



THE UNIVERSITY OF
MELBOURNE

Breadth subjects

Broaden your perspective with Chemistry



The flasks above contain a suspension of synthetic cadmium selenide nanocrystals. The fluorescence observed changes from blue to red as the nanocrystals increase in size. Image courtesy of Dr Tich-Lam Nguyen.

The University of Melbourne aims to produce graduates who are trained in a particular discipline (depth) and are knowledgeable across disciplines (breadth). The breadth component aims to build multiple competencies in students by exposing them to cross-disciplinary teaching and learning.

Chemistry is a 'central science' because of its relevance to physics, biology, the environment and technology.

From this perspective, it makes sense to study Chemistry as the dominant breadth component of your course.

Breadth pathways in Chemistry

There are two standard Chemistry breadth pathways that allow you to complete at least 12.5 points of Chemistry at third year level. The two standard pathways, *Environmental Chemistry* and *The Molecular World*, share common first year chemistry subjects but cover different branches of Chemistry at second and third year levels.

First year

In first year, you need to do at least *Chemistry 1* and *Chemistry 2* to be able to enrol in any second year Chemistry subjects. If you have not passed VCE Chemistry Units 3 and 4, or equivalent, you will also need to also undertake *Fundamentals of Chemistry*.

Second and third years

Environmental Chemistry breadth pathway (50 breadth points in Chemistry)

This pathway focuses on applications of chemistry to understanding the terrestrial, atmospheric and marine environments. This flexible, 50 point (four subjects) pathway culminates in the third year subject *Analytical & Environmental Chemistry*, and satisfies the breadth requirements of the new generation degrees, while giving scope for the student to pursue other breadth subjects within or outside Chemistry.

The Molecular World breadth pathway (62.5 breadth points in Chemistry)

This pathway, which is designed for those wishing to develop a strong Chemistry background for understanding industrial, environmental and biological systems, culminates in *Reactivity and Mechanism*, a core third year subject taken by all Chemistry majors. The second year subjects *Reactions and Synthesis* and *Structure and Properties* are prerequisites for this third year subject.

Below are example course plans for a student wishing to do breadth in Chemistry. *The Environmental Chemistry* pathway is for students interested in Sustainability and the Environment. *The Molecular World* pathway is for students interested in obtaining a more comprehensive background in Chemistry. Both pathways are possible with and without VCE Chemistry Units 3 and 4.

With VCE Chemistry (or equivalent)

Environmental Chemistry Total of 50 pts of Chemistry breadth subjects	The Molecular World Total of 62.5 pts of Chemistry breadth subjects
First year: Chemistry 1 (Semester 1 or 2) Chemistry 2 (Semester 2 or Summer Semester)	First Year: Chemistry 1 (Semester 1 or 2) Chemistry 2 (Semester 2 or Summer Semester)
Second year: Environmental Chemistry (Semester 1)	Second year: Reactions and Synthesis (Semester 1) Structure and Properties (Semester 2) Optional: Practical Chemistry (Semester 2)
Third year: Analytical & Environmental Chemistry (Semester 2)	Third year: Reactivity and Mechanism (Semester 1) Optional: Specialised Topics in Chemistry A (Semester 1) Specialised Topics in Chemistry B (Semester 2) Analytical & Environmental Chemistry (Semester 2)

Without VCE Chemistry (or equivalent)

Environmental Chemistry Total of 62.5 pts of Chemistry breadth	The Molecular World Total of 75 pts of Chemistry breadth
First year: Fundamental of Chemistry (Semester 1) Chemistry 1 (Semester 2) Chemistry 2 (Summer Semester)	First year: Fundamental of Chemistry (Semester 1) Chemistry 1 (Semester 2) Chemistry 2 (Summer Semester)
Second year: Environmental Chemistry (Semester 1)	Second year: Reactions and Synthesis (Semester 1) Structure and Properties (Semester 2) Optional: Practical Chemistry (Semester 2) Environmental Chemistry (Semester 1)
Third year: Analytical & Environmental Chemistry (Semester 2)	Third year: Reactivity and Mechanism (Semester 1) Optional: Specialised Topics in Chemistry A (Semester 1) Specialised Topics in Chemistry B (Semester 2) Analytical & Environmental Chemistry (Semester 2)

Notes:

- (1) All subjects are 12.5 points.
- (2) The **Environmental Chemistry** and **Molecular World** pathways should be viewed as guides. A breadth pathway containing more Chemistry subjects can be crafted in consultation with staff from the School of Chemistry or Faculty of Science.

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