



**Mathematics Learning
Support Centre**

Catalogue of Resources

*6th edition
Spring 2006*

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1 THE MATHEMATICS LEARNING SUPPORT CENTRE

The centre is based in the Mathematics Education Centre, W1.42. It is open daily in term-time and houses an excellent range of learning resources including handouts, textbooks, computers, videos and graphical calculators. One-to-one help from experienced staff can be obtained free of charge.

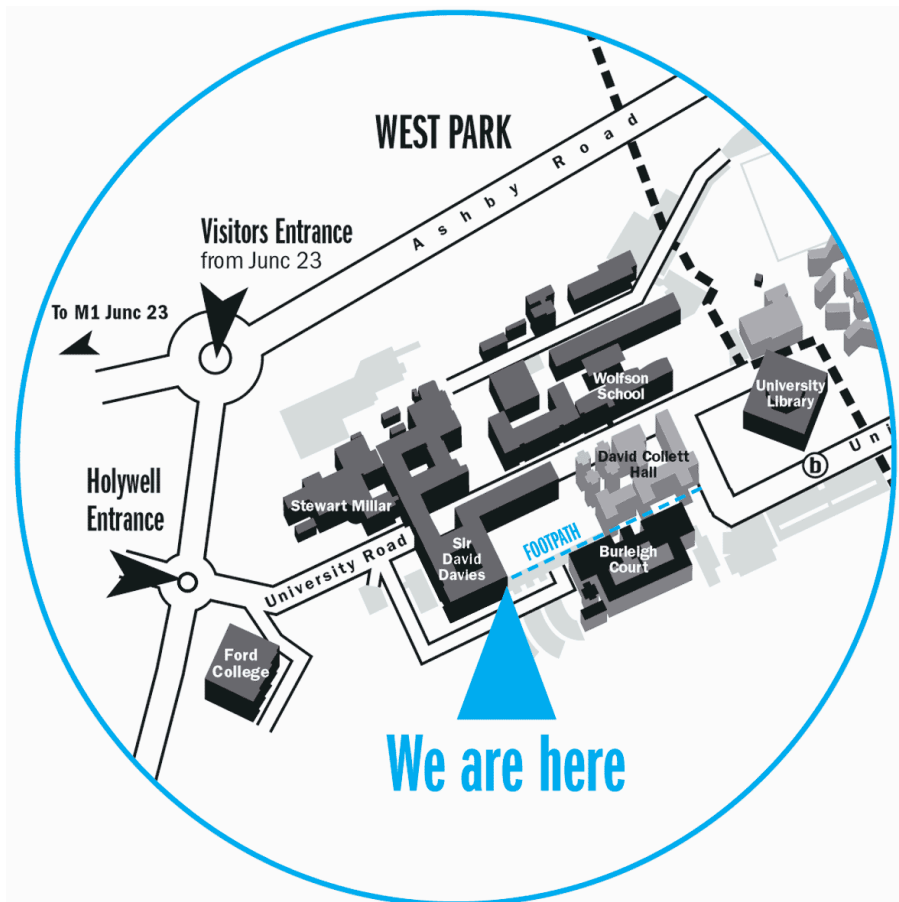
Opening Hours: Monday – Thursday **9.00am – 5.00pm**
 Friday **9.00am – 4.00pm**

This catalogue provides detailed information about the resources available in the centre.

For further information contact:

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How to find us: The centre is located in W1.42, Sir David Davies Building, West Park.



2 OVERVIEW OF RESOURCES

Resource	Description
Handouts	Handouts are freely available on topics which can cause problems. These are designed to help students having difficulty with their lecture notes or recommended text
Workbooks – Helping Engineers Learn Mathematics (HELM)	A major project has converted first and second year engineering mathematics material for delivery through self study open learning. The workbooks are available in the centre.
Workbooks – Pre-Sessional Material	Revision material, in the form of Algebra and Calculus Refresher Booklets, to help potential students to prepare for university, is available.
Textbooks	Many undergraduate mathematics texts can be consulted in the centre.
One-to-One Help	Personal tuition is freely available in the centre. Specialist statistical help is available at advertised times.
Support for Students with Additional Needs	The centre is able to provide additional one-to-one tutoring to dyslexic and dyscalculic students and to students with other additional needs.
Engineering Student Support Desk	The support desk offers assistance to engineering students in the form of leaflets and web-based materials as well as a Power Mac G5 which is available for processing video and audio materials.
Lunchtime Refresher Courses	These courses run throughout the year and cover key, basic mathematics topics.
Diagnostic Tests	The centre has hundreds of multiple-choice questions covering basic mathematics topics. Paper-based tests, web-based tests and tests on the CAL launcher are available.
Web-based Material	Many of the centre's paper-based resources are currently being made available online via externally funded projects such as HELM: http://helm.lboro.ac.uk In addition, web-sites have been developed for students of the Business School and the Economics Department.
Videos	A set of videos revising the A level mathematics core, GCSE mathematics and numeracy can be viewed in the centre. Also videos using mathematics to model engineering problems are available.
Graphical Calculators/ Overhead Projector	There are graphical calculators for student use within the centre. An overhead projector is available for workshops.
Computers and Computer Software	The centre has 5 networked PCs running Windows XP Pro. Additionally, sophisticated computer packages are available to perform calculations involving algebra, calculus, etc. Graph plotting packages make the visualisation of solutions particularly simple.
Computer Assisted Learning	A wide range of packages covering pre-GCSE through to 1st & 2nd year topics for students of mathematics, science & engineering.
Leaflets and Posters	These give advice, and further information about the centre.

3 HANDOUTS

The following sheets are freely available in the Mathematics Learning Support Centre. They contain theory, worked examples and exercises covering a range of topics. Some are also currently being made available online at <http://mathcentre.ac.uk>

3.1 *Elementary Topics*

These study sheets cover a range of basic topics roughly at GCSE level. They were written by Maureen Green and finalised by Les Mustoe.

Arithmetic

- 1 Calculating fractions - part 1
- 2 Calculating fractions - part 2
- 3 Calculating fractions - part 3

Decimals

- 4 Dealing with fractions - part 1
- 5 Dealing with operations - part 2
- 6 Dealing with percentages - part 3
- 7 Dealing with number systems - part 4

Ratios

- 8 Ratio and proportion - part 1
- 9 Ratio and proportion - part 2

Algebra

- 10 Powers and indices
- 11 The use of symbols
- 12 Substitution & formulae
- 13 Algebraic fractions - part 1
- 14 Algebraic fractions - part 2
- 15 Linear equations

Angles and Trigonometry

- 16 Measuring angles - part 1
- 17 Measuring angles - part 2
- 18 Angles & sides of a triangle - part 1
- 19 Angles & sides of a triangle - part 2
- 20 Trigonometry - sine, cosine and tangent

The Straight Line

- 21 Gradient and intercept part 1

3.2 Engineering Maths First Aid Kit

These study sheets cover a range of topics at A level / 1st year university level. They are particularly helpful for engineering students. They were written by Tony Croft. They are available online at <http://mathcentre.ac.uk>

Arithmetic

- 1.1 Fractions
- 1.2 Powers and roots
- 1.3 Scientific notation
- 1.4 Factorials
- 1.5 The modulus of a number

Algebra

- 2.1 The laws of indices
- 2.2 Negative and fractional powers
- 2.3 Removing brackets 1
- 2.4 Removing brackets 2
- 2.5 Factorising simple expressions
- 2.6 Factorising quadratics
- 2.7 Simplifying fractions
- 2.8 Addition and subtraction
- 2.9 Multiplication and division
- 2.10 Rearranging formulas 1
- 2.11 Rearranging formulas 2
- 2.12 Solving linear equations
- 2.13 Simultaneous equations
- 2.14 Quadratic equations 1
- 2.15 Quadratic equations 2
- 2.16 Inequalities
- 2.17 The modulus symbol
- 2.18 Graphical solution of inequalities
- 2.19 What is a logarithm?
- 2.20 The laws of logarithms
- 2.21 Bases other than 10 and e
- 2.22 Sigma notation
- 2.23 Partial fractions 1
- 2.24 Partial fractions 2
- 2.25 Partial fractions 3
- 2.26 Completing the square
- 2.27 What is a surd?

Functions

- 3.1 What is a function?
- 3.2 The graph of a function
- 3.3 The straight line
- 3.4 The exponential constant e

- 3.5 The hyperbolic functions
- 3.6 The hyperbolic identities
- 3.7 The logarithm function
- 3.8 Solving equations involving logarithms and exponentials
- 3.9 Polar coordinates

Trigonometry

- 4.1 Degrees and radians
- 4.2 The trigonometrical ratios
- 4.3 Graphs of the trigonometric functions
- 4.4 Trigonometrical identities
- 4.5 Pythagoras' theorem
- 4.6 The sine rule and cosine rule

Matrices

- 5.1 Determinants
- 5.2 Cramer's rule
- 5.3 Multiplying matrices
- 5.4 The inverse of a 2×2 matrix
- 5.5 The inverse of a matrix
- 5.6 Using the inverse matrix to solve equations

Vectors

- 6.1 Vectors
- 6.2 The scalar product
- 6.3 The vector product

Complex Numbers

- 7.1 What is a complex number?
- 7.2 Complex arithmetic
- 7.3 The Argand diagram
- 7.4 The polar form
- 7.5 The form $r(\cos \theta + j \sin \theta)$
- 7.6 Multiplication and division in polar form
- 7.7 The exponential form

Calculus

- 8.1 Introduction to differentiation
- 8.2 Table of derivatives
- 8.3 Linearity rules
- 8.4 Product and quotient rules
- 8.5 The chain rule
- 8.6 Integration as the reverse of differentiation
- 8.7 Table of integrals
- 8.8 Linearity rules of integration
- 8.9 Evaluating definite integrals
- 8.10 Integration by parts
- 8.11 Integration by substitution
- 8.12 Integration as summation

3.3 Business Maths Foundations

These study sheets cover a range of topics at GCSE / A level. They are particularly aimed at helping students of the business school and economics department. Sections 1-5 were written by Tony Croft. Section 6 was written by Clare Trott. They are available online at <http://learn.lboro.ac.uk/mlsc/bs>

Number

- 1.1 Fractions
- 1.2 Decimals
- 1.3 Ratios
- 1.4 Percentages
- 1.5 Powers and roots
- 1.6 Logarithms
- 1.7 The laws of logarithms

Notation, Symbols and Algebra

- 2.1 Symbols
- 2.2 Substitution
- 2.3 Sigma notation
- 2.4 The laws of indices
- 2.5 Negative and fractional powers
- 2.6 Removing brackets 1
- 2.7 Removing brackets 2
- 2.8 Factorising simple expressions
- 2.9 Factorising quadratics
- 2.10 Simplifying fractions
- 2.11 Addition and subtraction
- 2.12 Multiplication and division
- 2.13 Rearranging formulas 1
- 2.14 Rearranging formulas 2
- 2.15 Solving linear equations
- 2.16 Simultaneous equations
- 2.17 Quadratic equations 1
- 2.18 Quadratics equations 2

Linear Relationships

- 3.1 Linear relationships
- 3.2 The slope-intercept form
- 3.3 Manipulating inequalities
- 3.4 Linear inequalities

Common Functions

- 4.1 What is a function?
- 4.2 The graph of a function
- 4.3 The exponential constant, e
- 4.4 Introduction to differentiation

- 4.5 Table of derivatives
- 4.6 Some rules of differentiation

Mathematics of Finance

- 5.1 Interest
- 5.2 Arithmetic and geometric progressions
- 5.3 Continuous compounding

Statistics

- 6.1 Mean, Median and Mode
- 6.2 The Mean
- 6.3 Variance and Standard Deviation (ungrouped data)
- 6.4 Variance and Standard Deviation (grouped data)
- 6.5 Box and Whisker Plots
- 6.6 The Normal Distribution
- 6.7 Confidence Intervals

3.4 More Advanced Topics

These leaflets cover a few topics at 1st/ 2nd year university level. They were written by Tony Croft.

- 1 Maclaurin Series
- 2 Taylor Series
- 3 Radius of Convergence
- 4 Eigenvalues and Eigenvectors
- 5 Partial Differentiation
- 6 Introduction to Laplace Transforms
- 7 The Fourier Transform
- 8 The Simplex Algorithm
- 9 Proof by induction

3.5 Study Skills Leaflets

Developing mathematical skills
Essay writing
Learning at university
Organising yourself
Reading efficiently
Taking notes
What does the question mean?
Working in groups
Writing mathematics

3.6 Mechanics

These leaflets cover some basic general principles and Newton's laws.

General Principles

- 1.1 Introduction to Mechanics
- 1.2 Units and prefixes
- 1.3 Conversion of Units

Dynamics

- 2.1 Newton's 1st law of motion
- 2.2 Newton's 2nd law of motion
- 2.3 Newton's 3rd law of motion

3.7 Statistics

- 1.1 Paired t tests
- 1.2 Unpaired t tests
- 1.3 The Chi-squared test for two way (contingency) tables
- 1.4 Chi-squared goodness of fit test

- 2.1 The sign test
- 2.2 The Wilcoxon signed rank sum test
- 2.3 The Mann-Whitney U test

3.8 *Miscellaneous*

Least squares – Line of best fit

Preparing for employers numeracy tests

Statistics – An introduction to Statgraphics

4 WORKBOOKS – HELPING ENGINEERS LEARN MATHEMATICS

HELM - Helping Engineers Learn Mathematics - was a project sponsored by the Higher Education Funding Council for England (HEFCE) through phase 4 of the Fund for the Development for Teaching and Learning (FDTL4). Dr Martin Harrison, Mathematics Education Centre, Loughborough University is Project Director.

The HELM project has developed workbooks to support the mathematical education of engineering students. There are 48 workbooks, each approximately 50 pages long, plus a Student Guide and a Tutor Guide. In each, engineering mathematics is simply explained, worked examples are provided and case studies investigated. Full details are available at <http://helm.lboro.ac.uk>

The completed workbooks are available in the centre and all are also available online (for Loughborough University staff and students) via the Mathematics Learning Support Centre web-site, <http://mlsc.lboro.ac.uk/> (see Student Workbooks and Related Resources).

Workbook 1: Basic Algebra

- 1.1 Mathematical Notation and Symbols
- 1.2 Indices
- 1.3 Simplification and Factorisation
- 1.4 Arithmetic of Algebraic Fractions
- 1.5 Formulae and Transposition

Workbook 2: Basic Functions

- 2.1 Basic Concepts of Functions
- 2.2 Graphs of Functions and Parametric Form
- 2.3 One-to-one and Inverse Functions
- 2.4 Characterising Functions
- 2.5 The Straight Line
- 2.6 The Circle
- 2.7 Some Common Engineering Functions

Workbook 3: Equations, Inequalities and Partial Fractions

- 3.1 Solving Linear Equations
- 3.2 Solving Quadratic Equations
- 3.3 Solving Polynomial Equations
- 3.4 Solving Simultaneous Linear Equations
- 3.5 Solving Inequalities
- 3.6 Partial Fractions

Workbook 4: Trigonometry

- 4.1 Right-angled Triangles
- 4.2 Trigonometric Functions
- 4.3 Trigonometric Identities
- 4.4 Applications of Trigonometry to Triangles
- 4.5 Applications of Trigonometry to Waves

Workbook 5: Functions and Modelling

- 5.1 The Modelling Cycle and Functions

- 5.2 Quadratic Functions and Modelling
- 5.3 Oscillating Functions and Modelling
- 5.4 Inverse Square Law Modelling

Workbook 6: Exponential and Logarithmic Functions

- 6.1 The Exponential Function
- 6.2 The Hyperbolic Functions
- 6.3 Logarithms
- 6.4 The Logarithm Function
- 6.5 Modelling Exercises
- 6.6 Log-Linear Graphs

Workbook 7: Matrices

- 7.1 Introduction to Matrices
- 7.2 Matrix Multiplication
- 7.3 Determinants
- 7.4 The Inverse of a Matrix

Workbook 8: Matrix Solution of Equations

- 8.1 Solution by Cramer's Rule
- 8.2 Solution by Inverse Matrix Method
- 8.3 Solution by Gauss Elimination

Workbook 9: Vectors

- 9.1 Basic Concepts of Vectors
- 9.2 Cartesian Components of Vectors
- 9.3 The Scalar Product
- 9.4 The Vector Product
- 9.5 Lines and planes
- 9.6 Vectors and Electrostatics

Workbook 10: Complex Numbers

- 10.1 Complex Arithmetic
- 10.2 Argand Diagrams and the Polar Form
- 10.3 The Exponential Form of a Complex Number
- 10.4 De Moivre's Theorem

Workbook 11: Differentiation

- 11.1 Introducing Differentiation
- 11.2 Using a Table of Derivatives
- 11.3 Higher Derivatives
- 11.4 Differentiating Products and Quotients
- 11.5 The Chain Rule
- 11.6 Parametric Differentiation
- 11.7 Implicit Differentiation

Workbook 12: Applications of Differentiation

- 12.1 Tangents and Normals
- 12.2 Maxima and Minima
- 12.3 The Newton-Raphson Method

- 12.4 Curvature
- 12.5 Differentiation of Vectors
- 12.6 Case Study: Complex Impedance

Workbook 13: Integration

- 13.1 Basic Concepts of Integration
- 13.2 Definite Integrals
- 13.3 The Area Bounded by a Curve
- 13.4 Integration by Parts
- 13.5 Integration by Substitution and using Partial Fractions
- 13.6 Integration of Trigonometric Functions

Workbook 14: Applications of Integration 1

- 14.1 Integration as the Limit of a Sum
- 14.2 The Mean Value and Root-Mean-Square Value
- 14.3 Volumes of Revolution
- 14.4 Lengths of Curves and Surfaces of Revolution

Workbook 15: Applications of Integration 2

- 15.1 Integration of Vectors
- 15.2 Calculating Centres of Mass
- 15.3 Moment of Inertia

Workbook 16: Sequences and Series

- 16.1 Sequences and Series
- 16.2 Infinite Series
- 16.3 The Binomial Series
- 16.4 Power Series
- 16.5 Maclaurin and Taylor Series

Workbook 17: Conics and Polar Coordinates

- 17.1 Conic Sections
- 17.2 Polar Coordinates
- 17.3 Parametric Curves

Workbook 18: Functions of Several Variables

- 18.1 Functions of Several Variables
- 18.2 Partial Derivatives
- 18.3 Stationary Points
- 18.4 Errors and Percentage Change

Workbook 19: Differential Equations

- 19.1 Modelling with Differential Equations
- 19.2 First Order Differential Equations
- 19.3 Second Order Differential Equations
- 19.4 Applications of Differential Equations

Workbook 20: Laplace Transforms

- 20.1 Causal Functions
- 20.2 The Transform and its Inverse
- 20.3 Further Laplace Transforms

20.4 Solving Differential Equations

20.5 The Convolution Theorem

20.6 Transfer Functions

Workbook 21: z-Transforms

21.1 The z-Transform

21.2 Basics of z-Transform Theory

21.3 z-Transforms and Difference Equations

21.4 Engineering Applications of z-Transforms

21.5 Sampled Functions

Workbook 22: Eigenvalues and Eigenvectors

22.1 Basic Concepts

22.2 Applications of Eigenvalues and Eigenvectors

22.3 Repeated Eigenvalues and Symmetric Matrices

22.4 Numerical Determination of Eigenvalues and Eigenvectors

Workbook 23: Fourier Series

23.1 Periodic Functions

23.2 Representing Periodic Functions by Fourier Series

23.3 Even and Odd Functions

23.4 Convergence

23.5 Half-range Series

23.6 The Complex Form

23.7 An Application of Fourier Series

Workbook 24: Fourier Transforms

24.1 The Fourier Transform

24.2 Properties of the Fourier Transform

24.3 Some Special Fourier Transform Pairs

Workbook 25: Partial Differential Equations

25.1 Partial Differential Equations

25.2 Applications of PDEs

25.3 Solution using Separation of Variables

25.4 Solutions using Fourier Series

Workbook 26: Functions of a Complex Variable

26.1 Complex Functions

26.2 Cauchy-Riemann Equations and Conformal Mappings

26.3 Standard Complex Functions

26.4 Basic Complex Integration

26.5 Cauchy's Theorem

26.6 Singularities and Residues

Workbook 27: Multiple Integration

27.1 Introduction to Surface Integrals

27.2 Multiple Integrals over Non-rectangular Regions

27.3 Volume Integrals

27.4 Changing Coordinates

Workbook 28: Differential Vector Calculus

- 28.1 Background to Vector Calculus
- 28.2 Differential Vector Calculus
- 28.3 Orthogonal Curvilinear Coordinates

Workbook 29: Integral Vector Calculus

- 29.1 Line Integrals involving Vectors
- 29.2 Surface and Volume Vector Integrals
- 29.3 Integral Vector Theorems

Workbook 30: Introduction to Numerical Methods

- 30.1 Rounding Error and Conditioning
- 30.2 Gaussian Elimination
- 30.3 LU Decomposition
- 30.4 Matrix Norms
- 30.5 Iterative Methods for Systems of Equations

Workbook 31: Numerical Methods of Approximation

- 31.1 Polynomial Approximations
- 31.2 Numerical Integration
- 31.3 Numerical Differentiation
- 31.4 Nonlinear Equations

Workbook 32: Numerical Initial Value Problems

- 32.1 Initial Value Problems
- 32.2 Linear Multistep Methods
- 32.3 Predictor-Corrector Methods
- 32.4 Parabolic PDEs
- 32.5 Hyperbolic PDEs

Workbook 33: Numerical Boundary Value Problems

- 33.1 Two-Point Boundary Value Problems
- 33.2 Elliptic PDEs

Workbook 34: Modelling Motion

- 34.1 Projectiles
- 34.2 Forces in More Than One Dimension
- 34.3 Resisted Motion

Workbook 35: Sets and Probability

- 35.1 Sets
- 35.2 Elementary Probability
- 35.3 Addition and Multiplication Laws of Probability
- 35.4 Total Probability and Bayes' Theorem

Workbook 36: Descriptive Statistics

- 36.1 Describing Data
- 36.2 Exploring Data

Workbook 37: Discrete Probability Distributions

- 37.1 Discrete Probability Distributions
- 37.2 The Binomial Distribution

- 37.3 The Poisson Distribution
- 37.4 The Hypergeometric Distribution

Workbook 38: Continuous Probability Distributions

- 38.1 Continuous Probability Distributions
- 38.2 The Uniform Distribution
- 38.3 The Exponential Distribution

Workbook 39: The Normal Distribution

- 39.1 The Normal Distribution
- 39.2 The Normal Approximation to the Binomial Distribution
- 39.3 Sums and Differences of Random Variables

Workbook 40: Sampling Distributions and Estimation

- 40.1 Sampling Distributions
- 40.2 Interval Estimation for the Variance

Workbook 41: Hypothesis Testing

- 41.1 Statistical Testing
- 41.2 Tests Concerning a Single Sample
- 41.3 Tests Concerning Two Samples

Workbook 42: Goodness of Fit and Contingency Tables

- 42.1 Goodness of Fit
- 42.2 Contingency Tables

Workbook 43: Regression and Correlation

- 43.1 Regression
- 43.2 Correlation

Workbook 44: Analysis of Variance

- 44.1 One-Way Analysis of Variance
- 44.2 Two-Way Analysis of Variance
- 44.3 Experimental Design

Workbook 45: Non-parametric Statistics

- 45.1 Non-parametric Tests for a Single Sample
- 45.2 Non-parametric Tests for Samples

Workbook 46: Reliability and Quality Control

- 46.1 Reliability
- 46.2 Quality Control

Workbook 47: Mathematics and Physics Miscellany

- 47.1 Dimensional Analysis in Engineering
- 47.2 Mathematical Explorations

Workbook 48: Engineering Case Studies

- 48.1 Engineering Case Studies

Workbook 49: Student's Guide

Workbook 50: Tutor's Guide

5 WORKBOOKS – PRE-SESSIONAL MATERIAL

Two workbooks are available in the centre. These have been prepared by members of staff in the department of Mathematical Sciences and the Mathematics Education Centre at Loughborough University. These workbooks may be sent out to students immediately prior to them starting University. They are available online at <http://mathcentre.ac.uk>

Workbook 1 – An Algebra Refresher

Workbook 2 – A Calculus Refresher

6 TEXTBOOKS

The following textbooks are currently available for use in the centre.

Key to table:

In the first column, the books are given in alphabetical order, by author. 'E' in the second column indicates that the book is suitable for engineering students, 'B' for business, economics and management students, 'M' for mathematics students and 'R' that it is suitable for mathematics education research students. 'K' indicates that the topic of the book is key skills, 'St' that it is statistics, 'S' that the topic of the book is software and 'D' that the book is on dyslexia. The number in the third column indicates how many copies are in stock.

1.	Abeel, S., <i>My Thirteenth Winter – A Memoir</i>	D	1
2.	Abranovic, W.A., <i>Statistical Thinking and Data Analysis Methods for Managers</i>	St	1
3.	Adams, R.A., <i>A Complete Course Calculus, 4th edition</i>	B	1
4.	Adams, R.A., <i>Calculus A Complete Course, 5th edition</i>	M	1
5.	Agresti, A. & Franklin, C., <i>Statistics – The art and science of learning from data</i>	St	1
6.	Allen, B & Johnston-Wilder, S., <i>Mathematics Education – Exploring the culture of learning</i>	K	1
7.	Allenby, R.B.J.T., <i>Linear Algebra</i>	M	1
8.	Allenby, R.B.J.T., <i>Rings, Fields and Groups, 2nd edition</i>	M	1
9.	Anderson, D.R., Sweeney, D.J. & Williams, T.A., <i>Statistics for Business and Economics, 6th edition</i>	B, St	1
10.	Anderson, D.R., Sweeney, D.J. & Williams, T.A., <i>An Introduction to Management Science – Quantitative Approaches to Decision Making, 7th edition</i>	B, St	1
11.	Anderson, J.A.H., <i>Mathematics – The Language Concepts</i>	M	1
12.	Anton, H., <i>Calculus, 4th edition</i>	M	1
13.	Anton, H., <i>Calculus, 5th edition</i>	M	1
14.	Anton, H. & Rorres, C., <i>Elementary Linear Algebra, 8th edition</i>	M	3
15.	Anton, H. & Rorres, C., <i>Elementary Linear Algebra, 7th edition</i>	M	1
16.	Arfken, G.B. & Weber, H.J., <i>Mathematical Methods for Physicists, 4th edition</i>	E	1
17.	Arney, D.C., <i>Exploring Calculus with Derive</i>	S	2
18.	Atkinson, L.V. & Harley, P.J., <i>An Introduction to Numerical Methods with Pascal</i>	E	1
19.	Attenborough, Mary, <i>Engineering Mathematics Exposed</i>	E	4
20.	Ayyub, B.M. & McCuen, R.H., <i>Numerical Methods for Engineers</i>	E	1
21.	Baber, T.D.H., <i>Topics in Modern Mathematics 1</i>	M	1
22.	Bahder, T.B., <i>Mathematica for Scientists And Engineers</i>	E	1
23.	Bajpai, Calus & Fairley, <i>Mathematics For Engineers and Scientists - A Student's Course Book. Vol.1, Revised edition</i>	E	2
24.	Bajpai, A.C., Calus, I.M. & Fairley, J.A., <i>Statistical Methods for Engineers & Scientists</i>	St	1
25.	Bajpai, A.C., Calus, I.M. & Hyslop, J., <i>Ordinary Differential Equations (A programmed course for Students of Science & Technology)</i>	E	1
26.	Bajpai, A.C., Mustoe, L.R. & Walker, D., <i>Engineering Mathematics, 2nd edition</i>	E	3
27.	Bajpai, A.C., Mustoe, L.R. & Walker, D., <i>Advanced Engineering Mathematics</i>	E	1
28.	Bajpai, A.C., Mustoe, L.R. & Walker, D., <i>Advanced Engineering Mathematics, 2nd edition</i>	E	1
29.	Bancroft, Gordon & Fletcher, Mike, <i>Improve Your Maths! Essential</i>	K	1

<i>Maths for Students</i>			
30.	Barnes, J.W., <i>Statistical Analysis for Engineers & Scientists</i>	St	1
31.	Barnes, J.W., 'User's Manual' to accompany <i>Statistical Analysis for Engineers & Scientists</i>	St	1
32.	Barrass, R., <i>Scientists Must Write</i>	K	1
33.	Bartle, R.G., <i>The Elements of Integration and Lebesgue Measure</i>	M	1
34.	Baxandall, P. & Liebeck, H., <i>Vector Calculus</i>	M	1
35.	Bell, J., <i>Doing Your Research Project, 3rd edition</i>	R	1
36.	Berry, J., <i>Introduction To Non-Linear Systems</i>	M	2
37.	Berry, J., <i>The International DERIVE Journal</i>	S	1
38.	Berry, J. & Monaghan, J., <i>Start up with some maths on your TI-92 – A book for teachers by the TTLM group</i>	S	1
39.	Berry, J., Norcliffe, A., Humble S., <i>Introductory Mathematics through Science Applications</i>	M	1
40.	Biran, A. & Breiner, M., <i>Matlab for Engineers</i>	E	1
41.	Bird, J.O. & May, A.J.C., <i>Mathematical Formulae, 3rd edition</i>		1
42.	Bird, J.O. & May, A.J.C., <i>Technician Mathematics 3, 2nd edition</i>	E	1
43.	Bird, J.O. & May, A.J.C., <i>Technician Mathematics 4/5, 2nd edition</i>	E	1
44.	Birkeland, B., <i>Calculus and Algebra with Mathcad 8</i>	M	1
45.	Bluman, A.G., <i>Elementary Statistics, 5th edition</i>	St	1
46.	Bluman, A.G., <i>Statistics – A Brief Version, 2nd edition</i>	St	1
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292.	Peck, J. & Coyle, M., <i>The Student's Guide to Writing</i>	K	1
293.	Piascik Chester, <i>Applied Mathematics for Business & The Social & Natural Sciences</i>	B	1
294.	Piascik Chester, <i>Applied Finite Mathematics for Business & The Social & Natural Sciences</i>	B	1
295.	Piascik Chester, <i>Applied Calculus for Business & The Social & Natural Sciences</i>	B	1
296.	Plumpton, C., Shipton, E. & Perry, R.L., <i>Proof</i>	M	1
297.	Professional Development, <i>Beginners Excel 2003 1</i>	S	1
298.	Professional Development, <i>Beginners Word 2003 - Part 1</i>	S	1
299.	Reece, Gordon, <i>Microcomputer Modelling by Finite Differences</i>	S	1
300.	Reich, D., Passow, E., Emert, J. & Roebuck, K., <i>For All Practical Purposes</i>	K	1
301.	Reid, G. & Fawcett, A., <i>Dyslexia in Context – Research, Policy and Practice</i>	D	1
302.	Resnick, L.B. & Ford, W.W., <i>The Psychology of Mathematics for Instruction</i>	R	1
303.	Rice, John A., <i>Mathematical Statistics and Data Analysis, 2nd edition</i>	M	1
304.	Rice, John A., <i>Matrix Computations & Mathematical Software</i>	S	1
305.	Rich, N., Rose, J. & Gilligan, L., <i>Mastering the TI-92: Explorations from Algebra through Calculus</i>	K	1
306.	Rishel, T.W., <i>Teaching First –A Guide fro New Mathematicians</i>	K	1
307.	Robdera, M.A., <i>A Concise Approach to Mathematical Analysis</i>	M	1
308.	Roberts, Susan L. & Falkenburg, Sharon A., <i>Biomechanics - Problem Solving For Functional Activity</i>	E	1
309.	Roberts, A. Wayne, <i>Elementary Linear Algebra, 2nd edition</i>	M	1
310.	Robinson, P.D., <i>Fourier and Laplace Transforms</i>	E	1
311.	Robson, C., <i>Real World Research, 2nd edition</i>	R	1
312.	Robson, C., <i>Real World Research, 2nd edition</i>	St	1
313.	Rohlf, F.J. & Sokal, R.R., <i>Statistical Tables</i>	St	1
314.	Ross, S., <i>A First Course in Probability, 5th edition</i>	St	1
315.	Saglamer, G., Melezinek, A., Incecik, S., <i>Engineering Education in the Third Millenium</i>	S	1
316.	Salas, Hille & Etgen, <i>Calculus, 6th edition</i>	M	1
317.	Salas, Hille & Etgen, <i>Calculus, 8th edition</i>	M	1
318.	Savage, M.D. & Williams, J. <i>Mechanics in Action</i>	E	4
319.	Scheid, F., <i>Theory & Problems of Numerical Analysis</i>	M	1
320.	Schey, H.M., <i>div grad curl & all that – An Informal Text on Vector Calculus</i>	E	1

321.	Schey, H.M., <i>div grad curl & all that, 2nd edition</i>	M	1
322.	Shell Centre for Math. Ed., Nottingham Uni., <i>Study Skills in Mathematics</i>	K	6
323.	Sernesi, E., <i>Linear Algebra – A geometric approach</i>	M	1
324.	Sharp, H., <i>Finite Functions – An Introduction to Combinatorial Mathematics</i>	M	1
325.	Siegel, A.F. & Morgan, C.J., <i>Statistics and Data Analysis, 2nd edition</i>	St	2
326.	Singh, Kuldip, <i>Engineering Mathematics through Applications</i>	E	1
327.	Smith, Adrian, <i>Making Mathematics Count – The Report of Prof Adrian Smith's Inquiry into Post-14 Maths Education</i>	R	1
328.	Smith, Adrian, <i>Making Mathematics Count – The Report of Prof Adrian Smith's Inquiry into Post-14 Maths Education, February 2004</i>	R	1
329.	Smith, Barry, <i>Longman Key Skills Level 1+2</i>	K	1
330.	Smith, Barry, <i>Longman Key Skills Level 3</i>	K	1
331.	Smith, G., <i>Introductory Mathematics: Algebra and Analysis</i>	M	1
332.	Matthews, P.C., <i>Vector Calculus</i>	M	1
333.	Smith, P. & Smith, R.C., <i>Mechanics, 2nd edition</i>	M	1
334.	Smith, R.T. & Minton, R.B., <i>Calculus, 2nd edition</i>	B	
335.	Smithers, G., <i>Pure Mathematics 3 & 4 for A and AS level</i>	E	
336.	So, Y.F. & Wong, M.S., <i>New Way Additional Mathematics</i>	M	
337.	SMP, <i>Formulae for Advanced Mathematics with Statistical Tables</i>	M	1
338.	SMP, <i>Advanced Mathematics Book 4 – The School Mathematics Project</i>	E	1
339.	Sneddon, I.N., Stark, M. & Ulam, S., <i>The Theory of Lebesgue Measure and Integration</i>	M	1
340.	Spiegel, M.R., <i>Theoretical Mechanics with an introduction to Lagrange's Equations and Hamiltonian Theory</i>	E	1
341.	Spiegel, M.R., <i>Theory and Problems of Complex Variables – with an introduction to Conformal Mapping and its applications</i>	E	1
342.	Spiegel, M.R., <i>Theory and Problems of Real Variables – Lebesgue Measure and Integration with Applications to Fourier Series</i>	E	1
343.	Spiegel, M.R., <i>Calculus of Finite Differences and Difference Equations</i>	M	1
344.	Spiegel, M.R., <i>Theory and Problems of Vector Analysis & An Introduction to Tensor Analysis</i>	M	1
345.	Spiegel, M.R. & Stephens, L.J., <i>Statistics, 3rd edition</i>	St	1
346.	Spivak, M., <i>Calculus</i>	M	1
347.	SPSS <i>Regression Models 11.0</i>	K	1
348.	SPSS <i>Base 11.5 User's Guide</i>	K	1
349.	SPSS <i>Statistical Package for Social Sciences</i>	K	1
350.	Stanton, R.G., <i>Numerical Methods for Science and Engineering</i>	E	1
351.	Stephenson, G., <i>Mathematical Methods for Science Students, 2nd edition</i>	M	1
352.	Stephenson, G. & Radmore, P.M., <i>Advanced Mathematical Methods for Engineering and Science Students</i>	E	1
353.	Stirling, D.S.G., <i>Mathematical Analysis and Proof</i>	M	1
354.	Stroud, K.A., <i>Engineering Mathematics, 3rd edition</i>	E	3
355.	Stroud, K.A., <i>Engineering Mathematics, 4th edition</i>	E	2
356.	Stroud, K.A., <i>Engineering Mathematics, 5th edition</i>	E	1
357.	Stroud, K.A., <i>Further Engineering Mathematics, 3rd edition</i>	E	1
358.	Sullivan III, M., <i>Statistics – Informed Decisions Using Data</i>	St	1
359.	Syngé, J.L. & Griffith, B.A., <i>Principles of Mechanics, 3rd edition</i>	M	1
360.	Szymanski, J.E., <i>Basic Skills for Electronic Engineers</i>	E	1
361.	Tebbutt, P., <i>Basic Maths for Chemists</i>	E	1
362.	Tennant-Smith, J., <i>Mathematics for the Manager</i>	B	1
363.	Thomas, G.B. & Finney, R.L., <i>Calculus & Analytic Geometry, 9th edition</i>	B	1

364.	Thomson, Michael, <i>Dyslexia – Perspectives for Classroom Practitioners</i>	D	1
365.	Todd, J.A., <i>Projective and Analytical Geometry</i>	M	1
366.	Tolley, H. & Thomas, K., <i>How to Pass Numeracy Tests</i>	K	2
367.	Towers, David, <i>Guide to Linear Algebra</i>	M	1
368.	Tropper, A.M., <i>Linear Algebra</i>	E	1
369.	Turner, L.K., <i>Advanced Mathematics - A unified course</i>	M	1
370.	UMTC, <i>UMTC 2003</i>	R	1
371.	University of Sunderland, <i>Mathematics for Engineers</i>	E	2
372.	University of Sunderland, <i>Number & Basic Maths Skills</i>	K	1
373.	van Emden, J., <i>A Handbook of Writing for Engineers, 2nd edition</i>	K	1
374.	Vardeman, S.B., <i>Statistics for Engineering Problem Solving</i>	E	1
375.	Velleman, D.J., <i>How to Prove It</i>	M	1
376.	Vvedensky, D., <i>Partial Differential Equations with Mathematica</i>	S	1
377.	Wade, W.R., <i>An Introduction to Analysis, 2nd edition</i>	M	1
378.	Wade, W.R., <i>An Introduction to Analysis, 3rd edition</i>	M	1
379.	Walpole, R.E., Myers, R.H. & Myers, S.L., <i>Probability and Statistics for Engineers and Scientists, 6th edition</i>	St	1
380.	Waters, D., <i>Quantitative Methods for Business, 2nd edition</i>	B	1
381.	Weir, M.D., Hass, J & Giordano, F.R., <i>Thomas' Calculus, 11th edition</i>	M	1
382.	Weiss, N.A., <i>Elementary Statistics, 4th edition</i>	St	1
383.	Weiss, N.A., <i>Introductory Statistics, 7th edition</i>	St	1
384.	Weltner, K., Grosjean, J., Schuster, P. & Weber, W.J., <i>Mathematics for Engineers and Scientists</i>	E	1
385.	White, J., Yeats, A. & Skipworth, G., <i>Tables for Statisticians</i>	St	1
386.	White, J., Yeats, A. & Skipworth, G., <i>Tables for Statisticians, 3rd edition</i>	St	2
387.	Whitelaw, T.A., <i>Introduction to Abstract Algebra, 3rd edition</i>	M	1
388.	Wild, C.J. & Seber, G.A.F., <i>Chance Encounters – A First Course in Data Analysis and Inference</i>	St	1
389.	Wilkes, M.V., <i>A Short Introduction to Numerical Analysis</i>	E	1
390.	Williams, D., <i>Elements of Mechanics</i>	E	1
391.	Williamson, S.G., <i>Top-down Calculus</i>	E	1
392.	Wilson, R.J., <i>Introduction to Graph Theory, 4th edition</i>	B	2
393.	Wisker, G., <i>The Postgraduate Research Book</i>	R	1
394.	Wolfram Stephen, <i>Mathematica, A System for Doing Mathematics by Computer</i>	S	1
395.	Wonnacott, T.H. & Wonnacott, R.J., <i>Introductory Statistics, 5th edition</i>	St	1
396.	Wunsch, A.D., <i>Complex Variables with Applications – International Edition, 3rd edition</i>	M	1
397.	Wylie, C.R. & Barrett, C., <i>Advanced Engineering Mathematics, 6th edition</i>	E	1

7 ONE-TO-ONE HELP

During term-time, personal tuition and guidance, in the form of one-to-one help from experienced teaching staff, is available in the centre at the following times.

Monday - Thursday 10.00 am - 1.00 pm and 2.00 pm - 5.00 pm

Friday 10.00 am - 1.00 pm and 2.00 pm - 4.00 pm

There is no need to make an appointment. Students may simply turn up. This help is available for all students in the university who need help with basic mathematics. There is no charge to the student.

Specialist statistics help is also available, at advertised times. Typically this is for 6 hours per week. See the centre's web page for up-to-date details (<http://mlsc.lboro.ac.uk>).

During term-time, the centre is open Monday – Thursday from 9.00 am – 5.00 pm and 9.00 am - 4.00 pm on Friday. In addition to the one-to-one help provided, it can be used as a place for quiet study, as a resource base and for access to networked PCs. A receptionist is on duty throughout the opening hours.

Over the special examination period, the centre's opening hours are the same as term-time. Experienced teaching staff are available from 2.00 pm – 4.00 pm each afternoon. Details of dates can be obtained from <http://mlsc.lboro.ac.uk>.



8 SUPPORT FOR STUDENTS WITH ADDITIONAL NEEDS

The centre employs a mathematics tutor, who specialises in supporting students with additional needs, particularly dyslexia or dyscalculia. Due to demand, she is also assisted for a few hours per week by four other tutors, one based in the University's School of Art and Design. Students registered with the University's Disabilities and Additional Needs Service may receive individual support for up to an hour a week. Registered students, from all disciplines, who require to study mathematics or statistics as part of their degree, may benefit from this support.

In partnership with other local universities, a web-site (<http://ddig.lboro.ac.uk>) has been developed. The aim is to encourage the sharing of mathematics resources for dyslexic and dyscalculic students among teaching staff in Higher Education. Workshops are run to disseminate good practice, with regular contributions from the centre's tutor and members of the English Language Study Unit at Loughborough University.

Students with additional needs, other than dyslexia and dyscalculia, are also given extra support. Working closely with DANS (the disability and additional needs service) mathematics tuition is provided as required. Blind/partially sighted students have benefited from one-to-one tuition.

9 ENGINEERING STUDENT SUPPORT DESK

The centre houses the Engineering Student Support Desk.

The support desk has material directly relevant to engineering students including many study skills leaflets and some leaflets on basic mechanics (see section 3.6 of this catalogue). The engineering student support web-site, <http://engstudent.lboro.ac.uk/> also provides access to a diverse range of on-line resources for engineering students.

In the academic year 2004-5 an Apple Mac computer, a video recorder and a digital camera were purchased - for student use. The Apple Mac computer is on the engineering student support desk and has video editing software. Instruction booklets are provided. A booking system operates. Full details are available in the centre.

10 LUNCHTIME REFRESHER COURSES

The centre runs a programme of lunchtime short courses to give any undergraduate the opportunity to revise, practice and develop basic mathematical/ statistical skills which will be useful in their mainstream studies. They are primarily confidence building sessions and there is the opportunity to ask for help.

Topics covered have included algebra, functions, calculus and basic statistics. All courses are free of charge and all course materials are provided.

Full details of current courses can be obtained from the centre's web-site (<http://mlsc.lboro.ac.uk>)

11 DIAGNOSTIC TESTS

Since 1996 the Mathematics Learning Support Centre has offered a diagnostic mathematics testing service. There are 3 types of tests available.

- Paper based tests
- Web-based tests
- Tests delivered via the CAL Launcher, Loughborough University

All the tests have multiple choice questions and use automated marking. The tests accessed via the CAL Launcher are suitable for students' personal use. They provide immediate feedback directly to the student. For the paper-based and web-based tests, marks are available to departments, in spreadsheet format.

Any basic maths topics can be tested. Hundreds of questions are available and, typically, students are tested on number, algebra, functions, linear relationships, logarithms and exponentials, trigonometry, calculus, vectors, matrices and determinants

Paper-based tests

After consultation with departments, the centre can provide a question paper (with answers) relevant to the needs of students in that department. All basic mathematics topics are available.

Tests have already been developed for students in the following departments/faculties:

- Mathematics and Physics
- Human Sciences
- All Engineering departments, IPTME and Science and Engineering Foundation courses
- Chemistry
- Economics and the Business School

These tests are marked by Optical Mark Reader, at the Computer Assisted Assessment Unit, and results in spreadsheet format emailed to departments.

Web-based tests

Many diagnostic tests on a variety of basic mathematical topics are accessible from <http://mathcentre.ac.uk>

Additionally, four tests are available. The topics are:

- number
- algebra
- functions
- linear relationships

The tests are marked instantly and results are provided to students at the end of the test. Feedback, as links to appropriate on-line help leaflets, is also provided. Departments can conveniently receive their students' results through a web browser.

12 WEB-BASED MATERIAL

The Mathematics Learning Support Centre (<http://mlsc.lboro.ac.uk>)

Up to date information about the centre can be found on its web pages. In particular, details of centre staff, location, opening times, facilities, one-to-one help, diagnostic tests, lunchtime short courses and the Engineering Student Support Desk can be found there.

Business Maths Foundations/ Economics Maths Foundations

(<http://learn.lboro.ac.uk/mlsc/bs>, <http://learn.lboro.ac.uk/mlsc/ec>)

Students in the Economics Department and the Business School can take advantage of our web-sites designed specifically with their mathematical needs in mind. These web-sites contain the business maths foundations leaflets, which can be printed out. Also an interactive version of the leaflets is available. Paper-based and web-based diagnostic tests suitable for students in these two departments can be accessed.

Engineering Student Support (<http://engstudent.lboro.ac.uk/>)

This web-site provides access to a diverse range of on-line resources for engineering students. Amongst other things, these include study skills leaflets, information about study skills workshops, information on accessing the Learn server and the CAL launcher, links to resources in mechanics and an electronic version of the mechanics leaflets in the centre.

Dyscalculia & Dyslexia Interest Group (<http://ddig.lboro.ac.uk>)

In partnership with staff at other local universities, Clare Trott, the centre's specialist tutor in helping dyscalculic and dyslexic students, has formed this interest group and the web-site has been developed. The aim is to encourage the sharing of mathematics resources for dyslexic and dyscalculic students among teaching staff in Higher Education. The web-site gives details of workshops, members of the group, contact information and is a resource base for material.

The United Kingdom Mathematics Learning Support Centre

(<http://mathcentre.ac.uk>)

Members of staff in the Mathematics Education Centre, and partner universities, worked on a project to make available, to the Higher Education community, many of the paper-based resources in this and other centres. The engineering first aid kit leaflets, business maths foundation leaflets and algebra and calculus refresher workbooks are just some of the centre's resources which have been put on the mathcentre web-site. In addition the website contains online videos featuring experienced teachers who explain essential mathematical topics and provide plenty of fully-worked examples. The tutors are backed-up with diagnostic and practice exercises.

Helping Engineers Learn Mathematics (HELM) (<http://helm.lboro.ac.uk>)

The externally funded HELM project, managed by staff in the Mathematics Education Centre, has developed workbooks to support the mathematical education of engineering students. There are 48 workbooks, each approximately 50 pages long. In each, engineering mathematics is simply explained, worked examples are provided and case studies investigated. All workbooks are available online, for staff and students at Loughborough University, via the MLSC web-site, <http://mlsc.lboro.ac.uk>.

13 VIDEOS

The centre has a plasma screen television and video player available for those students who may wish to watch the following mathematically related videos.

13.1 A Level Mathematics

The complete core of A level mathematics is available on video for students wishing to revise, or fill-in gaps in their knowledge. The content includes:

- | | | |
|--------|---|------------|
| Tape 1 | Revision of basic algebra, rational indices
Algebra of polynomials and rational functions
The remainder theorem
Partial fractions
Quadratic functions | |
| Tape 2 | Series and Sigma notation
Inequalities
The binomial expansion
Plane Cartesian coordinates & curve sketching | |
| Tape 3 | Parametric forms
Trigonometry
Applications of trigonometry to 2 & 3 D problems | |
| Tape 4 | Vectors
Functions and inverse functions, symmetries | |
| Tape 5 | Differentiation; rules and standard forms | |
| Tape 6 | Further techniques of differentiation
Applications | |
| Tape 7 | Integration | (2 copies) |

13.2 GCSE Mathematics

Algebra

- | | | |
|--------|--|------------|
| Tape 1 | Number patterns
Rules for forming sequences
Drawing and interpreting simple (linear) mappings
Drawing a graph of a quadratic function.
Solving simple linear equations in one variable | |
| Tape 2 | Rules of indices for positive integer values
Solving simultaneous linear equations
Manipulating algebraic expressions
Inequalities | (2 copies) |
| Tape 3 | Rules of indices for negative and fractional values
Solving quadratic equations by factorisation
Solving quadratic equations by “completing the square”
Use of “the formula” to solve quadratic equations | |

Handling Data

- | | | |
|--------|--------------------|--|
| Tape 1 | Simple probability | |
|--------|--------------------|--|

Mean, mode, median
The Normal Distribution

Shape and Space

Tape 1 Volumes of cylinders, cones and spheres
Trigonometry
Pythagoras' theorem
Matrices and transformations

Number

Tape 1 Significant figures and decimal places
Using negative numbers
Converting fractions to decimals
Converting fractions to percentages
Tape 2 The Lowest Common Multiple (L.C.M.)
The calculator – memory and brackets
Recognising that measurement is approximate
Calculating with fractions
Tape 3 Rational and irrational numbers
Accuracy of recorded measurements

13.3 Basic Maths for 7-10s

Tape 1 Counting to 10, the 2,3 and 10 times tables
Tape 2 Adding and subtracting larger numbers, the 4 - 9 times tables

13.4 Number & Algebra in Key Stage 3 (11-14s)

Tape 1 Ordering numbers, fractions, approximation, indices
Tape 2 Ratios, number patterns, sequences
Tape 3 Coordinates, linear equations, simultaneous equations

13.5 Mathematical Modelling – Populations

The concept of mathematical modelling is introduced by applying it to the prediction of the growth of stocks in the North Sea.

13.6 Maths in a Box

Tape 1 Moving bodies with constant mass – Deceleration with parachutes
Tape 2 Moving bodies with constant mass – Acceleration with planes
Tape 3 Moving bodies with constant mass – Bows and arrows
Tape 4 Modelling with vectors - Kites
Tape 5 Moving bodies with variable mass - Impulse
Tape 6 Moments – Doors, Heart Valves and Flic-Flacs
Tape 7 Moving bodies with variable mass – Rockets
Tape 8 Modelling with vectors – Angular momentum
Tape 9 Moments – Circular motion
Tape 10 Modelling forces – Sliding and toppling

14 CALCULATORS / OVERHEAD PROJECTOR

The centre has the following graphics calculators. Instruction manuals are available for each calculator. The calculators may be borrowed by students to use while they work in the centre.

Texas <i>TI-81</i>	(2 available)
Casio <i>fx-7700G</i>	(1 available)
Texas <i>TI-92 II</i>	(1 available)

In addition there are several basic scientific calculators, with instruction leaflets, available for student use. These are

Aurora <i>SC582</i>	(1 available)
Casio <i>fx-83MS</i>	(1 available)
Casio <i>fx-85MS</i>	(8 available)
Casio <i>fx-115MS</i>	(2 available)
Casio <i>fx-991ES</i>	(1 available)
Sharp <i>EL-531W</i>	(1 available)
Texas <i>TI-30 ECO RS</i>	(1 available)
Texet <i>aLBΣRT</i>	(1 available)
RNIB Talking Scientific Calculator <i>LC107</i>	

University regulations now stipulate that only calculators approved by the university may be used in examinations. The list of approved calculators may be found at <http://www.lboro.ac.uk/admin/ar/student/exams/calculators/>

The centre also has a wall-mounted view screen and an overhead projector (OHP). These can be used with the Texas *TI-92 II* calculator and the calculator display can be projected onto the OHP screen.

15 COMPUTERS AND COMPUTER SOFTWARE

Networked PCs for students

There are 5 networked PCs, with Windows XP Pro operating system, available for student use. The following software is available on them:

- Microsoft Office 2003
- Maple v 10
- TeXnic Center (Latex)
- SPSS v 13.00
- Stat Graphics 5
- Matlab v 7.04 (A single floating licence has been procured).
- GCE A level Mathematics - provides hundreds of sample questions – all with model solutions
- Mental Arithmetic - a package to practise mental arithmetic skills.
- The Numbers Disc - a multimedia approach to teaching numeracy.

Networked PC for staff

There is one networked PC, with Windows 2000 operating system, suitable for staff use. The following software is available on it:

- Microsoft Office 2003
- Maple v 10
- Perception v 3

Other software packages, as detailed in section 14, are also available. These have single user licences and are available upon request.

In order that students can listen to audio files on the PCs, the centre has a set of speakers and a set of headphones.

16 LEAFLETS AND POSTERS

A range of advertising leaflets and posters can be obtained from the centre.

Leaflets

- The Mathematics Learning Support Centre
- Facts and Formulas
- More Facts and Formulas
- Mechanics Facts and Formulas
- Open Day information
- Information for Parents
- Information for Prospective Students

Posters, etc.

Posters, bookmarks and information cards advertising the centre