



<p>Unit: Atomic Structure</p>	<ol style="list-style-type: none"> 1. The structure of atoms 2. Mass number, atomic number and isotopes 3. Development of the model of the atom 	<ol style="list-style-type: none"> 4. Radioactive Decay 5. Nuclear equations 6. Half-life 7. Contamination 	<ol style="list-style-type: none"> 8. Background radiation 9. Uses of nuclear radiation 10. Nuclear Fission 11. Nuclear Fusion
<p>LESSONS</p>			
<p>Knowledge & Skills Development</p>	<ul style="list-style-type: none"> • Describe the structure of atoms in terms of their sub-atomic particles • Use mass number and atomic number to describe the atoms of specific elements • Knowledge of the contributions of JJ Thompson, Earnest Rutherford, Niels Bohn and James Chadwick towards the current model of the atom • Describe the structure and properties of alpha, beta and gamma radiation including penetration, range in air and ionising power • Apply knowledge to the uses of radiation and evaluate the best sources of radiation to use in a given situation • Use the names and symbols of common nuclei and particles to write balanced equations that show single alpha (α) and beta (β) decay • Explain the concept of half-life and how it is related to the random nature of radioactive decay 		<ul style="list-style-type: none"> • Determine the half-life of a radioactive isotope from given information • Compare the hazards associated with contamination and irradiation • Describe the natural and man-made sources of background radiation • Explain why the hazards associated with radioactive material differ according to the half-life involved • Describe and evaluate the uses of nuclear radiations for exploration of internal organs, and for control or destruction of unwanted tissue • Evaluate the perceived risks of using nuclear radiations in relation to given data and consequences • Describe the process of nuclear fission • Draw/interpret diagrams representing nuclear fission and how a chain reaction may occur • Describe the process of nuclear fusion
<p>Assessment / Feedback Opportunities</p>	<p>Formative Assessment Teacher questioning Quizzes Exam style questions</p>		<p>Summative assessment End of topic assessment Exam questions in future end of topic assessments to assess recall</p>
<p>Key Vocabulary</p>	<p>Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest</p> <p>Atom, Sub-atomic, particle, model, radiation, penetration, ionising, isotope, nuclei, radioactive, hazard, half-life, decay, fission, fusion, chain reaction, contamination, irradiation</p>		
<p>Literacy/Reading Opportunities</p>	<p>Subject specific vocabulary introduced before reading of related texts Word etymology from Latin and Greek roots Reading of simple and complex sentences, paragraphs, articles Scientific writing including structuring methods, comparisons and evaluations</p>		

Cross Curricular Themes	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators
Personal Development (Including British Values, RSE, Citizenship)	None
Career Opportunities	Careers within the nuclear industry (nuclear engineers, technicians, safety advisors, surveyors), Medical careers (radiographer, x-ray technician, etc)