Interactive Computing with BASIC

A First Course

Donald M. Monro

"... this book is a gem ... Mr Monro writes with a light easy style and deserves success.'

The Mathematical Gazette

An introduction to programming in BASIC which emphasizes the numerical and practical aspects of computing. Presenting the computer as an extension of the slide rule, the author rapidly has the student operating his own programme.

Paper £.2.40

Computing with FORTRAN

A Practical Course

Donald M. Monro

Increasing numbers of students are learning FORTRAN after a grounding in BASIC. This book complements the author's successful Interactive Computing with BASIC (above), although the text can also be readily used by students learning FORTRAN as their first programming language. Numerous problems are provided throughout.

Publication June Paper £3.00 approx

Introductory Vector Analysis

C. D. Collinson

'The easier portions will prove valuable to first-year (and possibly second-year) science and engineering students, while the more difficult parts will be of interest to the more advanced students or even the lecturer.'

The Mathematical Gazette

A basic course in vector analysis suitable for applied mathematics, science and engineering students.

Cloth £5.50 Paper £2.50



Edward Arnold

25 Hill Street, London WIX 8LL



BELL

Senior School Mathematics

M. KEEPING £2.45

This new book provides a basis for a one year course for pupils in the 15-18 age range by introducing branches of mathematics which are new to school mathematics and in developing some familiar topics. Amongst the subjects covered are chapters on probability, coastal navigation, the use of calculating machines, flow chart programming and the use of mathematics in industry. Pupils studying for the proposed Certificate of Extended Education could find the subjects covered useful. "... the book will provide material for at least a one-year course for the pupil who is sufficiently interested to attempt all the work suggested. The choice of topics is imaginative and interesting." "The Mathematical Gazette."

Constructive Mathematics

MARGARET HAYMAN

£1.35 Teacher's Book £1.80 net

This new book is based on a course of work taught to a non-exam 5th form in a comprehensive school. The course formed the basis for a mode III C.S.E. syllabus and would be equally suitable for a mode III 16+ examination if introduced by the Schools Council. The subjects dealt with are essentially practical—critical path analysis, flow diagrams, statistics of various kinds, graphical work, surveying, etc., and relative mathematics of a simple concrete kind has been developed from these. A teacher's guide with suggestions for alternative approaches to the work and hints and answers is available.

Computer Programming in the Classroom

B. J. JACKSON £1.60

The volume uses the City and Guilds Mnemonic Code which is widely used in secondary schools and colleges for introductory work. Each chapter contains numerous exercises for the student and the book is illustrated throughout with Flow Charts and Programmes.

An Introduction to BASIC

M. R. EAGLE 43.75

This book is intended as a first introduction to programming using the BASIC language. It aims to foster an appreciation of the computer by examples chosen to give some idea of the variety of possible uses. Enthusiasm for the power of computers is balanced by an emphasis on the responsibility of the programmer to use them, as a tool, correctly in order to avoid misleading results. Most sixth formers and college students should find the book within their grasp.

An Introduction to Algol

F. R. WATSON

"This is a good and careful introduction to programming through the medium of Algol, omitting practically all mathematical ideas not encountered by O level. It is written for sixth formers and students in Colleges of Education and Further Education who are following a course in computer studies which includes programming." "The Mathematical Gazette."

Multiple Integrals

G. COHEN

£2.30

£2.50

Intended for students of mathematics at tertiary level. The author has attempted to steer around the complexities of the subject and has thus produced a clear, illustrative text suitable for the average student.

G. Bell & Sons Ltd., Portugal St., London WC2A 211L

oxford educational

'All the books carry a common hallmark of high teaching efficiency ... It is not necessary to detail the contents, for they include every topic likely to be required and appropriate selection should satisfy most needs. This is an admirably thought out course likely to take a place among the leaders for years to come.' Times Educational Supplement

Oxford Comprehensive Mathematics

'Those who claim that it is impossible to write a satisfactory textbook for the whole ability range should study these...'

Mathematics in School

Oxford Comprehensive Mathematics

here is real flexibility in a modern secondary mathematics course

Oxford Comprehensive Mathematics

Books 1 and 2 designed specifically for mixed ability classes

Oxford Comprehensive Mathematics

Books 3, 4, and 5 provide two parallel courses. Green covers lead to C.S.E. and blue to G.C.E.

Books 1 and 2 Books 3 and 4 C.S.E. and G.C.E. Book 5 C.S.E. and G.C.E. due April 1977 each £1.50 each £1.75

each about £1.75

There are Teacher's Books to accompany each Pupils' Book and Workbooks to accompany Books 1, 2, and 3 and 4 C.S.E.



Provide the whole class with books and save money with O.U.P. Save on a Set. Books 1, 2, 3 C.S.E. and 3 G.C.E. are available in packs of 15 copies at a saving of around 10 per cent.

Book 1 Pack and Book 2 Pack Book 3 C.S.E. Pack and Book 3 G.C.E. Pack each £19.95 each £23.75

Please send me on inspection a selection from Oxford Comprehensive Mathematics and/or a detailed prospectus				
Name				
Address	•			



Oxford University Press Educational Division Walton Street Oxford OX2 6DP

Teachers?

are you pointing your students in the right direction?

Look at the number of advertisements for jobs that require a knowledge of some of the following

Computing · Statistics · Mathematics Operations Research · Data Processing Systems Analysis · Numerical Analysis

They can study all of these subjects on either of our four-year sandwich courses:—

B.Sc. Honours Mathematics

B.Sc. Honours Computer Science

Transfer between the courses is possible after an initial introductory period.

We have an excellent record for educating students who are needed—our course material and industrial training places are carefully chosen with job prospects in mind.

We also have H.N.D. courses in Mathematics and Computer Studies for students with one 'A' level. (By the way 'A' level Mathematics is not a requirement for the Computing courses.)

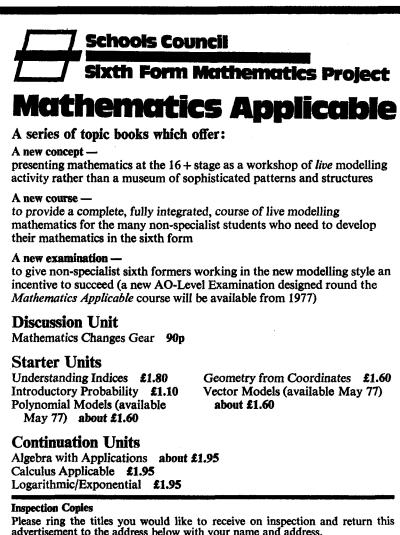
For further details contact

(Mrs) Shirley Gillanders
School of Mathematics, Computing and Statistics



Leicester Polytechnic

PO Box 143 LEICESTER LEI 9BH Leicester (0533) 50181 Extension 2619 (iv)



Inspection Copies Please ring the titles you would like to receive on inspection and return this advertisement to the address below with your name and address. Name School Address



Heinemann Educational Books

48 Charles Street, London W1X 8AH

Modular Mathematics

Modular Mathematics Organization

A new common course for 11 to 14 year olds developed by the Scottish Education Department

- * Modular—the course comprises 36 Modules, each developing a basic topic
- * Individualised Learning—pupils work independently at their own pace
- * Mixed Ability-the material is colour coded:



- * Integrated Material—each module comprises WORK-CARDS, WORKSHEETS and APPARATUS
- * Rigorously Evaluated—tested and modified in 27 secondary schools for three years, and now used successfully throughout Britain and the Commonwealth

For more information write (using the form below) or telephone: Graham Taylor, Heinemann Educational Books Ltd., 48 Charles Street, London W1X 8AH (01 493 9103)

(Name, Address, and telephone number)	Modular Mathematics
	Send me a prospectus and free specimen material
	Contact me to arrange a visit by your representative with a set of the material
	Supply me with details of forthcoming seminars on the
	scheme or schools which I can visit to see the scheme in action



Heinemann Educational Books

48 Charles Street, London WIX 8AH

ADVANCED MATHEMATICS

A Unified Course

A course which covers, with a few minor exceptions, the work of all the new single-subject A-level syllabuses. It combines a direct, clear and unified approach with flexibility in use, since the chapters can be treated as separate sections for teaching purposes. Considerable care has been taken over the selection and arrangement of the exercises at the end of each chapter.

Book One by L K Turner

Contents: Prologue; 1 Functions and their graphs; 2 Power functions and logarithmic functions; 3 Rates of change: differentiation; 4 Areas: integration; 5 Trigonometric functions; 6 Sequences and series; 7 Probability and statistics; 8 Introduction to vectors and mechanics; Appendix; Answers to exercises. (320pp)

Book Two by L K Turner, F J Budden and D Knighton

Contents: 9 Further calculus; 10 Complex numbers; 11 Further vectors and mechanics; 12 Probability distribution and further statistics; 13 Matrices, determinants, and linear algebra; 14 Introduction to algebraic structures; Epilogue; Answers. (562pp)

The transitional Book T — an introduction to vectors and mechanics — has been incorporated into the new edition of Book One, but will continue to be available separately while stocks last.

Advanced Mathematics: A Unified Course		
Please send me an inspection copy of: ☐ Book One £2.95	□ Book Two £3	.95
Name		
Send this form to Mrs G Statham (Ref C/7), Long W211 Longman House, Burnt Mill, Harlow, Essex Tel: Harlow 26721, ext. 307.	man Group Lim	



MATHEMATICS FOR SCIENCE AND TECHNOLOGY

SETS: NAIVE, AXIOMATIC AND APPLIED

D. VAN DALEN, H.C. DOETS and H. de SWART, Mathematisch Institut, Der Rijksuniversiteit te Utrecht.

Covers a part of set theory basic to present day mathematics and ranges in level from first to third undergraduate level, making it (amongst other things) a compendium for the working and in particular the teaching mathematician. Starts from first principles and contains a number of topics illustrating the usefulness of set theory in everyday mathematics.

ISBN 0 08 021166 6 300pp approx 73 illus US\$17.50 £8.75 approx Spring 1977

International Series in Pure and Applied Mathematics Volume 106

ENCYCLOPAEDIC DICTIONARY OF MATHEMATICS FOR ENGINEERS AND APPLIED SCIENTISTS

I.N. SNEDDON, Professor of Mathematics, Glasgow University

Over 2000 contributions by more than 150 outstanding authors covering terms used in mathematics, mathematical engineering, physics and related fields with SI units employed throughout.

"... beautifully designed and printed in conformity with the high standards invariably found in publications from Pergamon Press. . .there is no doubt that the book will provide a most useful reference work".

NEW SCIENTIST

ISBN 0 08 021149 6 qq008 400 illus US\$100.00 £50.00 1976

THE PRINCIPLES AND TECHNIQUES OF ENGINEERING **ESTIMATING**

G. CALDER, Stourbridge, England

An up-to-date and comprehensive account which includes applications of computers. Containing numerous examples, it is an essential textbook for students of estimating and a valuable reference tool for practising engineers.

ISBN 0 08 019704 3 188pp 20 illus ISBN 0 08 019703 5 flexicover

US\$12.00 £6.00 US\$6.00 £3.00

1976

MATHEMATICS FOR ELECTRONIC TECHNOLOGY

2nd edition

D.P. HOWSON, University of Bradford

The second edition of 'Mathematics for Electrical Circuit Albegra'. The new title reflects the thorough revision and expansion of the original work to include vector algebra, the complex variable and numerical analysis.

ISBN 0 08 018219 4 280pp

US\$15.50 £7.75 100 illus

ISBN 0 08 018218 6 flexicover

US\$9.50 £4.75



PERGAMON PRESS

Headington Hill Hall, Oxford OX3 0BW, England Fairview Park, Elmsford, New York 10523, USA

348

UNIVERSITY OF CAMBRIDGE

Board of Extra-mural Studies in co-operation with the Faculty of Mathematics

COLLOQUIUM FOR TEACHERS OF MATHEMATICS

"Mathematics from VIth Form to University"

25-29 July 1977

to be held in Trinity Hall, Cambridge

For further details please write to:

The Director, Board of Extra-mural Studies, Madingley Hall, Madingley, Cambridge CB3 8AQ

THE MATHEMATICAL GAZETTE

Editor:

Mr. D. A. Quadling, 12 Archway Court, Barton Road, Cambridge CB3 9LW,

Assistant Editors:

Dr. J. A. Anderson, Department of Mathematics, The University, Nottingham NG7 2RD.

Mr. J. W. Hersee, 6 Cherry Orchard, Hollybush Hill, Stoke Poges, Bucks. SL2 4PY.

Material for publication, and books for review, should be sent to Mr. Quadling. Authors will be notified as soon as possible whether or not their contributions can be accepted; if an *immediate* acknowledgement is required, they should send an addressed, reply-paid postcard with their contribution.

Business and advertising correspondence should be addressed to the Executive Secretary at the Leicester office of the Association.

© 1977 THE MATHEMATICAL ASSOCIATION

CONTENTS

An application of catastrophe theory. Anthony Hughes	1
A geometric slant on determinants. Rob Webb	20
The pigeonhole principle. Richard Walker	25
Patch-determined tilings. B. Grünbaum and G. C. Shephard	31
Classifying triangles and quadrilaterals. S. A. Robertson	38
Graphs and Markov chains. J. V. Greenman	49
The adventitious angles problem: a progress report	55
Notes 61. 1–4	58
Correspondence	64
Reviews	65

THE MATHEMATICAL ASSOCIATION

The fundamental aim of the Mathematical Association is to promote good methods of mathematical teaching. A member receives each issue of the *Mathematical Gazette* and/or *Mathematics in School* (according to the class of membership chosen), together with any Newsletters and Reports published during the year. Intending members should ask the Executive Secretary for information and application forms.

The address of the Association and of the Honorary Treasurer and Secretaries is 259 London Road, Leicester LE2 3BE. Telephone (0533) 703 877.

Change of address should be notified to the Membership Secretary at the Leicester office. If copies of the Association's periodicals fail to reach a member for lack of such notification, duplicate copies can be supplied only at the published price. If change of address is the result of a change of appointment, the Membership Secretary will be glad to be informed.

Subscriptions should be paid to the Hon. Treasurer.

Correspondence relating to the Teaching Committee should be addressed to Miss A. J. Wells, 18 Farmway Close, Hove, East Sussex BN3 8AE.

The Library is housed in the University Library, Leicester.

Correspondence for the Problem Bureau should be addressed to Mr. R. H. Cobb, 9 The Lees, Malvern, Worcs. WR143HT.

ISSN 0025-5572

PRINTED IN GREAT BRITAIN
AT THE SPOTTISWOODE BALLANTYNE PRESS
BY WILLIAM CLOWES AND SONS LIMITED
LONDON, COLCHESTER AND BECCLES