



Faculty of Computer Studies

MU120 B: Open Mathematics (Part B)

Course Guide

MU120B: Open Mathematics (Part B)

Credit Points / Credit Hours 15/4

Pre-requisites:

MU120A

Short Description:

Students will cover various mathematical in this course including prediction, linear models, quadratic models, exponential models, trigonometric and numerical concepts and techniques. Students will also be introduced to the ideas of mathematical modeling. Formal calculus is not included.

Aims:

This course aims to:

- Introduce students to concepts of mathematical functions.
- Enable students to understand statistical ideas and concepts.
- Enable students to develop the key skills of communication as well as students' own learning and performance.

Learning outcomes:

The learning Outcomes of this course are given below.

A. Knowledge and understanding:

Understand some of the key basic mathematical and statistical ideas and principles in the areas of:

- A1. Functions and symbols
- A2. Handling data and modeling
- A3. Know and use basic vocabulary, notation, representations and conventions associated with trigonometry, functions and graphs

B. Cognitive skills:

- B1. Use techniques from the course to analyze and solve problems in a range of contexts
- B2. Reason logically using the mathematical and statistical ideas and principles of the course

C. Key Skills:

- C1. Know and use basic vocabulary, notation, representations and conventions associated with elementary statistics, algebra, trigonometry, repeating patterns functions and graphs
- C2. Study independently, organizing study time and exploiting feedback.
- C3. Communicate clearly and coherently, using appropriate structure, style and technical language
- C4. Use a graphics calculator for a variety of mathematical functions.

D. Practical and/or professional skills:

- D1. Appreciate how mathematics pervades aspects of everyday life.
- D2. Reflect on your own progress in the course, showing an understanding of learning how to learn

Course Structure:

The MU120B course consists of total of 7 units of study from 2 blocks.

Table of Contents:

Block C

Unit 10: Prediction

- 1 Representing situations involving change
- 2 Linear models
- 3 Linear models directly from data
- 4 Simultaneous linear equations'
- 5 The most profitable strategy

Unit 11: Movement

- 1 Position, velocity and acceleration
- 2 Quadratic models
- 3 Quadratic equations
- 4 To catch a falling car

Unit 12: Growth and decay

- 1 Exponential growth
- 2 Variations on the theme
- 3 Exponential graphs
- 4 Exponents
- 5 The joy of exp

6 The exponential

Unit 13: Baker's dozen

- 1 Scaling a recipe
- 2 Finding a power law or proportional relationship from data
- 3 Experimenting with fruit cakes
- 4 Cataloguing your library of functions
- 5 Modeling using your library of functions

Block D

Unit 14: Space and shape

- 1 Similarity
- 2 Getting things into perspective
- 3 Similarity and trigonometry
- 4 Trigonometry and surveying
- 5 showing the way they went

Unit 15: Repeating patterns

- 1 Circles, cycles and sines
- 2 Sunrise, sunset ...
- 3 Patterns of sound

Unit 16: Rainbow's end

- 1 Putting it all together
- 2 Modeling rainbows with mathematics
- 3 Creating your own programs
- 4 A crock of gold
- 5 Doing the end-of course assignment (ECA)

Assessment:

The assessment for the MU 120B course consists of the following 3 components:

- Tutor-marked assignments: 2 TMAs
- Quiz/Mid-term Assessment: 1 MTA
- Final Exam: 1 Final Exam

Grade Distribution:

The percentage grade distribution, for the above 3 components, is as follows:

- Tutor-marked assignments: 35%
- Quiz/MTA: 15%
- Final Exam: 50%

Course Calendar (indicative version):

There are 2 assignments, 1 midterm quiz and 1 final Exam associated with this course. Course result is determined on the basis of student's scores in assignments, midterm quiz and the final Exam. To be sure of passing the course, the student needs to score at least 40% (at least 20% in the assignment and Quiz and at least 20% in the final exam) in the above 3 components and achieve an overall average score of 50%.

Study Week	Blocks	Course text	Other Components/notes	Practical Activates	Assignments / Assessments t
1	C	Unit 10			
2	C	Unit 10			
3	C	Unit 11	VC 1230 Band 2		
4	C	Unit 11			
5	C	Unit 12			
6	C	Unit 12			
7	C	Unit 13			
8	C	Unit 13	VC1230 Band 3	Listen to AC 3022 Band 3	
9	D	Unit 14			MTA/Quiz TMA1 due date
10	D	Unit 14	VC1230 Bands 4,5	Listen AC 3022 Band 4	
11	D	Unit 15			
12	D	Unit 15	VC1230 Band 6	Listen AC 3022 Band 5	
13	D	Unit 16			
14	D	Unit 16			
15		Review			TMA2 due date
16			Final Exam Period	To be announced	