Achievement Standard

Subject Reference
Physics 3.3

Title
Demonstrate understanding of wave systems

Level
3

Credits
4

Assessment
External

Subfield
Science

Domain
Physics

Status
Registered

Status date
4 December 2012

Planned review date
31 December 2016

Date version published
4 December 2012

This achievement standard involves demonstrating understanding of wave systems.

Achievement Criteria

<table>
<thead>
<tr>
<th>Achievement</th>
<th>Achievement with Merit</th>
<th>Achievement with Excellence</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Demonstrate understanding of wave systems.</td>
<td>• Demonstrate in-depth understanding of wave systems.</td>
<td>• Demonstrate comprehensive understanding of wave systems.</td>
</tr>
</tbody>
</table>

Explanatory Notes


2 *Demonstrate understanding* involves showing an awareness of how simple facets of phenomena, concepts, or principles relate to a given situation.

*Demonstrate in-depth understanding* involves giving explanations for phenomena, concepts, or principles that relate to a given situation.

*Demonstrate comprehensive understanding* involves connecting concepts or principles that relate to a given situation.

3 *Wave systems* include mathematical solutions and/or written descriptions. Written descriptions may include graphs or diagrams.
4 Assessment is limited to a selection from the following:

Interference (quantitative) of electromagnetic and sound waves, including multi-slit interference and diffraction gratings; standing waves in strings and pipes; harmonics; resonance; beats; Doppler Effect (stationary observer for mechanical waves).

Relationships:
\[ d \sin \theta = n\lambda \]
\[ n\lambda = \frac{dx}{L} \]
\[ f' = f \frac{v_w}{v_w \pm v_s} \]


---

**Replacement Information**
This achievement standard replaced unit standard 6391 and AS90520.

---

**Quality Assurance**

1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.

2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference 0233