

Sets (s): triple award

YEAR 11

SUBJECT Physics

Knowledge Focus: Nuclear energy and decay, Stars and planets, The Universe



Ysgol Uwchradd  
Prestatyn  
High School

**This half term : Skills, Knowledge and Understanding to be developed:**

This topic looks at the main features of our solar system, and the elliptical orbits of planets, their moons and artificial satellites. It also looks at the life cycle of stars and origin of the solar system. Then study the topic on the Universe, exploring the evidence of an expanding universe and links this to the Big Bang model.

**Key Terms to be learned this half term:**

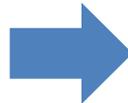
planets, orbit, sun, solar system, asteroids, dwarf planets, star, gravity, elliptical orbit, protostar, satellite, nuclear fusion, diffraction grating, spectrum, wavelength, Doppler shift, Galaxy, cosmological red shift, Big bang theory, cosmic microwave background radiation.

**Week 1 and 2 Learning Objectives etc:**

Learn about nuclear fission, generating power from nuclear fuels. The roles of the moderator and control rods in a nuclear fission reactor. Controlling the reaction.

Learn about nuclear fusion. Produce and balance nuclear equations for nuclear fission and fusion.

The problems of containment in fission and fusion reactors.



**Objective assessments:**

Learn the physics of fission and fusion.

**Homework:**

Question on nuclear fission and decay

**Week 3 and 4 Learning Objectives etc:**

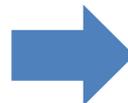
Learn about the main features of our solar system (their order, size, orbits and composition).

The features of the observable universe (planets, planetary systems, stars and galaxies).

Look at how a solar system is formed and the life cycle of stars.

Study the Hertzsprung-Russell diagram and be able to interpret it.

Learn how atomic absorption spectra can be used to identify gases from a given absorption spectrum and additional data.



**Objective assessments:**

Be able to recall the order of the planets including position of the asteroid belt and know what it consists of.

APP Biology

**Homework:**

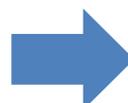
Question on stars and planets

**Week 5 and 6 Learning Objectives etc:**

How the 'cosmological red shift' revealed initially by Edwin Hubble's measurements on the spectra of distant galaxies, revealed that the wavelengths of the absorption lines are increased and that this effect increases with distance.

Learn the cosmological red shift in terms of the expansion of the Universe since the radiation was emitted.

The role of the red shift in supporting the Big Bang model of the origin of the Universe.



**Objective assessments:**

Explore the evidence that leads to the concept of an expanding universe and link it to the Big Bang model.

**Homework:**

Question on the Universe

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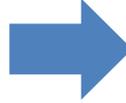


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**High School**

Learn how the existence of the Cosmic Microwave Background Radiation supports the hot Big Bang model of the origin of the Universe.

**Week 7 Learning Objectives etc:**

Exam preparation



**Objective assessments:**

SA on topics covered in LP

**Homework:**

Past papers and revision