	Term 1				
Week 1		31/01/2017	1/02/2017	2/02/2017	3/02/2017
	Outcome 1 : Thermodynamic Principles				
				• describe the Zeroth Law of Thermodynamics as two bodies in contact with each other coming to a thermal equilibrium • describe temperature with reference to the average kinetic energy of the atoms and molecules within a system	
Week 2	6/02/2017	7/02/2017	8/02/2017	9/02/2017	10/02/2017
	Thermodynamic Principles				
	• investigate and apply theoretically and practically the First Law of Thermodynamics to simple situations: Q = U + W • explain internal energy as the energy associated with random disordered motion of molecules • distinguish between conduction, convection and radiation with reference to heat transfers within and between systems				
Week 3	13/02/2017	14/02/2017	15/02/2017	16/02/2017	17/02/2017
	Thermodynamic Principles				
	• investigate and analyse theoretically and practically the energy required to: – raise the temperature of a substance: Q = mcΔT – change the state of a substance: Q = mL • explain why cooling results from evaporation using a simple kinetic energy model.			SAC Revision	SAC 1
Week 4	20/02/2017	21/02/2017	22/02/2017	23/02/2017	24/02/2017
	Thermodynamics and Climate Science				
	• identify regions of the electromagnetic spectrum as radio, microwave, infrared, visible, ultraviolet, x-ray and gamma waves • describe electromagnetic radiation emitted from the Sun as mainly ultraviolet, visible and infrared • calculate the peak wavelength of the re-radiated electromagnetic radiation from Earth using Wien's Law: λmaxT = constant • compare the total energy across the electromagnetic spectrum emitted by objects at different temperatures such as the Sun				
Week 5	27/02/2017	28/02/2017	1/03/2017	2/03/2017	3/03/2017
	Thermodynamics and Climate Science				
	• describe power radiated by a body as being dependent on the temperature of the body according to the Stefan-Boltzmann Law, $P \propto T^4$ • explain the roles of conduction, convection and radiation in moving heat around in Earth's mantle (tectonic movement) and atmosphere (weather) • model the greenhouse effect as the flow and retention of thermal energy from the Sun, Earth's surface and Earth's atmosphere				
Week 6	6/03/2017	7/03/2017	8/03/2017	9/03/2017	10/03/2017
	Thermodynamics and Climate Science				
	• explain how greenhouse gases in the atmosphere (including methane, water and carbon dioxide) absorb and re-emit infrared radiation • analyse changes in the thermal energy of the surface of Earth and of Earth's atmosphere • analyse the evidence for the influence of human activity in creating an enhanced greenhouse effect, including affecting surface materials and the balance of gases in the atmosphere.			SAC Revision	SAC 2
Week 7	13/03/2017	14/03/2017	15/03/2017	16/03/2017	17/03/2017
	Issues related to thermodynamics				
	• Presentation on the environmental impact of one of the following human activities: o Energy ratings of home appliances and fittings o Cooking alternatives				Presentation Submitted
Week 8	20/03/2017	21/03/2017	22/03/2017	23/03/2017	24/03/2017
	Outcome 2: Concepts used to model electricity				
	• apply concepts of charge (Q), electric current (I), potential difference (V), energy (E) and power (P), in electric circuits • explore different analogies used to describe electric current and potential difference • investigate and analyse theoretically and practically electric circuits using the relationships: I=Q/t, V=E/Q, P=E/t=VI • justify the use of selected meters (ammeter, voltmeter, multimeter) in circuits • apply the kilowatt-hour (kW h) as a unit of energy.				
Week 9	27/03/2017	28/03/2017	29/03/2017	30/03/2017	31/03/2017
	Circuit Electricity				
	including R = constant for ohmic devices – equivalent effective resistance in arrangements in • series: RT = R1 + R2 + ... + Rn and • parallel: 1/Rt=1/R1+1/R2+.....+1/Rn • calculate and analyse the effective resistance of circuits comprising parallel and series resistance and voltage dividers • model household (AC) electrical systems as simple direct current (DC) circuits				

Term 2

Week 1	17/04/2017	18/04/2017	19/04/2017	20/04/2017	21/04/2017
	Circuit Electricity; Electrical Safety				
	• explain why the circuits in homes are mostly parallel circuits. • model household electricity connections as a simple circuit comprising fuses, switches, circuit breakers, loads and earth • compare the operation of safety devices including fuses, circuit breakers and residual current devices (RCDs) • describe the causes, effects and treatment of electric shock in homes and identify the approximate danger				
Week 2	24/04/2017	25/04/2017	26/04/2017	27/04/2017	28/04/2017
	Using Electricity				
	SAC Revision	SAC	Students investigate and apply theoretically and practically concepts of current, resistance, potential difference of one of the following components: light bulbs, diodes, thermistors, light dependent resistors (LDRs), light-emitting diodes (LEDs) and potentiometers (quantitative analysis restricted touse of V=IR and P=VI)		
Week 3	1/05/2017	2/05/2017	3/05/2017	4/05/2017	5/05/2017
				Outcome 3: Particles of the Nucleus Part	
	Students to write up investigation using poster format and submitted.			• distinguish between the two types of forces holding the nucleus together: the strong nuclear force and the weak nuclear force • explain nuclear stability with reference to the forces that operate over very small distances • describe the radioactive decay of unstable nuclei with reference to half-life • model radioactive decay as random decay with a particular	
Week 4	8/05/2017	9/05/2017	10/05/2017	11/05/2017	12/05/2017
	Particles of the Nucleus Part 1; Energy of the Nucleus				
	• explain nuclear transformations using decay equations involving α, β-, β+ and γ radiation • analyse decay series diagrams with reference to type of decay and stability of isotopes • explain nuclear energy as energy resulting from the conversion of mass: E = mc2 • compare the processes of nuclear fusion and nuclear fission • explain, using a binding energy curve, why both fusion and fission are reactions that produce energy				
Week 5	15/05/2017	16/05/2017	17/05/2017	18/05/2017	19/05/2017
			Energy of the Nucleus; Particles of the Nucleus Part 2		
	SAC Revision	SAC	• explain light as an electromagnetic wave that is produced by the acceleration of charges • describe the production of synchrotron radiation by an electron radiating energy at a tangent to its circular path • model the production of light as a result of electron transitions between energy levels within an atom.		
Week 6	22/05/2017	23/05/2017	24/05/2017	25/05/2017	26/05/2017
	Particles of the Nucleus Part 2				
	• describe quarks as components of subatomic particles • distinguish between the two types of forces holding the nucleus together: the strong nuclear force and the weak nuclear force • compare the nature of leptons, hadrons, mesons and baryons • explain that for every elementary matter particle there exists an antimatter particle of equal mass and opposite charge, and that if a particle and its antiparticle come into contact they will annihilate each other to create radiation.				
Week 7	29/05/2017	30/05/2017	31/05/2017	1/06/2017	2/06/2017
	SAC Revision	SAC	EXAM REVISION		
Week 8	5/06/2017	6/06/2017	7/06/2017	8/06/2017	9/06/2017
	EXAM REVISION		EXAMS		
Week 9	12/06/2017	13/06/2017	14/06/2017	15/06/2017	16/06/2017

	EXAMS				Report Writing Day
Week 10	19/06/2017	20/06/2017	21/06/2017	22/06/2017	23/06/2017
	Unit 2: AOS 1: How can Motion be described and Explained (Concepts used to model motion)				
	• identify parameters of motion as vectors or scalars • graphically analyse non-uniform motion in a straight line • apply concepts of momentum to linear motion: p = mv.				
Week 11	26/06/2017	27/06/2017	28/06/2017	29/06/2017	30/06/2017
	Concepts used to model motion				
	• analyse graphically, numerically and algebraically, straight-line motion under constant acceleration:v=u+at, v2=u2+2as, s=0.5(u+v)t, s=ut+0.5at2, s=vt-0.5at2				

	Term 3				
Week 1	17/07/2017	18/07/2017	19/07/2017	20/07/2017	21/07/2017
	Concepts used to model motion				
	• explain changes in momentum as being caused by a net force: net p F t Δ = Δ • model the force due to gravity, Fg , as the force of gravity acting at the centre of mass of a body, Fg = mg, where g is the gravitational field strength (9.8 N kg-1 near the surface of Earth)				
Week 2	24/07/2017	25/07/2017	26/07/2017	27/07/2017	28/07/2017
	Forces and Motion				
	• model the force due to gravity, Fg, as the force of gravity acting at the centre of mass of a body, Fg = mg, where g is the gravitational field strength (9.8 N kg-1 near the surface of Earth) • model forces as vectors acting at the point of application (with magnitude and direction), labelling these forces using the convention 'force on A by B' or Fon A by B = –Fon B by A				
Week 3	31/07/2017	1/08/2017	2/08/2017	3/08/2017	4/08/2017
	Forces and Motion				
	• apply Newton's three laws of motion to a body on which forces act: Fnet a m = , Fon A by B = –Fon B by A • apply the vector model of forces, including vector addition and components of forces, to readily observable forces including the force due to gravity, friction and reaction forces				
Week 4	7/08/2017	8/08/2017	9/08/2017	10/08/2017	11/08/2017
	Forces and Motion				
	• calculate torque: τ = r F⊥ • investigate and analyse theoretically and practically translational forces and torques in simple structures that are in rotational equilibrium.			SAC REVISION	SAC
Week 5	14/08/2017	15/08/2017	16/08/2017	17/08/2017	18/08/2017
	Energy and Motion				
	• apply the concept of work done by a constant force using: – work done = constant force × distance moved in direction of force: W = Fs – work done = area under force-distance graph • investigate and analyse theoretically and practically Hooke's Law for an ideal spring: F = –kΔx				
Week 6	21/08/2017	22/08/2017	23/08/2017	24/08/2017	25/08/2017
	Energy and Motion				
	• analyse and model mechanical energy transfers and transformations using energy conservation: – changes in gravitational potential energy near Earth's surface: Eg = mgΔh – potential energy in ideal springs: Es = 0.5kΔx – kinetic energy: Ek=0.5mv2				
Week 7	28/08/2017	29/08/2017	30/08/2017	31/08/2017	1/09/2017
	Energy and Motion				

	• analyse rate of energy transfer using power: E = P/t • calculate the efficiency of an energy transfer system: η = useful energy out / total energy in • analyse impulse (momentum transfer) in an isolated system (for collisions between objects moving in a straight line): I = Δp • investigate and analyse theoretically and practically momentum conservation in one dimension.				
Week 8	4/09/2017	5/09/2017	6/09/2017	7/09/2017	8/09/2017
	SAC REVISION	SAC	Introduce topics availability for AOS 3		
Week 9	11/09/2017	12/09/2017	13/09/2017	14/09/2017	15/09/2017
	Feasability study of practical investigation. Write assessment grid for Poster assessment				
Week 10	18/09/2017	19/09/2017	20/09/2017	21/09/2017	22/09/2017
	Assessment: 1 page abstract introduction for AOS 3				

	Term 4				
Week 1	9/10/2017	10/10/2017	11/10/2017	12/10/2017	13/10/2017
					INTRO SUBMITTED
Week 2	16/10/2017	17/10/2017	18/10/2017	19/10/2017	20/10/2017
	Outcome 3: Practical Investigation				
	o What are stars? o How do forces act on the human body? o How do heavy things fly? o How do instruments make music?				
Week 3	23/10/2017	24/10/2017	25/10/2017	26/10/2017	27/10/2017
	PRACTICAL INVESTIGATION CONT.				
Week 4	30/10/2017	31/10/2017	1/11/2017	2/11/2017	3/11/2017
	STUDENTS TO START WORKING ON POSTER				
Week 5	6/11/2017	7/11/2017	8/11/2017	9/11/2017	10/11/2017
	POSTER SUBMITTED				
Week 6	13/11/2017	14/11/2017	15/11/2017	16/11/2017	17/11/2017

	EXAM REVISION				
Week 7	20/11/2017	21/11/2017	22/11/2017	23/11/2017	24/11/2017
	EXAMS				
Week 8	27/11/2017	28/11/2017	29/11/2017	30/11/2017	1/12/2017
Week 9	4/12/2017	5/12/2017	6/12/2017	7/12/2017	8/12/2017
Week 10	11/12/2017	12/12/2017	13/12/2017	14/12/2017	15/12/2017
Week 11	18/12/2017	19/12/2017	20/12/2017	21/12/2017	22/12/2017
Week 12	25/12/2017	26/12/2017	27/12/2017	28/12/2017	29/12/2017