

Meden School Curriculum Planning							
Subject	Physics	Year Group	12	Sequence No.		Topic	Materials

Retrieval	Core Knowledge	Student Thinking
What do teachers need <b>retrieve</b> from students before they start teaching <b>new content</b> ?	What <b>specific ambitious knowledge</b> do teachers need teach students in this sequence of learning?	What real life examples can be applied to this sequence of learning to <b>development of our students thinking, encouraging them to see the inequalities around them</b> and 'do something about them!'
AQA GCSE Physics P5 Forces and elasticity	<p><b>3.4.2.1 Bulk properties of solids</b></p> <p>Density, <math>\rho = \frac{m}{V}</math></p> <p>Hooke's law, elastic limit,</p> <p><math>F = k\Delta L</math>, <math>k</math> as stiffness and spring constant. Tensile strain and tensile stress.</p> <p>Elastic strain energy, breaking stress.</p> <p><math>energy\ stored = \frac{1}{2}F\Delta L = area\ under\ force-extension\ graph</math></p> <p>Description of plastic behaviour, fracture and brittle behaviour linked to force–extension graphs.</p> <p>Quantitative and qualitative application of energy conservation to examples involving elastic strain energy and energy to deform.</p> <p>Spring energy transformed to kinetic and gravitational potential energy.</p>	Applications of Hooke's Law include car suspensions, suspension bridges, mechanical watch mechanisms.

Interpretation of simple stress–strain curves.

Appreciation of energy conservation issues in the context of ethical transport design.

### 3.4.2.2 The Young modulus

$$\text{Young modulus} = \frac{\text{tensile stress}}{\text{tensile strain}} = \frac{FL}{A \Delta L}$$

Use of stress–strain graphs to find the Young modulus. (One simple method of measurement is required.)

**Required practical 4:** Determination of the Young modulus by a simple method.

**Young's modulus** is an important parameter for designing structures and components that need to withstand tensile or bending forces, such as bridges, beams, cables, springs, and rods. By knowing the Young's modulus of a material, you can estimate how much it will deform under a given load, and how much energy it will store or release. An important application of this concept is used when designing buildings that withstand earthquakes.

[How Engineering Earthquake-Proof Buildings Could Save Lives \(futurism.com\)](http://futurism.com)