

PROGRAMME SPECIFICATION DOCUMENT

1. Qualification Polymaths certificate	2. Programme Title Polymaths	3. UCAS Code	4. Programme Type Part time
<p>5. Main Purposes and Distinctive Features of the Programme</p> <p>Polymaths is a one year part time course designed for students whose mathematical education may not go beyond GCSE level. It gives access to degree and HND courses in mathematics or mathematically related subjects, at the University of Bolton and elsewhere.</p> <p>6. What a graduate should know and be able to do on completion of the programme</p>			
<p><u>Knowledge and understanding in the context of the subject(s)</u></p> <ol style="list-style-type: none"> 1. Understand the concept of the natural numbers, the integers, the rational numbers, the real numbers and the complex numbers. 2. Understand the concept of a mathematical function and its relationship to graphs, composite and inverse functions, period and frequency. 3. Understand the concept of a set, binary operation and binary relations. 4. Understand differentiation as a process of taking limits and understand the concept of an integral. <p><u>Cognitive skills in the context of the subject(s)</u></p> <ol style="list-style-type: none"> 1 Use algebraic laws, laws of powers, sigma notation, HCF and LCM, laws of fractions, notations for intervals and modulus, APs and GPs, the Binomial theorem and Euler's equation. 2 Solve simple equations, simultaneous equations and quadratic equations. Use complex arithmetic including fractional powers. 3 Draw and use straight line graphs, graphs of power functions, quadratics and other polynomials, rational functions, trigonometrical and inverse trigonometrical functions, exponential and logarithmic functions. 4 Use degrees and radians, solve simple triangle problems and use trigonometrical identities. Use the laws of logarithms, partial fractions and algebraic long division. 5 Use set notation, Venn diagrams and set operations. Use truth sets for general predicates. 6 Manipulate vectors, use the scalar product of vectors, work with linear transformations represented by matrices and use matrices to solve simultaneous equations. 7 Use Cayley tables. 8 Use rules for differentiating trigonometrical, polynomial and exponential functions, use the product and quotient rules, differentiate composite, implicit and inverse functions, and use logarithmic differentiation. 9 Apply differentiation to practical problems and find maximum and minimum points. 10 Use numerical integration and apply the fundamental theorem of calculus. Use integration by substitution, parts, partial fractions and completing the square. 11 Apply integration to calculating volumes of revolution. 		<p><u>Subject-specific practical/professional skills</u></p> <p>Use a computer algebra package to solve mathematical problems</p> <p><u>Other skills (e.g. key/transferable) developed in subject or other contexts</u></p> <ol style="list-style-type: none"> 1 Develop IT skills 2 Demonstrate the ability to work independently to investigate an area of work related to mathematics and present the results of this investigation in a report. 	

7. Qualities, Skills & Capabilities Profile

A Cognitive	B Practical	C Personal & Social	D Other
Critical reasoning	IT skills	Time management	Communication skills in mathematics
Analysis of problems		Responsibility for self learning	

8. Duration and Structure of Programme/Modes of Study/Credit Volume of Study Units

There are 2 evening classes per week each of 2.5 hours duration over 30 weeks. The work is broken into 6 sections as follows:
 Book A Number systems
 Book B Functions
 Book C Sets, concepts and relations
 Book D Calculus
 Computer algebra
 Project

9. Learning, Teaching and Assessment Strategy

Learning and Teaching Methods

135 hours of lectures/tutorial support
 15 hours of computing work

Assessment Methods

The assessment for the course comprises 52 items. There are weekly short tests (ST) which the students have one week to complete and 6 summative long tests (LT) which the students have 3 weeks to complete. There is also an examination on the material in books A and B. The computing work and the project are each assessed by a single assignment. There is a total of 1200 marks for the whole course which is distributed as follows:

Book A: 200 (ST 100, LT 50, exam 50)
 Book B: 200 (ST 100, LT 50, exam 50)
 Book C: 200 (ST 100, LT 100)
 Book D: 300 (ST 150, LT 150)
 Computer algebra: 150
 Project: 150

Assessment Classification System

Pass mark 700. There are no grades.

Honours Classification Bands

N/A

10. Other Information *(including compliance with relevant University policies)*

Date programme first offered

1976

Admissions Criteria

GCSE mathematics grade C

Indicators of Quality and Standards

Approved by the Institute of Mathematics and its Applications