



MATHEMATICS REFRESHER COURSE

Introduction:

Several core papers – Quantitative Analysis, Economics, Finance and Operations require knowledge of mathematics and statistics, while other core papers depend on a clear understanding of the principles taught in these papers.

Requirement:

This computer-based Mathematics Refresher Course is aimed at assisting students to gain competence with basic business mathematics and prepare them for the quantitative aspects of their Graduate Programmes course of study.

The purpose of the refresher course is to help students develop the necessary skills and background knowledge to enable them to move successfully through their Graduate Programmes course of study. The idea is that they really learn and understand the material and not just “get through” the course.

Content:

The Mathematics Refresher Course consists of two parts – the **Computer-based Self-study Course** and a **Quick Qualifying Test**.

Computer-based Self-study Course: Students enrolled for the Computer-based Self-study Course can download electronic copies of all the materials for the course including five coursebooks, five powerpoint slide files and five assignments. Students complete the course in their own time and upload the assignments for marking.

As each assignment is completed it should be uploaded onto the Maths Refresher Website. The lecturer will mark it and return it with helpful comments as appropriate.

Ideally, students should start this course well in advance of the start of their first quarter so they can complete the assignments before the start of their studies. The time required to complete each module depends on the level of competence of each individual student. Each module could be completed with about 3 to 5 hours of study. Some students take about 10 hours per module.

The Computer-based Self-study Course consists of five modules

- Introduction to mathematics
- Mathematical tools and economics
- Probability
- Statistics
- Financial mathematics

All modules have a **basic section** and an **advanced section**. To pass the course the student should demonstrate competence in the basic section. The advanced section is offered as a challenge for those students who desire that little bit extra. The assignments are based on material in both sections.

Module 1: Introduction to mathematics

- Spreadsheets
- Numbers and rounding
- Order of operations
- Powers

- Subscripts and summation
- Inequalities
- Percentage calculations
- Prices including and excluding GST
- Absolute values
- **Advanced section:** Solving equations
- **Advanced section:** Algebraic expressions

Module 2: Mathematical tools and economics

- Straight line graphs
- Graphs which aren't straight lines
- Slope (gradient)
- Simultaneous equations
- **Advanced section:** Graphing in economics
- **Advanced section:** Using graphs

Module 3: Probability

- Elementary probability concepts
- Expected values
- Measures of variation
- Combinations and permutations
- Binomial distribution
- Normal distribution
- **Advanced section:** Calculations based on normally distributed data

Module 4: Statistics

- Descriptive statistics
- Populations and samples
- Central limit theorem
- Confidence intervals
- Correlation
- **Advanced section:** Introduction to linear regression

Module 5: Financial mathematics

- Simple and compound interest
- Depreciation
- Future value
- Present value
- **Advanced section:** Net present value
- **Advanced section:** Internal rate of return

Quick Qualifying Test (QQT): Students who possess an understanding of business mathematics and can demonstrate an ability to use quantitative techniques may start by attempting the Quick Qualifying Test.

Students who gain 90% in the Quick Qualifying Test will be accredited with a pass in the Mathematics Refresher Course.

Students who obtain less than 90% in the Quick Qualifying Test are required to participate in the full Mathematics Refresher Course. **We expect this will apply to the majority of students.**

Marking scheme:

There are 10 questions and each question has a maximum mark of 10 and a minimum mark of 0.



10 marks are awarded for each question when **all** calculations and requirements are correct.



5 marks are awarded for any **single-part** question when **most** of the calculations and requirements are correct.



5 marks are awarded for any **multi-part** question when all calculations and requirements are correct **except for one part** in which **most** of the calculations and requirements are correct.



0 marks are awarded for any **single-part** question when most of the calculations and requirements are incorrect or incomplete.



0 marks are awarded for any **multi-part** question when most of the calculations and requirements in **two or more parts** are incorrect or incomplete.

This is a business report and presentation is important. The Quick Qualifying Test document has embedded Excel files in it. If you right-click onto these embedded files, then use WORKSHEET OBJECT and OPEN they will open up as an Excel workbook. You can modify the worksheet and return the file to the WORD document. Perform a print preview to ensure that all relevant data is visible.

Maximum mark is 100. The successful qualifying mark is 90.

The final score is advised when marked. Individual question scores are not provided.

DATES:

This course will be offered from 1 July 2008. Students may proceed through the course at their own pace. The duration for each module depends on the starting point for each student and the pace that they adopt to get through the material. An average student should be able to complete each module in about 3-5 hours.

COST:

Full Computer-based Self-study Course

\$175 (GST inclusive)

Students who possess an understanding of business mathematics and can demonstrate an ability to use quantitative techniques may start by attempting the **Quick Qualifying Test** for a fee of \$25 (GST inclusive)

Students who obtain less than 90% in this Quick Qualifying Test are required to participate in the Computer-based Self-study Course and pay **an additional fee of** \$150 (GST inclusive)

Students who gain at least 90% in this Quick Qualifying Test will be accredited with a pass in the Mathematics Refresher Course. **We expect this will apply to only a few students.**

REGISTRATION:

Access <http://maths.gardinergroup.co.nz> and **Register**. You will need to know whether you plan to start with the full computer-based self-study course or whether you plan to start with the quick qualifying test.

An email is sent to your designated email address. Retrieve this email and follow the [link](#) to verify the email address.

After registration you may access <http://maths.gardinergroup.co.nz> and **Signin**

Send an email to David Gardiner (Lecturer) if you have any issues or queries. Send the email to dave@gardinergroup.co.nz

PAYMENT:

After signing into the maths refresher website <http://maths.gardinergroup.co.nz> you will have three possible ways of making payment, credit card payment by Visa / Mastercard, bank transfer using internet banking, or posting a cheque.

Select Payment method Credit Card for credit card payment by Visa or Mastercard:

This will transfer you to Promark for secure credit card transactions.

Select Payment method Internet banking for a bank transfer using internet banking:

An invoice will be emailed to your email address and the invoice will contain the following payment details:

Account Name: Gardiner Consultants Limited
Account Number: 06 0287 0270357 00
Bank: National Bank of New Zealand
Branch: Browns Bay Branch

Enter your name in CODE and invoice number (if available) in REFERENCE

Select payment method Cheque for the payment option to post a cheque:

An invoice will be emailed to your email address and the invoice will contain the address for posting. Post a copy of the invoice together with your cheque to:

Gardiner Consulting Group, 335 Ashgrove Terrace, CHRISTCHURCH, 8024

Post registration:

When payment is confirmed you may **Signin** to <http://maths.gardinergroup.co.nz> and access the full set of course materials.

Mathematics Refresher Course Instructions

Here are some instructions to help you succeed in the refresher course.

The purpose of the refresher course is to help you develop the necessary skills and background knowledge to enable you to move successfully through your Graduate Programmes course of study. The idea is that you really learn and understand the material, not that you just “get through” the course.

You should have (or will be able to access) the following course materials

- A set of five Adobe pdf files containing the course book notes
- A set of five Powerpoint slides to be used in conjunction with the course book notes
- A set of five Word documents containing the five assignments

The requirements are that you successfully complete the five assignments. To complete an assignment you need to show me that you have an understanding of the concepts involved.

Assignments should be prepared on a computer and uploaded to the <http://maths.gardinergroup.co.nz> website. Some of the WORD documents containing the assignment questions will have embedded Excel files in them. If you right-click onto these embedded files, then use WORKSHEET OBJECT and OPEN they will open up as an Excel workbook.

When your assignment is returned to you it may include feedback comments as appropriate. This should be examined carefully, along with your assignment so that you can learn from the comments.

The method you should use is to open up the Powerpoint files and set it to slide show. (VIEW SLIDESHOW). Then using the Powerpoint slideshow as a prompt work your way through the course book notes for each module. At the end of each module, you should do the corresponding assignment.

ASSIGNMENT DUE DATES

There are five assignments and all assignments are marked by the lecturer. Assignments receive a “pass” when successfully completed. When all five assignments have been successfully completed the student receives a “pass” for the course.

Happy studying. I look forward to receiving your assignments.

David Gardiner Refresher course lecturer

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