Varsity College
Year 11 Specialist Mathematics 2025

Term 1

Week	Date	Topics	Assessment
1	**27-31 January** **O-Week** **Australia Day: Monday**	• O Week	
2	**3-7 February**	**Unit 1 Topic 3: Vectors in the plane** Representing vectors in the plane by directed line segments: • Definition of a scalar and vector • Represent vectors in multiple forms	
3	**10-14 February** **Swimming Carnival: Tuesday**	• Convert between Cartesian form and polar form **Unit 1 Topic 4: algebra of Vectors in two dimensions** • Scalar (dot) product • Parallel and perpendicular vectors	
4	**17-21 February**	• Projections of vectors • Applications of vectors: displacement and velocity	
5	**24-28 February**	• Applications of vectors: relative velocity • Applications of vectors: forces and equilibrium	
6	**3-7 March** **GC25: Wednesday**	• Vectors in the Plane Review **Unit 1 Topic 5: Matrices** Matrix arithmetic: • Matrix notation • Matrix addition/subtraction and scalars • Multiplication of matrices	
7	**10-14 March**	• Identities, inverses and determinants of 2 × 2 matrices • Solve matrix equations (including simultaneous equations with 2 variables)	
8	**17-21 March**	Revision for Unit 1 Exam	
9	**24-28 March**	**EXAM BLOCK**	**Unit 1 Exam**
10	**31 March - 4 April**	**Unit 3 Topic 5: Further matrices** • Dominance and Leslie matrices	
School holidays: Friday April 4 - Sunday April 19			

Term 2

Week	Date	Topics	Assessment
1	**21-25 April** Easter Monday ANZAC Day: Friday	• Investigate how matrices have been applied in other real-life situations, e.g. Leontief, Markov, area, cryptology, eigenvectors and eigenvalues. • Note: The external examination may assess only Dominance and Leslie matrices. • Note: Explicitly teach Cryptology	**PSMT Weeks 1 to 4** **PSMT out lesson 3**
2	**28 April-2 May** GC25: Tuesday	**Unit 3 Topic 2: Mathematical induction and trigonometric proofs** • Revision of proof techniques • Nature of inductive proof	
3	**5-9 May** Labour Day: Monday	• Proof by mathematical induction • Prove and use De Moivre's theorem for integral powers	**PSMT Draft due**
4	**12-16 May**	• Geometric proofs using vectors	**PSMT due L3**
5	**19-23 May**	**Unit 2 Topic 1: Complex numbers** Complex numbers: • The set of complex numbers • Addition/subtraction of complex numbers	
6	**26-30 May**	**EXAM BLOCK**	
7	**2-6 June** GC25: Wednesday	• Multiplication/division of complex numbers	
8	**9-13 June** GC25: Wednesday	• The complex plane (the Argand plane): • Geometric representation of complex numbers	
9	**16-20 June**	• Complex arithmetic using polar form: • Multiplication and division in polar form	
10	**23-27 June**	• De Moivre's Theorem	
School holidays: Saturday June 28 - Sunday July 13			

Term 3

Week	Date	Topics	Assessment
1	**14-18 July**	• identify subsets of the complex plane determined by straight lines and circles	
2	**21-25 July**	Roots of equations: • Quadratic equations with complex roots • Linear factors of real quadratic polynomial	
3	**28 July-1 August**	Sketching graphs • Absolute value function • Apply the relationship between the graph of f(x) and the graph of the reciprocal	
4	**4-8 August**	The reciprocal trigonometric functions, secant, cosecant and cotangent • Develop reciprocal ratios and graphs • Transform graphs of reciprocal functions Trigonometric identities • Pythagorean identities	
5	**11-15 August** **GC25: Tuesday**	• Angle sums and differences • Double angle identities • Identities for products of sines and cosines expressed as sums and differences	
6	**18-22 August** **GC25: Tuesday**	• Convert sums to products • Sketch and solve functions expressed as sums • Multi-angle trigonometric identities	
7	**25-29 August** **GC Show Day: Friday**	• Prove multi-angle trigonometric identities up to angles of 4x by equating parts using the binomial expansion and De Moivre's theorem • Note: Check if assessible	
8	**1-5 September**	Revision for Unit 2 Exam	
9	**8-12 September**	**EXAM BLOCK**	**Unit 2 Exam**
10	**15-19 September**	**EXAM BLOCK**	
School holidays: Saturday September 20 – Sunday October 4			

Term 4

Week	Date	Topics	Assessment
1	**6-10 October** King's Birthday: Monday	**Unit 3 Topic 5: Further matrices** • Review basic matrix methods including operations, inverses and determinants • Dominance and Leslie matrices	**Review Unit 2** **Exam Results** **IA1 PSMT** **Hand out lesson 3**
2	**13-17 October**	**Unit 3 Topic 2: Systems of linear equations** • recognise the general form of a system of linear equations • solve systems of linear equations using matrix algebra; review use of inverse matrix and Gaussian techniques of elimination to solve a system of linear equations • examine the three cases for solutions of systems of equations	
3	**20-24 October**	• examine the three cases for solutions of systems of equations	**Draft due**
4	**27-31 October**	**Unit 3 Topic 1: Further complex numbers** • review Cartesian form of a complex number; real & imaginary parts and arithmetic • prove the identities involving modulus and argument	**IA1 PSMT due lesson 3**
5	**3-7 November**	• prove and use De Moivre's theorem for integral powers	
6	**10-14 November**	• examine the nth roots of unity and of complex numbers including their location in the complex plane	
7	**17-21 November**	**Factorisation of polynomials** • prove and apply the factor theorem and the remainder theorem for polynomials • consider conjugate roots for polynomials with real coefficients • solve polynomial equations to order 4	
8	**24-28 November**	**EXAM BLOCK**	
School holidays: Saturday November 29 – Monday January 26			