GAC Mathematics

Syllabus Checklist · 大纲自查表

Tick one box per statement: ☐ not yet ☐ nearly ☐ confident. 每条打一个勾：尚未掌握 / 快会了 / 有把握。

1. GAC004 Mathematics I: Fundamentals

GAC004 数学 I：基础

1.1 Terminology and Arithmetic Review 术语与算术复习

☐☐☐ Solve elementary math problems using basic arithmetic operations.

1.2 Algebra I: Introductory Algebra 代数 I：代数入门

☐☐☐ Perform basic algebraic operations and solve equations and inequations using algebraic methods.

1.3 Algebra: Graphs of Algebraic Relations and Coordinate Geometry 代数：函数图像与解析几何

☐☐☐ Graph algebraic relations and use coordinate geometry to solve problems.

1.4 Geometry: Plane, Solid, and Euclidean Geometry 几何：平面、立体与欧氏几何

☐☐☐ Analyze simple problems involving planar shapes and solids and solve problems in Euclidean geometry.

1.5 Trigonometry 三角学

☐☐☐ Calculate solutions to various problems using trigonometric methods.

1.6 Exponential and Logarithmic Functions 指数函数与对数函数

☐☐☐ Solve and graph exponential and logarithmic functions and equations.

2. GAC010 Mathematics II: Probability, Statistics and Finance

GAC010 数学 II：概率、统计与金融

2.1 Sequence and Series 数列与级数

☐☐☐ Solve problems using arithmetic and geometric sequences and series.

2.2 Finance – Earning Money and Purchasing Goods 金融：赚钱与消费

☐☐☐ Apply algebraic methods to solve financial problems and analyse information.

2.3 Finance – Investing Money and Loans 金融：投资与贷款

☐☐☐ Apply algebraic methods to solve financial problems and analyse information.

2.4 Probability – Key Concepts 概率：核心概念

☐☐☐ Solve problems using probability and counting techniques.

2.5 Statistics 统计学

☐☐☐ Analyse collected data using statistical methods.

2.6 Statistics – Numerical Measures of Central Locations 统计学：集中趋势的数值度量

☐☐☐ Analyse collected data using statistical methods.

2.7 Statistics – Numerical Measures of Variability 统计学：离散程度的数值度量

☐☐☐ Analyse collected data using statistical methods.

2.8 Distributions – The Normal Distribution 分布：正态分布

☐☐☐ Use the normal distribution to analyse data.

3. GAC016 Mathematics III: Calculus & Advanced Applications

GAC016 数学 III：微积分与进阶应用

3.1 Differentiation 微分

☐☐☐ Determine the derivative (if it exists) of most mathematical functions and use the derivative to analyse functional behaviour.

3.2 Integration 积分

☐☐☐ Use techniques of integration to find indefinite and definite integrals.

3.3 Advanced Applications 进阶应用

☐☐☐ Apply differentiation and integration techniques in a variety of practical problems.

4. GAC024 Discrete Mathematics GAC024 离散数学

4.1 Sets, Relations and Functions 集合、关系与函数

☐☐☐ Demonstrate understanding of the introductory concepts and properties of sets, relations and functions.

4.2 Counting Systems 计数系统

☐☐☐ Understand the relationships between different counting systems and be able to perform simple binary arithmetic operations.

4.3 Binary Applications 二进制应用

☐☐☐ Understand the relationships between different counting systems and be able to perform simple binary arithmetic operations.

☐☐☐ Use the basic identities of Boolean algebra to analyse logic circuits and understand the basic principles of propositional logic.

4.4 Algorithms 算法

☐☐☐ Construct and analyse algorithms and flowcharts for simple mathematical and general procedures.

4.5 Graphs and Networks 图与网络

☐☐☐ Identify the basic types, properties and applications of graphs and trees.