

# BSC (HONS) CHEMISTRY OF PHARMACEUTICAL COMPOUNDS

## Overview

NFQ Level 8, Major Award

## Eligibility

Students from the Biological and Chemical Sciences Area of Study (CK402 entry (<https://ucc-ie-public.courseleaf.com/programmes/bscbf/>)) who pass First Science may opt to enter this programme, provided they have passed First Science and passed CM1200 and CM1201. There are twenty places available each year.

## Quotas

Students who opt to enter will be offered places in order of merit based on their First Year Examination results in Chemistry. In filling the quotas, places will be given to students passing the First University Examination in Science at the Summer Examination in the first year of registration for the First University Examination in Science, and in order of merit of marks in Chemistry obtained thereat. Remaining places, if any, will be filled in order of merit without distinction as to when the examination was completed. The decision as to the filling of such remaining places will be made after the results of the Autumn Supplemental Examination are known.

## Second Year - Chemistry of Pharmaceutical Compounds

In Second Science, students take modules common to the Second Science degree programme in Chemistry encompassing the basic elements of Inorganic, Organic and Physical Chemistry. Four other modules are taken from the Biological Sciences including modules in Biochemistry, Molecular Biology and Physiology. Students take 60 credits.

## Third Year - Chemistry of Pharmaceutical Compounds

In Third Science, students take 10 modules (60 credits), equally divided between Chemistry and the Biological Sciences.

Industrial Placements will be held in the vacation between Third and Fourth Year over the period May - October. This work placement is a core Fourth Year module (10 credits). Commencement of the final year is in week 11 to accommodate this.

## BSc Ordinary Degree - NFQ Level 7, Major Award

Students who pass Third Year may choose not to proceed to Fourth Year and may opt instead to be conferred with a BSc Ordinary Degree (<https://ucc-ie-public.courseleaf.com/programmes/bscpas/>).

## Fourth Year - Chemistry of Pharmaceutical Compounds

The Fourth Year involves a work placement module (10 credits on a Pass/Fail basis), taught modules (40 credits) and a further 10 credits comprising either a 10 credit Chemistry research project (CM4208) or a 5 credit Chemistry project (CM4203) plus a 5 credit Biochemistry project (BC4014). A maximum of 10 places are available on BC4014. Allocation of projects will be made in consultation with students with priority given on the basis of overall marks in *Third Science*.

Please note that this programme does *not* result in a qualification to practise as a pharmacist.

## Programme Requirements

For information about modules, module choice, options and credit weightings, please go to Programme Requirements (p. 1).

## Programme Requirements

Code	Title	Credits
<b>Year 1</b>		
Students take <b>60</b> credits as follows:		
<i>Core Modules</i>		
BC1001	Introduction to Biochemistry and the Biological Basis of Disease	5
BL1002	Cells, Biomolecules, Genetics and Evolution	5
BL1004	Physiology and Structure of Plants and Animals	5
CM1200	Fundamentals of Modern Chemistry Part 1	10
CM1201	Fundamentals of Modern Chemistry Part 2a	10
MA1001	Calculus for Science Part 1	5
MA1002	Calculus for Science Part 2	5
MB1003	Microbiology in Society	5
PY1010	Physics for Biological and Chemical Sciences	10
<b>Year 2</b>		
Students take <b>60</b> credits as follow:		
<i>Core Modules</i>		
<i>Chemistry</i>		
CM2001	Main Group and Transition Element Chemistry	5
CM2002	Fundamentals of Organic Chemistry	5
CM2003	Energetics and Kinetics	5
CM2004	States of Matter	5
CM2005	Structures and Reactions of Main Group Compounds	5
CM2006	Aromatics, Carbonyls and Alkenes	5
CM2007	Spectroscopy	5
CM2008	Structure, Bonding and Quantum Mechanics	5
<i>Biochemistry</i>		
BC2001	Biomolecules	5
BC2002	Principles of Metabolic Pathways	5
<i>Molecular Biology</i>		
ML2901	Introductory Molecular Biology	5
<i>Physiology</i>		
PL2021	Introductory Physiology I	5
<i>Optional Module <sup>1</sup></i>		
CM0004	Introduction to Validation (5)	
<b>Year 3</b>		
Students take <b>60</b> credits as follow:		
<i>Core Modules</i>		
<i>Chemistry</i>		
CM3001	Organic Synthesis, Intermediates and Heterocycles	5
CM3004	Structure and Reactivity of Organic Compounds	5
CM3024	Analytical Chemistry	10
CM3101	Natural Products and Reaction Mechanisms	
CM3102	Introduction to Pharmaceutical Chemistry	5
CM3110	Pharmaceutical Solids and Technology	5

<b>Biochemistry</b>		
BC3001	Structural and Experimental Biochemistry	5
BC3006	Molecular Biology	5
<b>Pharmacology</b>		
PT3001	Introduction to Pharmacology	5
PT3002	Introduction to Toxicology	5
PT3005	Chemotherapy and Pharmacology of Inflammation	5
<b>Optional Module <sup>2</sup></b>		
CM0005	Validation Science (5)	
<b>Year 4</b>		
Students take <b>60</b> credits as follow:		
<b>Core Modules</b>		
<b>Work Placement Module</b>		
CM4204	Work Placement	10
<b>Chemistry</b>		
CM4001	Advanced Organic Synthesis and Reactivity	5
CM4101	Physical Organic Chemistry	5
CM4103	Heterocycles, Biosynthesis and Asymmetric Synthesis	5
CM4108	Advanced Pharmaceutical Chemistry	5
CM4109	Pharmaceutical Chemistry Drug Design and Development	5
<b>Biochemistry</b>		
BC4002	Protein Science	5
<b>Pharmacology</b>		
PT4005	Neuropharmacology	5
PT4012	Applied Pharmacology & Toxicology	5
<b>Projects</b>		
Students select one of the following:		10
CM4203 <b>plus</b> BC4014	Research Project : Chemistry of Pharmaceutical Compounds (5) <b>plus</b> Research Project: Chemistry of Pharmaceutical Compounds ()	
CM4208	Research Project 2: Chemistry of Pharmaceutical Compounds (10)	
<b>Total Credits</b>		<b>235</b>

## Examinations

Full details and regulations governing Examinations for each programme will be contained in the *Marks and Standards Book* and for each module in the *Book of Modules*.

## Programme Learning Outcomes

### Programme Learning Outcomes for BSc in Chemistry of Pharmaceutical Compounds (NFQ Level 8, Major Award)

On successful completion of this programme, students should be able to:

- Identify, formulate, analyse and solve problems relating to the action, design and manufacture of pharmaceutical compounds;
- Outline the fundamental aspects of physiology, chemistry, biochemistry and pharmacology relating to pharmaceutical activity;
- Design and carry out experiments to test hypotheses or theories in pharmaceutical chemistry, biochemistry or pharmacology;
- Communicate effectively with pharmaceutical scientists in written, oral and electronic formats;
- Engage with all stages of the pharmaceutical manufacturing process, and appreciate the opportunities and challenges facing the pharmaceutical industry.

<sup>1</sup> Students interested in taking this optional module must note their interest to the module co-ordinator in the first week of Semester 1. Places are limited and will be allocated based on results obtained in First Year and subject to the approval of the Programme Co-ordinator. CM0004 is not included for progression to subsequent year and is not counted toward the final degree award. The result obtained in CM0004 will be recorded on the student's transcript.

<sup>2</sup> Students interested in taking this optional module must note their interest to the module co-ordinator in the first week of Semester 2. Students who have passed the prerequisite CM0004 will be allocated a place, subject to the approval of the Programme Co-ordinator. CM0005 is not included for progression to subsequent year and is not counted toward the final degree award. The result obtained in CM0005 will be recorded on the student's transcript.