1. GAC004 Mathematics I: Fundamentals

Weeks 1–8

GAC004 数学 I：基础

They should be able to

1. Solve elementary math problems using basic arithmetic operations.
2. Perform basic algebraic operations and solve equations and inequations using algebraic methods.
3. Graph algebraic relations and use coordinate geometry to solve problems.
4. Analyze simple problems involving planar shapes and solids and solve problems in Euclidean geometry.
5. Calculate solutions to various problems using trigonometric methods.
6. Solve and graph exponential and logarithmic functions and equations.

Stage	Use	Your notes
Starter 10 min · retrieval practice	Topic quiz 01 (10 questions, answers on sheet 2)	
Teach the new content	Handout 01 Slide deck 01 Vocabulary list 01	
Practice guided then independent	Exercise sheets 1.1, 1.2, 1.3, 1.4, 1.5, 1.6	
Check before they leave	*nothing in the Library for this stage yet*	
Homework set from the Library	Any unused exercise sheet above	

2. GAC010 Mathematics II: Probability, Statistics and Finance

Weeks 9–18

GAC010 数学 II：概率、统计与金融

They should be able to

1. Solve problems using arithmetic and geometric sequences and series.
2. Apply algebraic methods to solve financial problems and analyse information.
3. Apply algebraic methods to solve financial problems and analyse information.
4. Solve problems using probability and counting techniques.
5. Analyse collected data using statistical methods.
6. Analyse collected data using statistical methods.
7. Analyse collected data using statistical methods.
8. Use the normal distribution to analyse data.

Stage	Use	Your notes
Starter 10 min · retrieval practice	Topic quiz 02 (10 questions, answers on sheet 2)	
Teach the new content	Handout 02 Slide deck 02 Vocabulary list 02	
Practice guided then independent	Exercise sheets 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8	
Check before they leave	*nothing in the Library for this stage yet*	
Homework set from the Library	Any unused exercise sheet above	

3. GAC016 Mathematics III: Calculus & Advanced Applications **Weeks 19–23**

GAC016 数学 III：微积分与进阶应用

They should be able to

1. Determine the derivative (if it exists) of most mathematical functions and use the derivative to analyse functional behaviour.
2. Use techniques of integration to find indefinite and definite integrals.
3. Apply differentiation and integration techniques in a variety of practical problems.

Stage	Use	Your notes
Starter 10 min · retrieval practice	Topic quiz 03 (10 questions, answers on sheet 2)	
Teach the new content	Handout 03 Slide deck 03 Vocabulary list 03	
Practice guided then independent	Exercise sheets 3.1, 3.2, 3.3	
Check before they leave	*nothing in the Library for this stage yet*	
Homework set from the Library	Any unused exercise sheet above	

4. GAC024 Discrete Mathematics

Weeks 24–30

GAC024 离散数学

They should be able to

1. Demonstrate understanding of the introductory concepts and properties of sets, relations and functions.
2. Understand the relationships between different counting systems and be able to perform simple binary arithmetic operations.
3. Understand the relationships between different counting systems and be able to perform simple binary arithmetic operations.
4. Use the basic identities of Boolean algebra to analyse logic circuits and understand the basic principles of propositional logic.
5. Construct and analyse algorithms and flowcharts for simple mathematical and general procedures.
6. Identify the basic types, properties and applications of graphs and trees.

Stage	Use	Your notes
Starter 10 min · retrieval practice	Topic quiz 04 (10 questions, answers on sheet 2)	
Teach the new content	Handout 04 Slide deck 04 Vocabulary list 04	
Practice guided then independent	Exercise sheets 4.1, 4.2, 4.3, 4.4, 4.5	
Check before they leave	*nothing in the Library for this stage yet*	
Homework set from the Library	Any unused exercise sheet above	