HG1MC1 Mathematics for Chemistry 1
(Last Updated:08 April 2013)

Year 13/14

Total Credits: 10

Level: Level 1

Target Students: BSc and MSci students in the School of Chemistry. *Available to JYA/Erasmus students.*

Taught Semesters:

Semester	Assessment
Autumn	Assessed by end of Autumn Semester

Prerequisites: A study of mathematics from a course of at least one year duration post GCSE such as provided by a pass grade in A-level Mathematics, AS-level Pure Mathematics or equivalent.

Corequisites: None.

Summary of Content: This module provides definition, manipulation and graphical representation of important functions. The calculus of one variable is reviewed and then extended to develop techniques of differential and integral calculus together with solution of first-order differential equations. Basic elements of probability and statistics are introduced. Examples in the context of chemistry are used throughout. Topics are:

- functions of single variable;
- differential calculus of a single variable;
- integral calculus of a single variable;
- first-order ordinary differential equations;
- elementary probability and statistics.

Module Web Links:
- ☐ [MELEES web page](#)   (Web CT)

Method and Frequency of Class:

Activity	Number Of Weeks	Number of sessions	Duration of a session
Workshop	11 weeks	1 per week	2 hours

| Lecture | 11 weeks | 1 per week | 1 hour |

Activities may take place every teaching week of the Semester or only in specified weeks. It is usually specified above if an activity only takes place in some weeks of a Semester

Further Activity Details:
Each week there will normally be two lecture hours and a further hour of worked examples or problem workshops. There will be regular formative coursework assignments and a weekly mathematics 'clinic'.

Method of Assessment:

Assessment Type	Weight	Requirements
Exam 1	80	2-hour written examination
Coursework 1	10	Assignment
Coursework 2	10	Assignment

Convenor:
Dr K Hopcraft

Education Aims: In concert with the module HG1MC2, to provide students with a basic knowledge of the main mathematical techniques required in following a Chemistry-based course.

Learning Outcomes:

A student who completes this module successfully should be able to:

Knowledge and understanding
work with complex numbers and solve simple algebraic equations;
perform differential and integration of standard functions;
find Taylor series for simple functions;
find and classify local maxima and minima for simple functions;
carry out partial differentiation for simple functions and apply the chain rules.

Intellectual skills
reason logically and work analytically;
perform with high levels of accuracy;
manipulate mathematical formulae, algebraic equations and standard functions;
apply basic mathematical concepts to problems of a routine and extended nature;
select appropriate mathematical methods and techniques in problem solving within the Physical Sciences.

Professional skills
construct and present mathematical arguments with accuracy and clarity;
apply solution techniques appropriate to typical mathematical problems
arising in Chemistry.

Transferable skills
demonstrate skill in problem solving;
adopt effective strategies for study;
express ideas and methods of solution in the analysis of mathematical
problems appropriately and effectively;
enhance skills of formulation and reasoning in dealing with problem
solving and quantitative concepts.

Offering School: Mathematical Sciences