**Haese and Harris Coverage: (OLD TEXT)**

Chapters:

1. Functions
2. Sequences and Series
3. Exponentials
4. Logarithms
5. Graphing and Transforming Functions
6. Quadratic Equations and Functions
7. Complex Numbers and Polynomials
8. Counting Principles and Binomial Expansion
9. Mathematical Induction
10. The Unit Circle and Radian Measure
11. Non-Right Angles Triangles and Trigonometry
12. Advanced Trigonometry
13. Matrices
14. Vectors in 2 and 3 Dimensions
15. Complex Numbers
16. Lines and Plane in 3D space

19. Introduction to Calculus

A. Limits

B. Finding asymptotes using limits

C. Trigonometric Limits

20. Differential Calculus

A. The derivative Functions

B. Derivatives at a given x-value

C. Simple rules of differentiation

D. The Chain Rule

E. The production and Quotient Rules

F. Tangents and Normals

Note: Chapter 13 on Matrices IS NOT in our syllabus, but knowing some matrix algebra can be useful!

**New Text: (Oxford)**

Chapters:

1: Mathematics as the Science of Patterns

* 1. Number Patterns: Sequences, series, and sigma notation
  2. Arithmetic sequences and series
  3. Geometric sequences and series
  4. Conjectures and proofs
  5. Mathematics inductions
  6. Counting methods
  7. The binomial theorem

1. Mathematics as a language
   1. Relations and functions
   2. Special functions and their graphs
   3. Operations with functions
   4. Transformations of graphs of functions
2. The long journey of mathematics
   1. Introduction to complex numbers
   2. Operations with complex numbers
   3. Polynomial functions: graphs and operations
   4. Polynomial functions: zeroes, sum and product (vieta)
   5. Polynomial equations and inequalities
3. Modeling the real world
   1. Limits, Continuity and convergence
   2. The derivative of a function
   3. Dimple rules for differentiation

4.4-4.9 EXCLUDED

5. Aesthetics in mathematics

5.1 Recursive functions

5.2 Properties of exponents and logarithms

5.3 Euler’s number and exponential functions

5.4 EXCLUDED

5.5 Logarithms and bases

5.6 Logarithmic functions and their behavior

5.7 EXCLUDED

5.8 Angles, arcs, and areas

8. Ancient mathematics and modern methods

8.1 The right angles triangle and trigonometric rations

8.2 The unit circle and trigonometric rations

8.3 Compound angle identities

8.4 Double angle identities

8.5 Graphs of trigonometric functions

8.6 The inverse trigonometric functions

8.7 Solving trigonometric equations

8.8 The cosine rule

8.9 The sine rule

8.10 Areas of triangles

11. Inspiration and Formalism

11.1 Geometric vectors and basic operations

11.2 Introduction to vector algebra

11.3 Vectors, points, and equations of lines

11.4 Scalar product

11.5 Vector cross product and properties

11.6 Vectors and equations of planes

11.7 Angles, distances and intersections

11.8 Modeling and problem solving

12. Multiples perspectives in mathematics

12.1 Complex numbers as vectors

12.2 Complex plane and polar form (Cartesian vs. modulus argument)

12.3 Operations with complex numbers in modulus-argument form

12.4 Powers and roots of complex numbers: DeMoivre’s theorem and applications

12.5 Mathematical connections Note: Exclude any calculus here