

Physics Y12 – Term 1 (Unit 3 – IA1, Data Test)

Week	Topic/ Unit	Lesson Sequence
W1	Introduction week max 2 lessons Revision: Electricity and electrostatics	- ASSUME NO LESSON
		Revision: recall that electric charge can be positive or negative recall the law of conservation of electric charge recall that the energy available to electric charges moving in an electrical circuit is measured using electrical potential difference
		Revision: solve problems involving electrical potential difference, electric current, resistance and power interpret graphical representations of electrical potential difference versus electric current data to find resistance using the gradient and its uncertainty.
W2	Electrostatics chapter 6	Chapter 6.1 Van de Graaf Coulomb's law, solving problems, labelling forces
		and 6.2, review of vectors in 2-D, electric fields and field lines,
		Chapter 6.3 electric potential and potential difference, energy transformations and review of electrostatics electric potential and potential difference.
W3	Chapter 7 magnetic fields	Chapter 7.1 and 7.2 defining fields, field strength, right hand grip rule and $B = \frac{\mu I}{2r}$,
		Chapter 7.3 solenoids and
		mandatory prac on field strength
W4	Finishing 7 and starting 8 – induction and radiation	Chapter 7 – left hand motor rule
		mandatory prac
		8.1 – flux 8.2 induction, qualitatively
W5	Chapter 8 induction and radiation	8.2 quantitatively
		Lenz's law including demo, transformers
		Radiation
W6	Data test	Revision
W7	Circular motion chapter 3	3.1 Uniform horizontal circular motion
		3.2 Equations and definitions, w , v , r , T , π .
		Mandatory prac
W8	PRAC	Centripetal acceleration and force
		Introduce IA3
		Student experiment brainstorming and submitting ideas
W9		Introducing gravity
		Conducting experiment
		Conducting experiment
W10		Experiment starting write up
		Experiment – catching up on any missing data
		Experiment - analysing

TERM 2 Unit 3, topic 1 – gravity experimental assignment

Week	Topic/ Unit	Lesson Sequence
W1	Gravity chapter 4	Revision and determining big G
		Gravitational fields
		Catch up on pracs
W2	Kepler's laws	Kepler's laws
		Artificial satellites
		A lesson dedicated to analysing experimental data and evaluating
W3	Chapter 7 magnetic fields	Orbital manoeuvring
		Gravitational waves
		Submit draft ~
W4	Chapter 9	UNIT 4 Special relativity – light has a finite speed
		Muon decay, frames of reference
		Drafts back ~
W5	Chapter 9	Galilean relativity
		Submit final response and upload to SafeAssign
		Take a breath
W6	Chapter 10	Time dilation and then simultaneity
		Length contraction,
		mass dilation and relativistic momentum
W7	Chapter 10	Take another breath/revision
		$E = mc^2$
		Paradoxes
W8	Chapter 10	Red shift
		Breath/ revision
		Breath/ revision
W9	Quantum theory – chapter 11	Revision of waves, Young's 2 slits.
		Research task issued
		Wien's law
W10	Quantum theory – chapter 11	Research task
		Photoelectric effect
		Research task

TERM 3 – Unit 4, topics 1-3, relativity, quantum mechanics, standard model – research investigation

Week	Topic/ Unit	Lesson Sequence
W1	Gravity chapter 11	Planck's constant
		Research task
		photoelectric effect practical
W2	Chapter 12	Research task
		Research task
		Research task
W3	Chapter 12	Compton effect
		Drafts due and the lesson to work on it
		The Rutherford atom
W4	Chapter 12	Drafts back and the lesson to work on it
		De Broglie waves
		Final due and the lesson to work on it
W5	Standard model Chapter 13	The Bohr atom
		Matter and antimatter
		Vocabulary
W6	Chapter 13	Gauge bosons
		Matter and antimatter
		Vocabulary
W7	Chapter 14 particle interactions	Gauge bosons
		Conservation
		Lepton numbers
W8	Chapter 14	Lepton numbers
		Feynman diagrams
		STUDENT FREE DAY
W9	Chapter 14	Feynman diagrams
		Symmetry CPT.
		CPT review and breaking symmetry
W10	Revision	