

Physics 90184 Demonstrate understanding of heat transfer & nuclear physics

Level 1 Credits 3

This achievement standard involves knowledge and understanding of heat transfer and nuclear physics and the use of appropriate methods to solve related problems.

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Identify or describe aspects of phenomena, concepts or principles. Solve straightforward problems. 	<ul style="list-style-type: none"> Give descriptions or explanations in terms of phenomena, concepts, principles and/or relationships. Solve problems. 	<ul style="list-style-type: none"> Give concise explanations that show clear understanding in terms of phenomena, concepts, principles and/or relationships. Solve complex problems.

Heat Transfer

- | | |
|---|--|
| <input type="checkbox"/> temperature | <input type="checkbox"/> radiation |
| <input type="checkbox"/> heat energy | <input type="checkbox"/> insulation |
| <input type="checkbox"/> rate of heat transfer | <input type="checkbox"/> $P = \frac{E}{t}$ |
| <input type="checkbox"/> latent heat | <input type="checkbox"/> $Q = mc\Delta T$ |
| <input type="checkbox"/> specific heat capacity | <input type="checkbox"/> $Q = mL$ |
| <input type="checkbox"/> conduction | |
| <input type="checkbox"/> convection | |

Nuclear Physics

- | | |
|--|--|
| <input type="checkbox"/> atomic structure review | <input type="checkbox"/> how a nuclear reactor works |
| <input type="checkbox"/> alpha, beta and gamma radiation | <input type="checkbox"/> fusion reactions & the Sun |
| <input type="checkbox"/> the conservation of atomic number and mass number | <input type="checkbox"/> uses of radioactivity |
| <input type="checkbox"/> isotopes | <input type="checkbox"/> dangers of radioactivity |
| <input type="checkbox"/> fission reactions | |



Achievement will typically involve single aspects related to phenomena, concepts or principles. A *straightforward problem* is one involving a single process. The relevant concept or principle will be transparent, the method will be straightforward (a formula will need no more than a simple rearrangement), and the information will be directly usable.

Achievement with merit will typically involve reasons. For achievement with merit, a problem is typically one in which the relevant concept or principle may not be immediately obvious, the method may involve the use of a complex formula or rearrangement, or the information may not be directly usable or immediately obvious.

Achievement with excellence will typically have minimal irrelevancies. A *complex problem* will typically involve more than one process. The recognition of two different concepts must be involved.