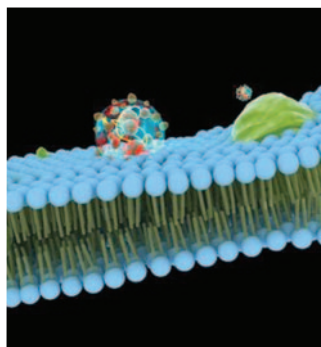


Chemistry with Biophysical Chemistry

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



A nanoparticle with encapsulated active ingredient is penetrating a cell membrane. Image and copyright of Nanobotmodels Company (info@nanobotmodels.com).

- Develop theoretical and practical skills in exploiting the physical and chemical principles of the biomolecular world in modern industrial and biomedical applications

“

In the summer after third year, I did a summer internship in Associate Professor Vitaly Buckin's lab in UCD which I found really interesting as well as very helpful in preparing me for the final year research project. This, as well as my thesis research in my final year, led me to realise that I'd like to pursue further research in a PhD which is what I hope to continue into in the coming year.

Rian Lynch, Student

”

Sample pathway for a degree in Chemistry with Biophysical Chemistry*

YEAR 1

ENGAGE WITH THE PRINCIPLES

CHEMISTRY

Modules include:

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

MATHEMATICS

Modules include:

- ▶ Mathematics for the Biological & Chemical Sciences

BIOLOGY

Modules include:

- ▶ Cell Biology & Genetics

- ▶ One Elective module
- ▶ One Small-Group Project

YEAR 2

CHOOSE YOUR SUBJECTS

The subject combinations listed below are illustrative of what a student who graduates in Chemistry with Biophysical Chemistry could choose in Year 2. Further subject combinations are possible depending on the choices in Year 1. Further information is available on page 19.

CHEMISTRY WITH BIOPHYSICAL CHEMISTRY

Modules include:

- ▶ Biophysical Chemistry
- ▶ Physical Chemistry
- ▶ Inorganic Chemistry
- ▶ Organic Chemistry

CHEMISTRY

Modules include:

- ▶ Students who choose Chemistry with Biophysical Chemistry as their main subject for Second Year also cover the requirements for Chemistry.

- ▶ Two Elective modules

YEAR 3

FOCUS ON YOUR CHOSEN SUBJECT

CHEMISTRY WITH BIOPHYSICAL CHEMISTRY – Modules include:

- ▶ Instrumental Analysis
- ▶ Carbonyl Chemistry & Synthesis
- ▶ Quantum Mechanics
- ▶ Mechanism & Stereochemistry
- ▶ Nano-Assemblies and Interfaces

- ▶ Organometallic & Solid State Chemistry
- ▶ Main Group Chemistry & Bonding
- ▶ Symmetry & Computational Chemistry
- ▶ Optional modules in Biomolecular, Organic and Inorganic Chemistry

- ▶ Two Elective modules

YEAR 4

REFINE YOUR KNOWLEDGE

CHEMISTRY WITH BIOPHYSICAL CHEMISTRY – Modules include:

- ▶ Biophysical Chemistry Research Project
- ▶ Metals in Biology
- ▶ Electrochemistry

- ▶ Biophysical Chemistry
- ▶ Advanced Kinetics and Thermodynamics
- ▶ Nanochemistry

- ▶ Optional modules in Biomolecular, Organic and Inorganic Chemistry

BSc (Honours) Chemistry with Biophysical Chemistry

PhD

- Students can pursue a PhD in Ireland or abroad in areas as diverse as:
- ▶ Pharmaceutical and biomedical biomolecular formulations design
 - ▶ Bio-processing and bio-engineering
 - ▶ Bio-nanotechnology
 - ▶ Forensic science
 - ▶ Food and agro technologies
 - ▶ Energy generation
 - ▶ Novel materials and materials analysis
 - ▶ Polymer chemistry

Industry

- ▶ Pharmaceutical, Biomedical, Medical Device Industry
- ▶ Biotechnology, Food Technology, Agrochemistry
- ▶ Fine Chemical, Chemical Development
- ▶ Personal Care, Cosmetics, Environmental Protection, Paints and Coatings/ Petrochemistry
- ▶ Patenting
- ▶ Science-based Sales, Marketing, Finance

Conversion Courses

- ▶ Professional Master of Education (PME)
- ▶ Graduate Veterinary Medicine
- ▶ Graduate Medicine
- ▶ Master of Management

*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. Modules are subject to change each year.



www.ucd.ie/myucd/biophysicalchemistry

i

Associate Professor Vitaly Buckin
UCD School of Chemistry

vitaly.buckin@ucd.ie
facebook.com/UCDSchool
twitter.com/ucdschool

V1 2021