

## Module Specification

Module Title	Essential Skills for Chemists			Module Code	CHE100	
Credit Value	15	Level	4	Mode of Delivery	On Campus	Semester A & B
Module Organiser	Dr T S Sheriff					

Pre-requisite modules	Co-requisite modules	Overlapping modules

### 5) Content Description

Provide a description of the module, as it will appear in the Module Directory and on the Student Information System (approx. 70-80 words).

This module is intended for students studying on chemistry-based degree programmes (including F100, F103, 9A32, F152, 2L22 and F154). This module is structured around three main key areas: (1) Acquiring mathematical skills for problem solving in chemistry. The module will explain how mathematics underpin chemistry and will support students in acquiring a variety of key mathematical skills used to solve problem in chemistry. The material covered in this module includes: basic numeracy skills, units and order of magnitude, simple mathematical calculations, introductory calculus (differentiation/integration), complex numbers, matrices, geometry, application of probability theory in chemistry and statistical analysis of data. (2) Considering the role of Chemistry in the "real world" and Developing graduate skills. Through personal investigation and series of talk of professional Chemists, students will be encouraged to consider the role of chemistry in an applied context and gain a more global perspective of their discipline. Students will also develop through this module, oral and written communication skills and some basic literature search technique. (3) Exploring Career Pathways. Students will be given an opportunity to explore various career choices, to reflect on their own career aspirations and to meet with professional Chemists from diverse backgrounds.

### 2) Module Aims

Specify the aims of the module, i.e. the broad educational purposes for offering this module.

The aim of this module is to provide students with: (1) An understanding of how mathematics provide tools for problem solving in chemistry (2) The basic skills necessary to underpin a successful degree programme in the chemical sciences (3) An understanding of the career paths available to chemistry graduates and an opportunity to reflect on own career aspirations (4) To consider applications of chemistry in the real world

### 3) Learning Outcomes

Identify the learning outcomes for this module, i.e. knowledge, skills and attributes to be developed through completion of this module. Outcomes should be referenced to the relevant [QAA benchmark statements](#) and the [Framework for Higher Education Qualifications in England, Wales and Northern Ireland \(2008\)](#). The [SEEC Credit Level Descriptors for Further and Higher Education 2003](#) and [Queen Mary Statement of Graduate Attributes](#) should also be used as a guiding framework for curriculum design.

Academic Content:	
A 1	Manipulate equations, including those involving powers and logarithms and derive the units of physical quantities, and convert between units
A 2	Balance all types of chemical equations and determine oxidation states of elements and carry-out calculations relating to molar masses, concentrations etc.

A3	Carry-out calculations relating to yields in chemical reactions and carry-out calculations relating to acidity of solutions and compounds
A4	Represent chemical structures using various standard convention and determine distances and angles in two-dimensional and three-dimensional shapes
A5	Use molecular modelling software to visualise and determine properties of molecules and differentiate and integrate simple mathematical functions
A6	Determine the maxima and minima in functions, and areas under curves and apply basic probability theory to problems of a chemical nature

Disciplinary skills - able to:	
B1	This module will develop and reinforce students' knowledge of basic mathematical techniques as well as key principles encountered in the study of science at degree level
B2	Skills of general scientific relevance (data manipulation skills etc.) will be developed

Attributes:	
C1	The module will incorporate coursework aimed at developing and reinforcing students' skills in basic numeracy and mathematics, use of IT, data handling and statistical analysis
C2	Students will also be trained and have practice in solving numerical problems relevant to chemistry, thereby enhancing students' general problem solving skills

QM Model Outcomes:	
D1	Identify and discuss their own career aspirations or enterprise skills and knowledge and how they impact on others.
D2	Identify and demonstrate the perspectives or problem solving techniques of different disciplines
D3	Consider the role of their discipline in diverse cultural and global contexts

#### 4) Reading List

Provide an indicative reading list for the module. This should include key texts and/or journals but **should not** be an exhaustive list of materials.

There is no single textbook that is appropriate for all the topics covered in the module; where appropriate individual lecturers will provide guidance on suitable supplementary reading. A handbook will be provided covering the core mathematical skills.

#### 5) Teaching and Learning Profile

Provide details of the method of delivery (lectures, seminars, fieldwork, practical classes, etc.) used to enable the achievement of learning outcomes and an indicative number of hours for each activity to give an overall picture of the workload a student taking the module would be expected to undertake. This information will form the Key Information Set for each undergraduate programme and will be used to populate the KIS widget found on the QMUL programme information pages. More information can be found [online](#) about KIS. You may also wish to refer to the [QAA guidance on contact hours](#) when completing this section.

Activity Type	KIS Category	Time Spent (in hours)
Lecture	Scheduled	28

Practical Workshops	Scheduled	14
Total		42

Specify the total module notional study hours. This should be a total of the hours given for each activity. The notional study hours for each academic credit point is 10. A 15 credit point module therefore represents 150 notional study hours.

Activity Type	Total Time Spent (in hours)	Percentage of Time Spent
Scheduled learning and teaching	42	28
Placement	0	0
Independent Study	108	72
Total	150	100

Use the information provided in the box above to specify the total time spent and the percentage time spent in each category of teaching and learning activity.

## 6) Assessment Profile

Provide details of the assessment methods used to assess the achievement of learning outcomes.

Description of Assessment	Assessment Type	KIS Category	Duration/Length	Percentage Weighting	Final element of assessment	Qualifying Mark
Coursework	Written assignment	Coursework		100%	Yes	

**Final element of assessment:** The assessment that takes place last. **There should normally be only one element of assessment marked as final unless two assessment or submission dates occur on the same day.**

**Qualifying mark:** A specified minimum mark that must be obtained in one or more elements of assessment in order to pass a module. **This is in addition to, and distinct from, the requirement to achieve a pass in the module mark to pass the module.**

## Reassessment

Provide details of the reassessment methods used, specifying whether reassessment is either standard reassessment or synoptic reassessment.

- Standard Reassessment
  Synoptic Reassessment

Synoptic reassessment details (if you have indicated synoptic reassessment above, please give details)		
Brief Description of Assessment	Assessment Type	Duration/Length of Examination/ Coursework