

Full Year, Level 4 module
(Maximum 144 Students)

UCU: 20 Organiser: Professor Simon Lancaster

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:F2*D3/, U

Exam Paper(hrs):2 Exam Period:SPR-02

After a shared introduction to chemical bonding, atomic and molecular structure and chemical principles, this module will provide you with an introduction to the structures, properties and reactivities of molecules and ionic solids. The first few lectures of this module are integrated with the module 'Chemistry of Carbon Based Compounds'. The course is supported and illustrated by the bonding, structure and periodicity experiments of the first year practical modules, Chemistry Laboratory A or Research Skills in Biochemistry. The latter part of the course will concentrate more on fundamental aspects of inorganic chemistry. Emphasis will be placed on the relationships between chemical bonding and the structures and properties of molecules. This module is the prerequisite for the 2nd year Inorganic Chemistry module.

2019/0 - CHE-4501Y ANALYTICAL CHEMISTRY

Full Year, Level 4 module
(Maximum 80 Students)

UCU: 20 Organiser: Dr Anna Fuller

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:G1\, D3\

Exam Paper(hrs): Exam Period:SPR-02

Introducing important concepts in analytical chemistry, this module covers a range of qualitative and quantitative analytical techniques that underpin more complex instrumental analytical methodologies. Exploring these techniques, you will learn how to apply them to "real-life" analytical problems.

2019/0 - CHE-4602Y RESEARCH SKILLS IN BIOCHEMISTRY

Full Year, Level 4 module
(Maximum 70 Students)

UCU: 20 Organiser: Dr Tharin Blumenschein

MODULE - 40% PASS ON AGGREGATE

Module Type: Coursework

Timetable Slot:B1-D1, U

WHILE TAKING THIS MODULE YOU MUST TAKE CHE-4101Y OR TAKE CHE-4301Y

Full Year, Level 5 module
(Maximum 70 Students)

UCU: 20 Organiser: Dr Joseph Wright

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:G2/H3/C1/-B3

Exam Paper(hrs):2 Exam Period:SPR-02

BEFORE TAKING THIS MODULE YOU MUST TAKE CHE-4301Y AND TAKE CHE-4001Y OR TAKE CHE-4602Y

Specialist materials dominate the modern world, and it is our ability as chemists to control their properties. Understanding and controlling material properties is the central theme of this module. In this module you will learn about two key classes of material: polymers and inorganic solids. You'll gain a firm grounding in the specialist methods used to characterise these materials. This will enable you to appreciate the unique properties of these materials, and how they can be controlled. In the practical element of the module, you'll gain skills in synthesising and characterising polymers and inorganic solids. In the polymers thread, you'll begin by gaining an appreciation of the role they play in society and why they are unique. You'll then encounter methods we can use to understand the properties of polymers, and how we can control them. You'll also explore the wide range of mechanisms that can be used to make organic polymers. In the thread focussed on inorganic materials, you'll explore the ionic model for inorganic solids, before gaining an appreciation of the synthesis and characterisation methods that allow access to these materials. You'll then explore the variety of properties that solids can exhibit, including semiconduction and magnetism. This lecture-based content is complemented by the practical component of the course, where you'll gain hands-on experience in both synthesis and characterisation.

2019/0 - CHE-5501Y INSTRUMENTAL ANALYTICAL CHEMISTRY

Full Year, Level 5 module
(Maximum 50 Students)

UCU: 20 Organiser: Dr Andrew Mayes

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:G2/*C2*H3, C1/-B3, G1/ID3\

Exam Period:SPR-02

BEFORE TAKING THIS MODULE YOU MUST TAKE CHE-4001Y

The module covers the theory and practical application of some key instrumental techniques for chemical analysis. Molecular spectroscopy, chromatography and electroanalytical techniques are the important instrumental methods included. Laboratory practicals using these techniques will reinforce material covered in the lecture programme.

2019/0 - CHE-5601Y BIOPHYSICAL CHEMISTRY

Full Year, Level 5 module
(Maximum 80 Students)

UCU: 20 Organiser: Professor Julea Butt

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot: B2, A1-F1, E2, H2/

Exam Paper(hrs):2 Exam Period: SPR-02

BEFORE TAKING THIS MODULE YOU MUST TAKE BIO-4007Y OR TAKE CHE-4202Y

This module will equip you with an understanding of the principles and techniques used in contemporary biophysical chemistry. You will learn experimental techniques for measuring thermodynamic and kinetic properties of biological molecules. You will gain firm grounding in the physical principles describing those properties and their use to provide quantitative descriptions of those properties. Using predominantly examples from protein biochemistry you will explore three major themes; i) spectroscopic properties of biomolecules, ii) thermodynamic and kinetic properties of proteins and enzymes, and, iii) methods defining biomolecule size and mass. Through weekly seminars you will benefit from putting your knowledge into practice, communicating your ideas and growing your confidence in quantitative data analysis and problem solving. During laboratory based practical work, you will develop your skills in sample preparation together with the collection and interpretation of spectroscopic data. Your participation in this module will give you the knowledge to appreciate how, and why, biophysical chemistry contributes to advances in medicine, sustainable energy solutions and healthy ageing.

2019/0 - CHE-6001Y RESEARCH PROJECT

Full Year, Level 6 module
(Maximum 40 Students)

UCU: 40 Organiser: Dr Vasily Oganessian

MODULE - 40% PASS ON AGGREGATE

Module Type: Project

Timetable Slot: U

IN TAKING THIS MODULE YOU CANNOT TAKE CHE-6002Y

A supervised research project available only to students registered for the BSc programme.

2019/0 - CHE-6002Y LITERATURE-BASED PROJECT

Full Year, Level 6 module
(Maximum 20 Students)

UCU: 20 Organiser: Dr Vasily Oganessian

MODULE - 40% PASS ON AGGREGATE

Module Type: Project

Timetable Slot: U

IN TAKING THIS MODULE YOU CANNOT TAKE CHE-6001Y

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:A1,B2

Exam Paper(hrs):2

Exam Period:SPR-02

BEFORE TAKING THIS MODULE YOU MUST TAKE CHE-4101Y AND TAKE CHE-5101A

You will cover several key topics required to plan the synthesis of organic compounds, and to understand the properties displayed by organic compounds. The first topic is on synthesis planning, strategy and analysis, supported by a study of further important oxidation and reduction reactions. The second topic is on the various types of pericyclic reactions and understanding the stereochemistry displayed by an analysis of frontier orbitals. The third topic is on the use of organometallic compounds in synthesis with a particular emphasis on the use of transition metal based catalysts. The fourth topic is on physical organic chemistry and includes aspects of radical chemistry. The final topic is the synthesis of chiral non-racemic compounds, and describes the use of chiral pool compounds and methods for the amplification of chiral information, including asymmetric reductions and oxidations.

2019/0 - CHE-6151Y TOPICS IN ORGANIC CHEMISTRY

Full Year, Level 6 module

(Maximum 30 Students)

UCU: 20

Organiser: Dr Sean Bew

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:H2/*G1/

Exam Paper(hrs):2

BEFORE TAKING THIS MODULE YOU MUST TAKE CHE-5101A
IN TAKING THIS MODULE YOU CANNOT TAKE CHE-7150Y

This module is to provide an awareness of new bond construction in advanced organic chemistry. It has aspects of natural product chemistry and the associated bioactivity of natural compounds. The module will illustrate how advanced synthetic chemistry can be used to construct compounds that might find applications in the pharmaceutical industry.

2019/0 - CHE-6250Y CHEMICAL PHYSICS - PHYSICAL CHEMISTRY

Full Year, Level 6 module

(Maximum 30 Students)

UCU: 20

Organiser: Professor Steve Meech

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:D2*C3*

Exam Period:SPR-02

BEFORE TAKING THIS MODULE YOU MUST TAKE CHE-5201Y OR TAKE CHE-

5250Y OR TAKE PHY-5001Y

On this module, you will study topics covering important areas of modern physical chemistry and chemical physics. The material will blend together experimental and theoretical aspects of photonics, condensed phase dynamics in molecular and macromolecular fluids and quantum and classical simulations.

2019/0 - CHE-6301Y INORGANIC COMPOUNDS: STRUCTURE AND FUNCTION

Full Year, Level 6 module
(Maximum 100 Students)

UCU: 20

Organiser: Dr Myles Cheesman

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:E2\+

Exam Paper(hrs):2

Exam Period:SPR-02

BEFORE TAKING THIS MODULE YOU MUST TAKE CHE-5301B OR TAKE CHE-2C32

This module concentrates on two important themes in contemporary inorganic chemistry: (i) the role of transition metals in homogeneous catalysis; (ii) the correlation between the structures of transition metal complexes and their electronic and magnetic properties. The structure and bonding in these compounds will be discussed as well as their applications in synthesis. There will be a series of problem-solving workshops interspersed with the lectures.

2019/0 - CHE-6601Y PROTEIN STRUCTURE, CHEMISTRY AND ENGINEERING

Full Year, Level 6 module
(Maximum 70 Students)

UCU: 20

Organiser: Dr Tharin Blumenschein

MODULE - 40% PASS ON AGGREGATE

Module Type: Examination with Coursework or Project

Timetable Slot:G2/*C2*G1\

Exam Paper(hrs):2

Exam Period:SPR-02

BEFORE TAKING THIS MODULE YOU MUST TAKE CHE-5601Y OR TAKE CHE-5201Y

The structural basis of the function of many proteins has been elucidated and this, together with the ready availability of chemical and biochemical techniques for altering proteins in a controlled way, has led to the application of proteins in a wide variety of biological and chemical systems and processes. These include their use as industrial catalysts and medicines, in organic syntheses and in the development of new materials. This module provides you with an introduction to the principles underlying this rapidly expanding and commercially-relevant area of the molecular biosciences and gives insights into their applications.