

Varsity College Year 12 Specialist Mathematics

Term 1, 2023

Week	Date	Topics	Assessment	
1	23-27 January Australia Day PH - Thurs	 Unit 3 Topic 2: Vectors and matrices Review of Cartesian form and polar form Ch. 4A, 4C Introduction to 3D vectors Ch. 4B Unit vectors in 3D space and the altitude angle Ch. 4C 		
2	30 Jan – 3 Feb Swimming Carnival - Mon	 Scalar product and the angle between vectors Ch. 4D Vector projections (2D vectors then 3D) Ch. 4E Collinearity Ch. 4F Geometric proofs using vectors in 3D Ch. 4G 		
3	6-10 February	 Vector functions intro and conversion to Cartesian functions Represent vectors in parametric vector and Cartesian form (including circles, ellipses and hyperbolas) Collisions of particles (determine if paths cross or meet) Ch. 5B 		
4	13-17 February	 Vector equations of lines Ch. 5C Parallel and perpendicular vector equations Ch. 5C Distance from a point and a line Ch. 5C Intersection of lines Ch. 5D Vector (cross) product Ch. 5E Vector methods in applications - area of shapes 		
5	20-24 February	 Vector equations of planes Ch. 5F Distances, angles and intersections Ch. 5G The Cartesian equation of a sphere Ch. 5H 		
6	27 Feb – 3 Mar	 Differentiate and integrate a vector function with respect to time (Vector Calculus) Ch. 8C Determine position, velocity and acceleration vectors as a function of time Ch. 8D Sketch vectors as a function of time in parametric form 		
7	6-10 March GIPSA - Wednesday	 Apply vector calculus to motion in a plane, including: Collisions of particles (determine if paths cross or meet) Ch. 8D Projectile motion Ch. 8F Circular motion Ch. 8G 		
8	13-17 March	 Unit 3 Topic 1: Proof by mathematical induction Revision of proof techniques Ch. 3A Nature of inductive proof Proof by mathematical induction Ch. 3B 		
9	20-24 March	REVISION		
10	27-31 March Cross Country - Thurs	IA2 Unit 3 Exam	Exam	
School Holidays: Saturday April 1 – Sunday April 16				



Term 2, 2023

Week	Date	Topics	Assessment		
1	17-21 April Athletics Carnival - Wednesday	 Unit 4 Topic 1: Integration and applications of integration Integration using substitution Ch. 11D Integration of natural logarithm functions Ch. 11A 			
2	24-28 April ANZAC Day PH - Tues	 Integration techniques using the trig. identities Ch. 11F Differentiation and integration techniques for inverse trigonometric functions Ch. 11B & 11C 			
3	1-5 May Labour Day PH - Monday GIPSA - Wednesday	 Integration by parts Ch. 11H Integration using partial fractions Ch. 11G 			
4	8-12 May	 Simpson's rule Ch. 12F Area of a region between two curves Ch. 12 Volumes of solids of revolution Ch. 12D 			
5	15-19 May GIPSA - Wednesday	 Volumes of solids of revolution (continued) Ch. 12D Unit 4 Topic 2: Rates of change and differential equations Implicit differentiation, including equations of tangents and normal Ch. 13A Related rates 13H & Ch. 13I 			
6	22-26 May GIPSA - Wednesday	 First-order differential equations Ch. 13B, 13C & 13D Separation of variables Ch. 13G 			
7	29 May – 2 June	 Applications of differential equations, including Newton's law of cooling, radioactive decay and the logistic differential equation Ch. 13E, Ch. 13F Slope field for a differential equation Ch. 13K 			
8	5-9 June Exam Block – Tuesday L1, 2 GIPSA - Wednesday	 Unit 4 Topic 2: Rates of change and differential equations Displacement, velocity and acceleration Ch. 14A Differential equations of velocity and acceleration Ch. 14B & 14C Simple harmonic motion Ch. 14D 			
9	12-16 June	 Newton's laws of motion for constant force, momentum, resultant force, action and reaction Ch. 14F Inclined planes and connected particles Ch. 14G & 14H Non-constant forces Ch. 14I 			
10	19-23 June	 Unit 4 Topic 3: Statistical inference Probability density function Ch. 15E Sample means and central limit theorem Ch. 15D Confidence intervals for the population mean Ch. 15F 			
School Holidays: Saturday June 24 – Sunday July 9					



Term 3, 2023

Week	Date	Topics	Assessment		
1	10-14 July	Revision for IA3 content			
2	17-21 July	Revision for IA3 content			
3	24-28 July	Revision for IA3 content			
4	31 July – 4 August Exam Block Thursday	IA3 Unit 4 EXAM Specialist Mathematics Friday Lessons 1 and 2 – students withdrawn from lessons 1 and 2 to sit exam.	Unit 4 Exam (IA3)		
5	7-11 August	Review: Unit 3 Topic 1: Proof by induction Unit 3 Topic 2: Vectors and matrices			
6	14-18 August	Unit 3 Topic 3: Complex numbers 2			
7	21-25 August	Unit 4 Topic 1: Integration and applications of integration			
8	28 August – 1 Sept.	Unit 4 Topic 2: Rates of change and differential equations Unit 4 Topic 3: Statistical inference			
9	4-8 September	Mock Exams			
10	11-15 September	Mock Exams			
School Holidays: Saturday September 16 – Monday October 2					

Term 4, 2023

Week	Date	Topics	Assessment
1	2-6 October Queen's Birthday PH - Mon	REVISION UNIT 3 & 4	
2	9-13 October	REVISION UNIT 3 & 4	
3	16-20 October	No classes for Applied and Certificate subjects.	
		 Study lessons for General subjects. 	
4	23-27 October		External
5	30 Oct – 3 Nov	External Exam Block	Assessment:
6	6-10 November		Unit 3 and 4
7	13-17 November	Graduation	