



# AceTute Y11/12 NSW HSC Mathematics Syllabus

2014 Revision



# AceTute

AceTute's Year 11 and 12 Mathematics courses prepares students not only for the topics conducted under the NSW Department of Education and Training HSC and Preliminary Syllabus, but also for the format and layout of the final and University style exams. Our courses aim to accelerate the topics normally covered by high schools and work at a pace which is comfortable for the student and their parents/caregivers

## Mathematics Year 11 NSW

### Term 1

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- 1. Basic Arithmetic & Algebra**
  - (3U) Other inequalities.*
- 2. Absolute Values**
- 3. Trigonometric Ratios**
  - (3U) Harder applications of Trigonometric Ratios*
  - (3U) Trigonometric functions of sums and differences of angles.*
  - (3U) Expressions for  $\sin \theta$ ,  $\cos \theta$  and  $\tan \theta$  in terms of  $\tan$ .*
  - (3U) Simple trigonometric identities and equations.*
  - (3U) The general solution of trigonometric equations.*
- 4. Probability**
- 5. Termly Revision**

### Term 2

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- 1. Linear Functions**
  - (3U) The angle between two lines*
  - (3U) Internal and external division of an interval in a given ratio.*
- 2. Real Functions**
- 3. Plane Geometry**
  - (3U) Harder applications of plane geometry to the solution of numerical exercises requiring one or more steps of reasoning*
  - (3U) Harder applications of plane geometry to simple theoretical problems requiring one or more steps of reasoning*
  - (3U) Definitions of terms related to circles.*
  - (3U) Simple angle properties of a circle.*
  - (3U) Derivation of further angle, chord and tangent results.*
  - (3U) Applications of plane geometry to numerical and theoretical problems requiring one or more steps of reasoning*
- 4. Termly Revision**

### Term 3

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- 1. Series and Applications**
  - (3U) Mathematical induction. Applications*
- 2. The Tangent to a Curve and the Derivative of a Function**
- 3. The Quadratic Polynomial and the Parabola**
  - (3U) Parametric representation. Applications to problems concerned with tangents, normals and other geometric properties.*
- 4. Termly Revision**

### Term 4

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- 1. Geometrical Applications of Differentiation**
- 2. Yearly Revision**
- 3. Integration**
  - (3U) Methods of integration, including reduction to standard forms by very simple substitutions.*
- 4. Logarithmic and Exponential Functions**

**Mathematics 2 Unit Year 12 NSW**

**Term 1**

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1. The Tangent to a Curve and the Derivative of a Function
2. The Quadratic Polynomial and the Parabola
3. Geometrical Applications of Differentiation
4. Integration
5. Termly Revision

**Term 2**

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1. Series and Series Applications
2. Exponential Functions
3. Logarithmic Functions
4. Termly Revision

**Term 3**

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1. Trigonometric Functions (Inc. applications of trigonometric ratios)
2. Probability
3. Trial Revision (Term Focus)

**Term 4**

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1. Applications of Calculus to the Physical World
2. Final Exam Revision (Term Focus)



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**Mathematics 3 Unit Year 12 NSW**

**Term 1**

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1. Induction
  - a. Polynomials
2. Integration
3. Iterative Methods for Numerical Estimation of the Roots of a polynomial Equation
4. Projectile Motion
5. Termly Revision

**Term 2**

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1. Inverse Functions and Inverse Trigonometric Functions
2. Primitive of  $\sin 2x$  and  $\cos 2x$
3. Binomial Theorem
4. Termly Revision

**Term 3**

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1. Equation  $\frac{dN}{dt} = k(N - P)$
2. Velocity and Acceleration as a Function of X
3. Simple Harmonic Motion
4. Trial Revision

**Term 4**

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1. Further Probability
2. Harder Applications of HSC 2U Topics
3. Final Exam Revision



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**Mathematics 4 Unit Year 12 NSW (Additional to 2U or 3U Math Content)**

**Term 1**

1. Complex Numbers
2. Polynomials
3. Termly Revision

**Term 2**

1. Graphs
2. Conics
3. Termly Revision

**Term 3**

1. Integration
2. Volumes
3. Trial Revision

**Term 4**

1. Mechanics
2. Harder 3U Topics
3. Final Exam Revision



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