

## Definitions and Concepts for WJEC (Wales) Physics GCSE

### Topic 2.9: Nuclear Decay and Nuclear Energy

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*Definitions in **bold** are for higher tier only*

*Definitions marked by '\*' are for separate sciences only*

**Chain Reaction:** The process of neutrons released by a fission reaction, being absorbed by another unstable, large nuclei, and inducing further fission.

**Control Rods:** Found in nuclear reactors to control the rate of fission. They absorb neutrons, preventing them from inducing further fission reactions.

**Deuterium:** An isotope of hydrogen with one proton and one neutron in its nucleus. It is commonly involved in fusion reactions.

**Fission Products:** Fission produces two smaller nuclei, two or three neutrons and gamma rays. All these products are released with kinetic energy.

**Fissile Nuclei:** A nuclei that will undergo fission if it absorbs a neutron travelling at a suitably slow speed.

**Mass-Energy Equivalence:** All matter has an associated energy. This means that mass can be converted into energy in the form of radiation.

**Moderator:** A substance found in nuclear reactors to slow down neutrons so they are at suitable speeds to induce fission in fissile nuclei.

**Nuclear Fission:** The splitting of a large and unstable nucleus into two smaller and more stable nuclei to produce energy. This is the method currently used in nuclear power stations.

**Nuclear Fusion:** The joining of two small, light nuclei to form a larger, heavier one and release energy. It cannot happen at low pressures and temperatures since in these conditions the electrostatic repulsion of protons in the nucleus cannot be overcome.

**Shielding:** A barrier used to prevent radioactive daughter products leaving a nuclear reactor.

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**Tritium:** An isotope of hydrogen with one proton and two neutrons in its nucleus. It is commonly involved in fusion reactions.

**Uranium-235:** The radioactive isotope used in nuclear reactors. It is often referred to as U-235.

