| Subject | Year | Term |
|---|---|---|
| Physics | 13 | 2 |

## Topic

Topic 11 Nuclear Radiation

## Content (Intent)

**Prior Learning (Topic) Topic 5 (waves)**

Gravitational collapse and hydrogen 'burning'

Nuclear binding energy  Mass deficit, $\Delta E = c^2 \Delta m$

Background radiation

Nature and properties of alpha, beta and gamma radiation

Nuclear decay equations.

Radioactivity as a random process (eg dice simulation).

Activity, $A = \frac{dn}{df} = -\lambda N$

Meaning of $\lambda$, $ln2 = \lambda\, t_{1/2}$

Exponential decay equations

$N = N_0 e^{-\lambda t}$ and $A = A_0 e^{-\lambda t}$ and the corresponding log. Equations.

Processes of fission and fusion, Mechanism of fusion

Extreme condition required for fusion.

- *CORE PRACTICAL 15*: Investigate the absorption of gamma radiation by lead.

| How will knowledge and skills be taught? (Implementation) | How will your understanding be assessed & recorded (Impact) |
|---|---|
| Measure background radiation with GM tube.<br>Measure range of radiation in air and other materials.<br>Model radioactivity with dice.<br>Computer simulation to produce a radioactive decay curve. | Homework Booklet 11 marked and written feedback given<br>Test 11 marked, graded and feedback given |

## How can parents help at home?

Check that the homework booklet 11 is completed

## Helpful further reading/discussion

| Reading | Vocabulary Lists | Careers Links |
|---|---|---|
| **Advanced Physics for you chapter 26** | *See front of homework booklet* | |