

Syllabus coverage

These bending tests are primarily aimed at the [Engineering Studies Stage 6 Syllabus](#), but could also be adapted to a range of other study areas. The lesson plans the outcomes are found in are denoted in brackets next to the syllabus points below

HSC course primary outcomes:

Civil structures:

- evaluate the importance of the stress/strain diagram in understanding the properties of materials (1,2,3)
- calculate and graph the bending stress and shear force of simply supported beams involving vertical point loads only (1,2,3)
- describe the effect of uniformly distributed loads on a simple beam, without calculations (1)
- apply mathematical and/or graphical methods to solve problems related to stress and strain (3)
- apply mathematical methods to solve problems related to materials used in civil structures apply graphical methods to the solutions of relevant problems (3)
- describe and/or use software to solve problems (3)

Aeronautical engineering:

- investigate the nature and effect of bending stresses, applying appropriate mathematical methods (1,2,3)

HSC course additional outcomes (optional):

- **Civil structures:**
 - explain the special properties produced by composite materials (1,3)
 - compare simple reinforced, pre-tensioned and post-tensioned structures (1,3)

Preliminary course additional outcomes (optional):

- **Engineered products:**
 - apply mathematical and/or graphical methods to solve problems related to forces in engineered products (3)
- **Multiple modules:**
 - use appropriate application software to produce a range of pictorial drawings (3)