BROOKE HOUSE COLLEGE

University Foundation Programme

Medicine
Pathway Course Guide

THE COURSE
Overview

Over recent years Brooke House College has developed and modernised the Foundation Programme to embrace the changes and trends within education and working society. By doing this we can offer a contemporary and significantly larger choice within our course curriculum.

General Information

Students will have a programme that prepares them for entry on to a Medicine degree programme. The interview will be carried out by the course co-ordinator at the beginning of the course and then continual academic support is given to ensure the students fulfil their potential. Exams will take place at the end of each term, three times per academic year.
Unit examinations maybe re-taken where applicable. Coursework and other modes of continual assessment may only be re-assessed subject to the whole unit being re-taken.

THE FOUNDATION EXAMINATION STRUCTURE
(Internally Assessed and Externally Moderated)

The Foundation Programme geared for the preparation of international students, from a variety of countries and educational backgrounds, for progress to Higher Education in the UK.
The Internal examinations are assessed on a percentage scale equating to the following reported levels of achievement:

Pass 40%
Merit 60%
Distinction 70%

Equivalent mapping to A levels 90%+ A*, 80%+ A, 70%+ B, 60%+ C, 40%+ E approx.

The course is timetabled for 675 hours of tutor- led sessions per academic year and runs from September – June.

COURSE UNIT INFORMATION

Units

- Core Maths
- Pure Maths
- Extra Pure Maths
- Chemistry Unit 1 - Structure, bonding and the mole.
- Chemistry Unit 2 - Physical Chemistry
- Chemistry Unit 3 - Organic Chemistry
- Biology unit 1
- Biology unit 2
- Biology unit 3
- Communication Skills
- IELTS *if required*

CORE MATHEMATICS (Course Code CM) [Term 1]

This module is covered by every foundation student. Basic Pure (Arithmetic and Algebra) is revised and is of Higher GCSE level standard, whilst some Decision Maths and extra Statistics of AS Level standard is also covered to extend beyond GCSE level in order to prepare for the extensive choice of option courses offered in Terms 2 and 3:

'CM' - CORE MATHS [Term 1] (Marks split 40/60)

Exam	Content	Code	Title
	Discrete Data (Basic Stats)	S1	Late for Lessons again
CM	Percentages	P1	Read the Small Print!
1	Flowcharts	D1	Show me the Way
	Equations & Formulae	P2	Changing the Subject
	Continuous Data (Basic Stats)	S2	On the Road again
CM	Networks	D2	Satellite Navigation
2	Stem & Leaf Diagrams, Coding & Box-plots	S3	Statistical Tricks
	Algebra & Graphs (Equations & Straight Line Gr)	P5	What's the Point?

PURE MATHEMATICS (Course Code PM) [Term 2]

This option covers some of the Pure Maths topics required to support the parallel Business and Science Maths courses. It is useful to follow this course if you intend to apply for the more 'mathematical' courses at University such as Physics, Engineering, Economics and Mathematics. The work covered is of AS Core Maths standard ("C1 & C2")

'PM' - PURE MATHS [Term 2] (Marks split 40/60)

Exam	Content	Code	Title
PM	Differentiation of x^n & applications ('n' a positive integer)	P6	What's the Difference?
1	Integration of x^n ('n' a positive integer); Trapezium Rule	P7	What's the Sum?
	Numerical Methods (solving equations numerically)	P10	That's About Right
PM	Further Calculus (assorted functions and techniques)	P11	Spreading the Net
2	Advanced Trigonometry (graphs, equations & identities)	P12	Not Just Any Old Triangle
	The Algebra of Brackets & its uses	P13	Brackets Galore

EXTRA PURE MATHEMATICS (Course Code XPM) [Term 3]

If you intend to study rather more 'mathematical' degrees, this course should be useful in extending your knowledge of Pure Maths. The course continues to build on those met in PM and reaches A2 Core Maths level ("C3 and C4") in the topics covered. It is intended to broaden your mathematical experience and includes topics you have probably never met before – 'Complex Numbers', 'Polar Coordinates' and Conic Sections' – plus further work on 'Trigonometry', 'Calculus' and 'Matrices'.

'XPM' – EXTRA PURE MATHS [Term 3 – follows on from 'PM'] (Marks split 50/50)

Exam	Content	Code	Title
X	Further Trigonometry (techniques for solving equations)	P14	Out of Phase
PM	Matrices and their applications	P15	Entering Two by Two
1	Conic Sections and Parametric Equations	P16	Stay Focussed
X	Further Integral Calculus (assorted techniques)	P17	On the Bench
PM	Polar Coordinates (graphs and calculus)	P18	Ever Decreasing Circles
2	Complex Numbers (algebra and Argand diagrams)	P19	Nothing is Real

CHEMISTRY

Unit 1: Structure, bonding and the mole.

Atomic structure RAM. Mass spectrometer.	Chemical safety Prelim. test / formulae and equations.
Ionisation energies and electron configurations	Empirical and molecular formulae
Electron configurations Periodic Table blocks	Molecular and ionic equations
Electron configurations Shapes of s and p orbitals	The mole The Avogadro Constant
Ionic and covalent bonding Ionic crystal structures	% composition Pract: Determination of x in $BaCl_2.xH_2O$
Electronegativity Polar covalency	Reacting masses
Shapes of molecules Molecular polarity	Reacting masses
Intermolecular forces Practical: 'Like dissolves like'	Percentage yield Practical: Preparation of $CuSO_4$ crystals.
Molecular crystals Giant molecular crystals	Practical (conclusion) Molar Volume of gases
Metallic crystals	Vm calculations Pract: Determination of Vm for hydrogen

Unit 2: Physical Chemistry

Redox
Oxidation numbers

Kinetics
Practical: S2O3 2- / H+ reaction
(concentration and temperature)

Kinetics
Factors affecting rate.

Kinetics
Collision Theory

Chemical equilibria
Le Chatelier's Principle

The Equilibrium Constant (Kc)
Calculations

Acids and bases
Arrhenius's theory

Acids and bases
Ka and calculations

pH calculations
Buffer solutions

Molar solutions
Titrations (introduction)

Titration calculations.

Practical:
Standardisation of HCl using anhydrous Na2CO3

Practical:
% ethanoic acid in vinegar

Thermochemistry
The bomb calorimeter

Thermochemistry
DHc and DHf, Hess's Law

Thermochemistry
Practical: DH determination.

Thermochemistry
Calculations

Thermochemistry
Bond enthalpies

Unit 3B: Organic Chemistry

Structures of alkanes
Nomenclature

Isomerism (all types)

Alkanes

Alkenes

Alkenes

Halogenoalkanes

Halogenoalkanes
Pract: Identification of a halogen present

Alcohols

Mass spectra of organic compounds

I.R. spectra of organic compounds

Distillation and fractionation.
Oil refining.

Practical:
Prep. of 2-chloro-2-methylpenttane

Practical:
Purification of 2-chloro-2-methylpentane

Practical: Recrystallisation of benzoic acid

Practical: M.Pt. determination

Practical: Prep of ethanal

Alcohols	Heating under reflux
Pract: Identification of an alcohol (incl. by B.Pt. determination	Revision

Assessment: will be through written answers to questions set for homework, a written test at the end of each topic and a test set at the end of each module.

BIOLOGY

- **Unit 1 Biochemistry**

Structure and function of carbohydrates, proteins, lipids, DNA. DNA replication. Membrane structure, cell organelles and their function. Enzymes-lock and key theory, rate of reaction, denaturation. Protein synthesis. Cell cycle with mitosis and meiosis.
Method of assessment: Practical 25%, Examination 75%

- **Unit 2 Respiration and Organ systems**

Cell respiration-aerobic and anaerobic. Glycolysis, the link reaction, Krebs cycle, oxidative phosphorylation. Ultrastructure of the kidney-nephrons. Ultrafiltration. counter current in the Loop of Henle. Functions of the liver. and the pancreas. Digestion of carbohydrates and structure of the small intestine.
Method of assessment: Practical 25%, Examination 75%

- **Unit 3 Co-ordination**

Muscles structure and function to include the ratchet mechanism. Neurone structure and function, 3 types of neurones. Depolarisation and repolarisation, hyperpolararisation, synapses. Eye structure and function, rods and cones, rhodopsin, trichromatic theory. Genes and monohybrid inheritance.
Method of assessment: Practical 25%, Examination 75%

Communication Studies (Internal Assessment)

Communication is the means whereby one can transmit ideas and information to others in a form that all the parties involved are able to understand.
The purpose of this course is to allow students to gain the necessary skills in the modern world such that they are able to transmit what they want to communicate using the various means that are available. During the course, we will be studying presentation skills, job applications, interview techniques, positive and negative body language, academic referencing, written communication and note-taking. There will also be aspects of I.T. within the course. This course aims to give students a broad understanding of academic skills and provide them with the confidence to be successful. The classes will endeavour to be practical and informative with independent study being necessary to the success of the student.
The course will be assessed internally by the teaching staff by a variety of methods such as written essays, oral and electronic presentations and observations.
Maximum total contribution for Communication Studies to the Foundation Course is 10%

IELTS - Compulsory External English Examination
(External Examination)
All students will study a programme of English that will lead to an IELTS (International Language Testing System) external examination. Students will need to achieve a band that is acceptable by Universities (Band 6+ minimum)
The examination consists of four sections: listening, speaking, reading, writing.

This unique 9-band system measures scores in a consistent manner – wherever and whenever the test is taken. It is internationally recognised and understood, giving you a reliable international currency.

Once students have successfully achieved an IELTS band which is at an acceptable level for entry into university they will no longer need to study this part of the course.

The IELTS examination does not contribute to the overall Foundation Course mark, but is a compulsory component, which is needed to attend a Degree Course at a British University.

IELTS examinations may be attempted on one or more occasions, subject to places being available.

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