

# unit guide

MATHEMATICS 1

CMS-S-MA1

Faculty of Business,  
Computing and Information  
Management

2008-2009

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## 1. UNIT DETAILS

<b>Unit Title:</b>	Mathematics 1
<b>Unit Level:</b>	S
<b>Unit Reference Number:</b>	CMS-S-MA1
<b>Credit Value:</b>	1
<b>Student Study Hours:</b>	150
<b>Contact Hours:</b>	52
<b>Private Study Hours:</b>	98
<b>Pre-requisite Learning (If applicable):</b>	None
<b>Co-requisite Units (If applicable):</b>	None
<b>Course(s):</b>	BSc (Hons) Computing Studies Foundation Year BSc (Hons) Internet Computing Foundation Year
<b>Year and Semester</b>	2008-2009 semester 1
<b>Unit Coordinator:</b>	Dr Sylvia Jennings
<b>UC Contact Details (Tel, Email, Room)</b>	Tel: 020 7815 7458, room L4
<b>Teaching Team &amp; Contact Details (If applicable):</b>	Dr Titus Olaniyi, room N201 Tel: 020 7815 6943
<b>Subject Area:</b>	Mathematics, Statistics & Foundation Studies
<b>Summary of Assessment Method:</b>	Coursework 100% (4 in-class phase tests 60%, workbook of completed exercises 40%)

## 2. SHORT DESCRIPTION

Students entering the foundation year often have an incomplete and sketchy knowledge of basic mathematics. There is a need therefore to review some mathematical basics and introduce the mathematical tools and skills that will be useful in developing a confident approach to the use of mathematics in computing and problem-solving.

## 3. AIMS OF THE UNIT

The aims of this unit are to provide students with basic mathematical skills and to foster within them the confidence and independence of thought to enable them to apply mathematics in a variety of problem domains. An understanding of the language of mathematics is essential to most scientific disciplines. This unit requires only limited background knowledge of mathematics and will provide grounding in the basic skills and techniques.

## 4. LEARNING OUTCOMES

### 4.1 Knowledge and Understanding

Students should:

- Be numerate in the sense of understanding negative numbers, rounding, fractions, decimals, percentages, scientific notation

- Understand the simple laws of algebra

#### 4.2 Intellectual Skills

Students should be able to:

- Formulate and solve simple linear and quadratic equations
- Be able to calculate various averages and standard deviation

#### 4.3 Practical Skills

Students should be able to:

- Use a calculator with confidence and competence

#### 4.4 Transferable Skills

Students should be able to:

demonstrate how data may be represented by tables and charts

## 5. ASSESSMENT OF THE UNIT

100% coursework

There will be no end of unit examination and assessment will be by coursework only.

This will comprise:

- |      |   |             |
|------|---|-------------|
| (i)  | 4 in-class tests, of which the best 3 will count.<br>Each test contributes 20% to the overall mark.             | 60%         |
| (ii) | 10 in-class or computer based assessments of completed tutorial work over 10 weeks,<br>marked on a scale 0 - 4. | 40%         |
|      | <b>Total</b>  | <b>100%</b> |

A pass for the unit is normally awarded on an overall mark of 40% or above.

I will either give out exercise sheets each week or direct you to exercises in your book. Try all of these. Mathematics is not a spectator sport - you must do it in order to learn it! **You are expected to bring the relevant book/handouts to the lectures and tutorials**

## 6. FEEDBACK

Test results will normally be given back the following week.

## 7. INTRODUCTION TO STUDYING THE UNIT

### 7.1 Overview of the Main Content

Number

1 Arithmetic Operations

- Sequence of arithmetic operations, factors and multiples, highest common factor
- 2 Fractions  
Reducing a fraction to its lowest terms, addition, subtraction, multiplication, division
  - 3 Decimals  
Addition, subtraction, multiplication, division, fraction to decimal, decimal to fraction
  - 4 Percentages  
Percentage of a quantity, profit and loss, discount, percentage change
  - 5 Ratio & Proportion  
Proportional parts, direct proportion, inverse proportion, foreign exchange
  - 6 Directed numbers  
Positive, negative, addition of directed numbers, subtraction of directed numbers

### Algebra

- 1 Basic Algebra  
Use of symbols, substitution, powers, addition, multiplication, division, brackets
- 2 Factorisation  
Factoring, quadratic expressions
- 3 Equations  
Solving simple equations, construction of simple equations
- 4 Simultaneous equations  
Elimination method in solving simultaneous equations, problems involving simultaneous equations
- 5 Sequences and series  
Sequences, arithmetic progressions, geometric progressions, infinite sequences, series and sigma notation, arithmetic series, geometric series

## 7.2 Overview of Types of Classes

The entire class is taken for a 2-hour formal lecture and will be directed towards problems and exercises. This is followed by a 2-hour tutorial for each tutorial group. During the tutorial, students will be able to get more individual help with material covered in the preceding lecture. The tutor will also inspect the student's workbook on a weekly basis and award him/her a mark (between 0 and 4) based on the completion of exercises.

## 7.3 Importance of Student Self-Managed Learning Time

The School expects all students to spend 6 hours every week in private study. During this time the student must learn the material taught in the lectures/tutorials and complete the set exercises in a workbook kept specifically for this unit. The work must be kept in a neat and legible manner and will *be inspected and marked every week*. Although it is expected that all

set exercises will be attempted, usually only one or two unspecified exercises will be assessed (marked from 0 to 4) by the tutor. These exercises must be marked in the designated tutorial slot and may not be submitted for marking at a later stage.

## 8. THE PROGRAMME OF TEACHING, LEARNING AND ASSESSMENT

### 8.1 Unit Organisation and Structure

Length of unit: 1 semester (or 150 study hours)

Date unit starts: w/b 22<sup>nd</sup> September 2008.

Date unit ends: w/e 9<sup>th</sup> January 2009.

Time spent each week in full class lecture: 2 hours

Time spent each week in tutorial: 2 hours

Time spent each week in private study: 6 hours at least

### 8.2 Weekly plan of topics

(C&D refers to the course text by Croft & Davison. See below.)

WEEK	TOPIC	REFERENCE	ASSESSMENT
1	Arithmetic of whole numbers	C&D1	
2	Fractions	C&D2, Rowe1	
3	Decimal Fractions	C&D3, Rowe2	
4	Percentage and Ratio	C&D5, Rowe3	
5	Algebra	C&D6, Rowe4	Test 1
6	Indices	C&D7, Rowe5	
7	Simplifying algebraic expressions	C&D10, 11.1	
8	Factorisation	C&D11.2, 11.3	Test 2
9	Algebraic Fractions	C&D12	
10	Transposing Formulae Solving Linear Equations Simultaneous Linear Equations	C&D13 C&D14.1, Rowe8 C&D14.2, Rowe9	
11	Solving Quadratic Equations	C&D14.3, Rowe10	Test 3
12	Functions	C&D16	
13	Functions	C&D16	Test 4

## 9. LEARNING RESOURCES

### 9.1 Core Materials

(\*\* means set book)

\*\*Croft, A. & Davison, R. **Foundation Maths**, 4<sup>th</sup> ed., Prentice Hall, £31.99

## 9.2 Optional Materials

(\* means highly recommended) Library call numbers are given in ( ). There are numerous other suitable books at the call numbers of the following books.

\*Bancroft, G. & Fletcher, M. **Improve Your Maths!** Addison Wesley 1998, £33.99

\* Rowe, Nick. **Refresher in Basic Mathematics**, Thomson Learning, £9.99  
ISBN 0-8264-5829-7

### *Background reading*

Page, A. Berry, J. & Hampson H. **Mathematics a second start**. Horwood, £15

Abbott, P. **Teach yourself Algebra**. (Not in library).

Bird, J. O. & May, A. J. C. **Technician Mathematics 3**. 2nd ed., Longman, London, 1994. (510.246)

Booth, D.J. **Foundation Mathematics**. 2nd ed., Addison-Wesley, 1994

Graham, L. & Sargent, D. **Count down to Mathematics ,Vol 1**. Addison-Wesley, 1981. (510)

\*Greer, A. **A Complete GCSE Mathematics: Higher Course**. 3rd ed., Stanley Thornes, London, 1992. (510)

## Videos

There are also videos in the library. The OU videos often have accompanying texts.

M101: Mathematics, a Foundation Course. **Open University, 1978/1990**. (510).

Two videos accompanying the Rowe book at (510).

## Web sites

[www.gcse.com](http://www.gcse.com)

[www.mathcentre.co.uk](http://www.mathcentre.co.uk)

[www.bbc.co.uk/learning](http://www.bbc.co.uk/learning)

## CD-ROMS

Refresher in Basic Maths on the Don't Panic disc, LSBU publication accompanying the Rowe book.

GCSE Bitesize Revision Complete Guide Maths, BBC publication

## NOTES

### Communication

Communication with students will be by lecture announcements, notice board and/or e-mail. Make sure you make friends with some other members of the class. They can

help if you are unable to attend a class. Please read your e-mail regularly. Tutors are best contacted by e-mail.

### **Additional Resources**

The Skills for Learning team, run by Sue Starkings and based in Caxton House, offers additional classes in Mathematics and English for those who are weak. Times of these sessions will be posted. Do make contact if you need support in your learning.