Trajectory Education

Headstart 2026

Subject Syllabus & Timeline

VCE Chemistry 3+4

WEEK 1: FUELS & COMBUSTION EQUATIONS — 06-12-2025

- Explain the difference between renewable and non-renewable fuels.
- Write balanced chemical equations for photosynthesis, cellular respiration, and fermentation.
- Construct thermochemical equations for the combustion of organical fuels, including ΔH values

WEEK 2: THERMOCHEMISTRY & CALORIMETRY — 13-12-2025

- Apply stoichiometry to calculate heat energy released and volumes of greenhouse gases
- Calculate the calibration factor of a calorimeter and use it to determine the enthalpy change of a reaction.
- Analyse temperature-time graphs to correct for heat loss during experimentation.

WEEK 3: REDOX PRINICIPLES & ORGANIC CELLS — 20-12-2025

- Identify conjugate redox pairs and determine oxidation numbers in complex molecules.
- Design a labelled diagram of a galvanic cell, identifying polarities and half-cell reactions.
- Write complex half-equations in acidic and basic conditions.

WEEK 4: THE ELECTROCHEMICAL SERIES & FUEL CELLS — 27-12-2025

- Use the electrochemical series to predict cell potential difference and reaction spontaneity.
- Explain the function of porous electrodes in fuel cells regarding surface area and catalytic action.
- Perform calculations using Faraday's Laws to link electrical charge to chemical quantities.

WEEK 5: INTRO TO REACTION RATES & EQUILIBRIUM — 03-01-2026

- Explain changes in reaction rate using collision theory and Maxwell-Boltzmann distribution concepts.
- Draw energy profile diagrams distinguishing between catalysed and uncatalysed pathways.
- Construct equilibrium constant expressions for homogeneous systems.

Headstart classes are **completely free** and a great way to set yourself up for the new school year.

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Questions?

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