School administrators and Heads of Learning Area – Science and Technologies and teachers of Engineering Studies ATAR Year 11 are requested to note for 2025 the following minor syllabus changes. The syllabus is labelled 'For teaching from 2025'.

Science and Technologies | Engineering Studies ATAR Year 11 | Summary of minor syllabus changes for 2025

The content identified by ~~strikethrough~~ has been deleted from the syllabus and the content identified in *italic*s has been revised in the syllabus for teaching from 2025

Syllabus changes

For teaching from 2025

Unit 1

Fundamental engineering calculations

Perimeter

- determine perimeter of
  - square and rectangular plane figures
  - right-triangular plane figures
    - *Pythagoras' theorem*
      - $a^2 = b^2 + c^2$ *where c is the hypotenuse and a and b are the other two sides*

Mechatronics

Electrical and electronics

Laws and principles

- charge
  - $q = It$
- voltage dividers
  - $V_1 = V_{CC} \times \frac{R_1}{R_1 + R_2}$
  - $V_2 = V_0 = V_{CC} \times \frac{R_2}{R_1 + R_2}$
  - $V_{CC} = V_1 + V_2$

Unit 2

Mechanisms

Calculations

- speed
  - $speed\ (linear\ translation) = \frac{\Delta x}{\Delta t} = \frac{x_f - x_i}{t_f - t_i}$
  - $speed\ (rotational\ to\ linear\ translation) = \frac{(rpm)(2\pi r)}{60}$
  - $output\ speed\ (rpm) = \frac{input\ speed\ (rpm)}{VR}$

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Energy, work and power

Calculations

- energy
  - $E = Pt$
  - $E_P = mg\Delta h$
  - $E_K = \frac{1}{2}mv^2$
  - ~~$\Delta E_P = \Delta E_K$ (assuming 100% efficiency)~~
- work done
  - $W = \Delta E$
- work (linear)
  - $W = Fs = F\Delta x = F(x_f - x_i)$
- power
  - $P = \frac{\Delta E}{\Delta t} = \frac{W}{\Delta t}$
- power (linear)
  - $P = \frac{Fs}{\Delta t} = \frac{F\Delta x}{\Delta t} = \frac{F(x_f - x_i)}{\Delta t} = Fv$

Specialist engineering field

Mechatronics

Systems and control

Interfacing with microcontroller

- analogue pins
  - detects voltage on a scale 0–5 V
  - *analogue to digital conversion (ADC)*
  - *virtually no current draw*
- *serial*
  - serial input (RX)
  - serial output (TX)
  - *no need to code the above serial connections*