Year 12 Mechanics Curriculum Summary

Y12 Mechanics

When?	Topic	Knowledge	Unit Assessment
HALF TERM 1	**Modelling in Mechanics**	• Understand how the concept of a mathematical model applies to mechanics • Understand and be able to apply some of the common assumptions used in mechanical models • Know SI units for quantities and derived quantities used in mechanics • Know the difference between scalar and vector quantities	• Mathematical models • Mechanical models • Units of measure • Scalar and vector quantities
HALF TERM 3	**Constant Acceleration**	• Understand and interpret displacement-time graphs • Understand and interpret velocity-time graphs • Derive the constant acceleration formulae and use them to solve problems • Use the constant acceleration formulae to solve problems involving vertical motion under gravity	• Displacement-time graphs • Constant acceleration formulae • Solve problems involving vertical motion under gravity
HALF TERM 5	**Forces & Motion**	• Draw force diagrams and calculate resultant forces • Understand and use Newton's first law • Calculate resultant forces by adding vectors • Understand and use Newton's second law, F=ma • Apply Newton's second law to vector forces and acceleration • Understand and use Newton's third law • Solve problems involving connected particles	• Force diagrams • Resultant forces • Newton's first law, second law, third law • Acceleration • Connected particles

When?	Topic	Knowledge	Unit Assessment
HALF TERM 6	**Variable acceleration**	• Understand that displacement, • Use differentiation to solve kinematics problems • Use calculus to solve problems involving maxima and minima • Use integration to solve kinematics problems • Use calculus to derive constant acceleration formula	• Displacement, velocity and acceleration may be given as functions of time • Calculus (differentiation and integration) to solve problems (kinematics, max/min, constant acceleration formula)