Chemistry with Environmental & Sustainable Chemistry

CAO code: DN200 Option: Chemistry & Chemical Sciences (CCS)

Sample pathway for a degree in Chemistry with Environmental & Sustainable Chemistry *

YEAR 1 — ENGAGE WITH THE PRINCIPLES

CHEMISTRY
Topics include:

- The Basis of Organic and Biological Chemistry
- The Basis of Physical Chemistry
- The Molecular World

MATHEMATICS
Topics include:

- Mathematics for the Biological & Chemical Sciences

- One Small-Group Project

- Two Elective modules

YEAR 2 — CHOOSE YOUR SUBJECTS

CHEMISTRY WITH ENVIRONMENTAL & SUSTAINABLE CHEMISTRY
Topics include:

- Environmental and Sustainable Chemistry
- Inorganic Chemistry
- Physical Chemistry
- Environmental Geology

CHEMISTRY
Topics include:

- The Basis of Inorganic Chemistry
- Organic Chemistry
- Chemical Biology
- Biophysical Chemistry

- Two Elective modules

YEAR 3 — FOCUS ON YOUR CHOSEN SUBJECT

CHEMISTRY WITH ENVIRONMENTAL & SUSTAINABLE CHEMISTRY – *Topics include:*

- Quantum Mechanics
- Carbonyl Chemistry & Synthesis
- Self-Assembly of Biomolecules
- Mechanism & Stereochemistry

- Instrumental Analysis
- Organometallic & Solid State Chemistry
- Main Group Chemistry & Bonding
- Symmetry & Computational Chemistry

- Two Elective modules

YEAR 4 — REFINE YOUR KNOWLEDGE

CHEMISTRY WITH ENVIRONMENTAL & SUSTAINABLE CHEMISTRY – *Topics include:*

- Environmental & Sustainable Chemistry Research Project
- Green and Sustainable Chemistry
- Methods in Organic Synthesis

- Chemical Thermodynamics
- Nanochemistry
- Electrochemistry
- Reactivity & Change
- Modern Methods and Catalysis

- Advanced Inorganic Chemistry
- Methods in Organic Synthesis 2
- Industrial Internship

BSc (Honours) Chemistry with Environmental & Sustainable Chemistry

Apart from the positions that a chemistry degree would qualify a student for (see below), graduates in this degree would be uniquely qualified to work in fields related to Environmental Protection (e.g., the Environmental Protection Agency), Green Chemistry and Sustainable Energy generation.

PhD

Students can pursue a PhD in Ireland or abroad in areas as diverse as:

- Pharmaceutical design
- Atmospheric kinetics
- Biological aspects of nanoscience
- Energy generation
- Pollution control
- Novel material synthesis
- Polymer chemistry
- Materials analysis bio-inorganic chemistry
- Computational studies

Industry

Most graduates work in the pharmaceutical or chemical industries. Positions range from manufacturing chemists to quality control/analysis/assurance, research and development and raw materials/product analysis in manufacturing.

- 2nd level or 3rd level Teaching
- State Labs such as the Forensic laboratory
- ESB and Bord Gáis
- Medical device industry
- Patent law
- Healthcare industry

**See pages 4 and 5 for information on the terminology used above. Potential combinations shown here are examples only and are not guaranteed by UCD. Topics are subject to change each year.*

Undergraduate Chemistry laboratory in the new UCD O'Brien Centre for Science.

- Learn the basis of 'Green Chemistry' and what happens, at a molecular level, when chemicals interact with the environment
- Discover techniques to produce energy and commodity chemicals sustainably

"Currently my research spans Environmental Chemistry, where we study catalysts to remove pollutants from car exhausts, Green Chemistry, where we improve processes used in polymer production, and Chemistry in Sustainable Energy generation, which focuses on materials for solar hydrogen production and storage and synthesis of biofuel."

Associate Professor James Sullivan, Staff

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