, core module **CHE751** (Pharmaceutical Chemistry MSci Research Project). *The latter is a **core** module: you must*

pass CHE751 in order to graduate with an MSci, rather than a BSc, degree. This leaves you with a choice of **2 elective** modules (30 credits) from 4 potential electives in Year 4.

(9) HOW DO WE LISTEN AND ACT ON YOUR FEEDBACK?

You are strongly encouraged to provide **informal feedback** to **Module Organisers** and/or to the relevant **Programme Director** where you can see a way that your teaching could be significantly improved or you have cause for complaint. If you feel uncomfortable approaching a Module Organiser and/or Programme Director, you can also make any suggestions/raise any concerns by email to: sbcs-studentvoice@qmul.ac.uk. This email address is monitored daily by several colleagues so you can reasonably expect a response within 3 working days if you use the “student voice” email account.

The Student-Staff Liaison Committee (**SSLC**), Chaired by the Director for Student Experience, Dr Caroline Brennan, provides a **formal** means of communication and discussion between the School and its students. The committee consists of **elected student representatives** from each year in the School, together with appropriate representation from staff within the School. SSLC is designed to respond to the needs of students, as well as act as a forum for discussing programme and module developments. The SSLC meets regularly throughout the year.

The Teaching & Learning Committee (**TLC**) advises the School's Director of Education (DOE), Dr Chris Bray, on all matters relating to the delivery of taught programmes at school level, including monitoring the application of relevant QM policies and reviewing proposals for module and programme approval and amendment before submission to Taught Programmes Board (TPB). Student views are incorporated in the committee's work in a number of ways, such as through consideration of student surveys and input from the SSLC.

All schools/institutes operate an Annual Programme Review (**APR**) of their taught undergraduate and postgraduate provision. APR is a continuous process of reflection and action planning which is owned by those responsible for programme delivery; the main document of reference for this process is the Taught Programmes Action Plan (**TPAP**) which is the summary of the school/institute's work throughout the year to monitor academic standards and to improve the student experience. Students' views are considered in this process through analysis of the National Student Survey (NSS), Queen Mary Student Survey (QMSS) and module evaluations.

(10) ACADEMIC SUPPORT

You will be provided with a personal tutor, referred to as an "**Academic Advisor**, who will serve as your **main point of contact for advice** regarding academic matters and for assistance with pastoral concerns, throughout your whole programme. SBCS no longer operates the system of “office hours” since all advisees may have very different patterns of availability dependent on their choice of elective modules. Instead you can schedule an

appointment to meet with your Advisor via **email**. Moreover, if and when your Advisor is unavailable or cannot help with a specific problem, the School has several experienced **Programme Tutors** and a **Student Support Officer** plus **Student Support Assistants** who can address any concerns that you might have. (The DOE is always happy to schedule meetings with individual students and/or small groups of students, but only where they have not been able to resolve issues with their Academic Advisors/Programme Tutors or the Student Support Officer/Assistant.)

SBCS also operates a Peer Assisted Study Support (**PASS**) programme for peer guidance.

(11) SPECIFIC SUPPORT FOR DISABLED STUDENTS

Queen Mary has a central Disability and Dyslexia Service (**DDS**) that offers support for all students with **disabilities, specific learning differences** and **mental health** issues. The DDS supports all Queen Mary students: full-time, part-time, undergraduate, postgraduate, UK and international at all campuses and all sites.

Students can access advice, guidance and support in the following areas:

- Finding out if you have a specific learning difference like dyslexia
- Applying for funding through the Disabled Students' Allowance (DSA)
- Arranging DSA assessments of need
- Special arrangements in examinations
- Accessing loaned equipment (*e.g.* digital recorders)
- Specialist one-to-one "study skills" tuition
- Ensuring access to course materials in alternative formats (*e.g.* Braille)
- Providing educational support workers (*e.g.* note-takers, readers, library assistants)
- Mentoring support for students with mental health issues and conditions on the autistic spectrum.

(12) ADVICE AND COUNSELLING

Queen Mary has an Advice and Counselling Service (**ACS**), based in Geography Square, that offers support for all students at all stages of their degree studies. The **full range of services** offered by the ACS is detailed on their website (www.welfare.qmul.ac.uk). On this website, you will find a series of self-help and guidance booklets covering such diverse issues as adapting to life as a student at university through making a claim for extenuating circumstances to requesting an interruption of studies or withdrawing.

(13) SUPPORTING “THE STUDENT TRANSITION” AND IMPROVING YOUR PREPARATION FOR POSTGRADUATE STUDY AND/OR EMPLOYMENT

Alongside studying compulsory and elective modules covering a range of chemistry and/or pharmaceutical chemistry topics, there will also be opportunities for your personal growth and to develop ‘**graduate attributes**’ alongside your BSc degree. To support your transition into and through Higher Education, colleagues in SBCS have devised online materials and exercises in the **Personal & Professional Development (PPD)** pages of QMPlus at:

- <https://qmplus.qmul.ac.uk/course/view.php?id=6200>
- <https://qmplus.qmul.ac.uk/course/view.php?id=6201>.

In addition, SBCS supports the development of students’ **social capital** and **transferable skills** with a view to improving your **preparation** for **postgraduate study** and/or **employment**. These objectives will be achieved through a series of 10 or 15 credit modules in each academic year, designed to identify and address which of your **personal competencies and skills** which would benefit from further development.

In Year 1, these objectives will be addressed through the tutorial elements of the modules CHE100 (Essential Skills for Chemists). In Years 2, 3 and 4 modules may entail interdisciplinary study, team projects or community-based activities. This further increases the personalisation of **your** degree programme over and above your ability to select a unique combination of elective modules in Year 3 and 4 of your degree.

(14) CHANGE OF PROGRAMME

Due to the common content of the first year of study, you can request a Change of Programme (**CoP**) between any of the 6 Chemistry/Pharmaceutical Chemistry degree programmes. Thereafter, the Chemistry and Pharmaceutical Chemistry degree programmes diverge (there being different programme contents for Year 2).

Due to the common content of the first 2 years of study, up until the end of Year 2, you can request a Change of Programme (**CoP**) between any of the 3 Chemistry degree programmes (F100, F103 & 9A32) or between any of the 3 Pharmaceutical Chemistry degree programmes (F152, F154 & 2L22).

Should you wish to be considered for a Change of Programme, you will need to complete a **CoP form**, available from the **SBCS reception**. Before signing and submitting your form you should meet with your **Academic Advisor** or a relevant **Programme Tutor** to discuss the pros and cons of switching programmes. You should then return the completed and signed form to the SBCS reception to be considered and, if possible, approved by Dr Chris Bray as the **DOE**. As soon as a decision has been reached, you will be emailed and advised of the outcome of your application by the SBCS SSO.

You may request a **single** CoP during your degree. In each academic year, there are **four deadlines** for requesting a CoP, these being:

- **01 December 2019** *where there are implications for the Semester B modules required on the new programme;*
- **01 February 2020** *where you would like your CoP to be approved before entry to the Semester B exams;*
- **01 April 2020** *approval of the CoP will be considered at the June Exam Board meeting, contingent on passing the requisite number of credits;*
- **01 August 2020** *approval of the CoP will be considered at the September Exam Board meeting, contingent on passing the requisite number of credits.*

Approval will be contingent on (a) there being **places available** on the programme onto which you would like to transfer, and (b) **meeting** the projected **progression criteria** (i.e. 60% weighted average mean) for the new programme (see Section 7). If you fail to meet the higher progression criteria for the Chemistry/Pharmaceutical Chemistry MSc programmes (F103/ F152) or the Year in Industry/Research programme (9A32/2L22), you will be transferred on to the 3 year Chemistry/Pharmaceutical Chemistry BSc degrees (F100/F154) by the Subject Exam Board. *(In the event of an enforced CoP on academic grounds, you will not need to submit a CoP request.)*

(15) OPPORTUNITIES FOR POSTGRADUATE STUDY IN THE SCHOOL OF BIOLOGICAL & CHEMICAL SCIENCES

On completion of your BSc/MSc degree, you might wish to embark on a **postgraduate research degree** to become a Doctor of Philosophy (**PhD**). Increasingly, competitive applicants for PhD opportunities have not only a high class honours degree (first or upper second class honours), but they will also have completed a **postgraduate taught** Master of Science (**MSc**) or Masters by Research (**MRes**) degree (commonly with a Merit or Distinction). SBCS offers a MSc in Chemistry, the MSc in Chemical Research. If you wish to know more about this MSc programme, you are recommended to contact the MSc Programme Director, Dr Arianna Fornili (a.fornili@qmul.ac.uk) to discuss whether this would be an appropriate choice for you.

(16) LINKS WITH EMPLOYERS, PLACEMENT OPPORTUNITIES AND TRANSFERABLE SKILLS

Chemistry is often regarded as the "central science", and interfaces with physics, biology, materials science and medicine. The Chemistry and Pharmaceutical Chemistry BSc and MSci degrees each offer a high-level of training in both practical and theoretical aspects of chemistry, suitable if you wish to pursue a career as a professional chemist.

Graduates of chemistry degree courses are generally recognised by employers as having good technical and transferable skills, including skills in literacy, numeracy, application of logic, problem solving, communication, IT and computation, independent and team working, and time management. Graduates of the BSc programmes that incorporate a Year in Industry/Research (9A32/2L22) will also have gained specific experience of the working practices and working environments afforded by those employers offering placements; organisations that may consider students for placements would include major international pharmaceutical companies such as GlaxoSmithKline, AstraZeneca and Novartis.

The four year MSci degrees each offer a high level of training in theoretical aspects of chemistry with coverage of most (if not all) of the major areas (organic, inorganic and physical chemistry) to an advanced level. The Pharmaceutical Chemistry MSci (F152) also covers key aspects of biochemistry, physiology and pharmacology. Graduates of these MSci programmes generally have significantly more experience in the conduct of advanced practical chemistry than would be the case for graduates of the corresponding BSc degrees, and have experience of undertaking an extended research project. MSci graduates can therefore be expected to possess a wider range of practical skills, and a greater ability to undertake independent research studies. The MSci degrees are therefore particularly suitable if you plan to pursue a career as a professional research chemist; the Pharmaceutical Chemistry MSci (F152) is especially appropriate if you are seeking a career in the pharmaceutical industry.

Regardless of which degree you graduate with, opportunities for employment within the field of chemistry would include careers in the following areas:

- chemical industry;
- pharmaceuticals;
- food industry;
- mining, oil and gas industries;
- consumer products (e.g. cosmetics);
- analytical and forensic services;
- teaching and education;
- environmental protection.

The Pharmaceutical Chemistry degree programmes are focused on pharmaceutical chemistry and thereby naturally leads onto careers in the pharmaceuticals industry, but

there are many opportunities for employment within the wider field of chemistry including each of the areas listed above.

Opportunities for employment outside the field of chemistry would include careers in:

- finance;
- commerce;
- civil service;
- law;
- journalism;
- publishing;
- healthcare;
- technical sales;
- information technology.

Under QMUL's International Exchange Programme ('Global Opportunities'), students on most BSc and MSci programmes may have the opportunity to 'study abroad' at one of QMUL's partner universities for a full year between Years 2 and 3 of their BSc/MSci degree. If you wish to take advantage of this opportunity, you would have to request a CoP onto Chemistry/Pharmaceutical Chemistry with a Year Abroad. While the year overseas would not count towards your S3 College Mark and hence to your BSc/MSci classification, any Year Abroad should include relevant modules and you would need to meet the pass standards of the overseas university in order to graduate with the title "Chemistry/Pharmaceutical Chemistry with a Year Abroad". As you will appreciate, positions on such international exchanges are subject to a successful application and are awarded on a competitive basis. (If you wish to apply to transfer on to a Year Abroad programme, in the first instance, you should discuss the pros and cons with your Academic Advisor and a Programme Tutor, as appropriate.) SBCS offers several degrees "with a Year Abroad" because we appreciate the opportunities that this can provide for personal and professional growth, and for the acquisition of transferable skills that will enrich your CV and bolster your prospects for a graduate career.