

The School of Biochemistry & Immunology is research intensive and has a strong international reputation for the quality of its scholarly activities. The areas of research in Biochemistry include membrane proteins, enzymology, folic acid biochemistry, structural biology, tRNA biology, neurochemistry, systems biology, cancer biology, molecular parasitology, apoptosis, energy transduction and drug discovery. In the area of Immunology our School is active in immunoregulation, immunomodulation, cell signalling in immunity and inflammation, immunoparasitology, vaccine adjuvant research, innate immunity and inflammation, and viral subversion of immunity.

Our success in these areas is complemented by our substantial investment in cutting-edge facilities for nuclear magnetic resonance, protein crystallisation, X-ray crystallography, transgenics, histochemistry, electron microscopy, confocal microscopy, and fluorescence activated cell sorting. The School has a passion for discovery, an ability to generate new knowledge, expertise in cutting-edge technologies, a flair for entrepreneurship and innovation, as well as a commitment to communicating their passion and knowledge to students. The School funds three moderatorships, leading to degrees in **Biochemistry**, **Immunology** and **Molecular Medicine**.

International students who have relevant backgrounds from their home Institutions and at least 1-2 years of comparable subjects similar those necessary for entry into a specific moderatorship can elect to take the full Junior Sophister year. For **ERASMUS+** students hosted by School, we have set up specific agreements with your home Institutions in either Biochemistry or Immunology. **Visiting non-EU students**, including TASSEP, Science Without Borders (SWB) or similar can apply through College for a full academic year in Biochemistry (TASSEP, ERASMUS+ by agreement or SWB), Immunology (TASSEP, ERASMUS+ by agreement or SWB) or Molecular Medicine (TASSEP or SWB), see pages 2, 3 & 4, respectively.

We can accommodate **single semester visiting students** or **students hosted by other Schools** wishing to take a module, but this is subject to space limitations and preferences are given to full academic year students that we host, see page 5.



Junior Sophister Biochemistry - Full Academic Year

Code	Semester	Module Name	ECTS	Assessment
BI3110	Semester 1 (Michaelmas)	Protein Structure	10	30% coursework & 70% by examination

This module consists of lectures covering proteins and enzymes. In particular lectures focus on protein structure and function, enzyme regulation and enzyme activity. The lectures are complemented by practical classes that explore protein assays, enzyme kinetics and structural biology.

Code	Semester	Module Name	ECTS	Assessment
BI3115	Semester 1 (Michaelmas)	Biochemical Analysis	5	100% coursework

This is a practical module that teaches core research skills in general biochemical techniques, maintaining of accurate laboratory records and data handling techniques.

Code	Semester	Module Name	ECTS	Assessment
BI3120	Semester 1 (Michaelmas)	Membrane & Cell Biology	10	30% coursework & 70% by examination

This module covers the structure and function of biological membranes, the cytoskeleton, signal transduction pathways and associated pathological conditions important to human health. Practicals investigate ion transporter function, cAMP signalling, receptor/ligand binding and cell culture techniques.

Code	Semester	Module Name	ECTS	Assessment
BI3010	Semester 2 (Hilary)	Nucleic Acids	10	30% coursework & 70% by examination

This module consists of lectures covering the structure and function of nucleic acids and the molecular basis of gene regulation, including DNA replication and repair, transcription and translation. Practicals focus on using molecular biology techniques to generate recombinant proteins.

Code	Semester	Module Name	ECTS	Assessment
BI3140	Semester 2 (Hilary)	Biochemistry in Health & Disease	10	30% coursework & 70% by examination

This module explores how imbalances in metabolism result in disease. It covers biochemical defence mechanisms against infection and also looks at pharmaceutical drug discovery. Practical classes address aspects of cancer metabolism and evasion of the immune system by tropical parasites.

Code	Semester	Module Name	ECTS	Assessment
BI3020	Semester 2 (Hilary)	Research Skills	10	100% coursework

The purpose of this module is to develop critical analysis and communication skills. Students will undertake a review of a subject area of biochemical relevance under the supervision of a member of staff and present a literature review of the topic in both written form and in oral presentation form. In addition there will be training in quantitative problem solving.

Junior Sophister Immunology - Full Academic Year

Code	Semester	Module Name	ECTS	Assessment
BI3210	Semester 1 (Michaelmas)	Biochemistry	10	30% coursework & 70% by examination

This module considers protein structure and function, including membrane proteins, cytoskeleton, microtubules and actin and proteins of the immune system. Signal transduction pathways and associated pathological conditions important to human health make up the final portion of the module. Practical classes explore protein assays, enzyme kinetics and cAMP signalling.

Code	Semester	Module Name	ECTS	Assessment
BI3215	Semester 1 (Michaelmas)	Analytical Skills	5	100% coursework

This is a practical module that teaches core research skills in general biochemical techniques, maintaining of accurate laboratory records and data handling techniques.

Code	Semester	Module Name	ECTS	Assessment
BI3220	Semester 1 (Michaelmas)	Innate Immunity	10	30% coursework & 70% by examination

This module looks at cells, receptors and soluble components of the innate immune system and how they function to eliminate pathogens. Topics covered include Toll-like receptors, cytokines, neutrophils and natural killer cells. The practical component explores phagocytosis and dendritic cell function.

Code	Semester	Module Name	ECTS	Assessment
BI3230	Semester 2 (Hilary)	Gene Regulation	10	30% coursework & 70% by examination

This module consists of lectures covering the structure and function of nucleic acids and the molecular basis of gene regulation, including DNA replication and repair, transcription and translation. Practicals focus on using molecular biology techniques to generate recombinant proteins.

Code	Semester	Module Name	ECTS	Assessment
BI3240	Semester 2 (Hilary)	Microbiology & Immunology	10	30% coursework & 70% by examination

This module builds on the core concepts in immunology introduced in BI3220. Topics studied in depth include microbial pathogenicity, immunology and disease and epigenetics. The laboratory sessions explore cytokines and lymphocytes.

Code	Semester	Module Name	ECTS	Assessment
BI3020	Semester 2 (Hilary)	Research Skills	10	100% coursework

The purpose of this module is to develop critical analysis and communication skills. Students will undertake a review of a subject area of biochemical relevance under the supervision of a member of staff and present a literature review of the topic in both written form and in oral presentation form. In addition there will be training in quantitative problem solving.

Junior Sophister Molecular Medicine - Full Academic Year

Code	Semester	Module Name	ECTS	Assessment
BI3310	Semester 1 (Michaelmas)	Proteins & Drugs	10	30% coursework & 70% by examination

This module covers proteins and enzymes with a focus on protein structure and function, enzyme regulation and enzyme activity. Lectures on medicinal chemistry discuss the molecular components of cells, control through non-covalent interactions, the sites and mechanisms of drug action and drug development.

Code	Semester	Module Name	ECTS	Assessment
BI3315	Semester 1 (Michaelmas)	Bioanalysis	5	100% coursework

This is a practical module that teaches core research skills in general biochemical techniques, maintaining of accurate laboratory records and data handling techniques.

Code	Semester	Module Name	ECTS	Assessment
BI3320	Semester 1 (Michaelmas)	Cell Biology	10	30% coursework & 70% by examination

This module covers the structure and function of biological membranes, the cytoskeleton, signal transduction pathways and associated human pathologies. The endocrine system in the regulation of metabolic, excretory and reproductive processes in mammals is also explored in detail. Practicals investigate ion transporter function, assays of cAMP signalling, receptor/ligand binding and cell culture techniques.

Code	Semester	Module Name	ECTS	Assessment
BI3010	Semester 2 (Hilary)	Nucleic Acids	10	30% coursework & 70% by examination

This module consists of lectures covering the structure and function of nucleic acids and the molecular basis of gene regulation, including DNA replication and repair, transcription and translation. Practicals focus on using molecular biology techniques to generate recombinant proteins.

Code	Semester	Module Name	ECTS	Assessment
BI3330	Semester 2 (Hilary)	Disease & Development	10	30% coursework & 70% by examination

This module explores how imbalances in metabolism result in disease. It covers core concepts in immunology and an overview of cellular mechanisms of cancer and cancer therapeutics. The relevance of developmental biology and the use of animal models to our understanding of human disease is also covered. Practicals address cancer metabolism and evasion of the immune system by tropical parasites.

Code	Semester	Module Name	ECTS	Assessment
BI3020	Semester 2 (Hilary)	Research Skills	10	100% coursework

This module develops critical analysis and communication skills. Students will review a subject area of biochemical relevance under the supervision of a member of staff and present a written literature review of the topic and present an oral summary. In addition there will be training in quantitative problem solving.

**Junior Sophister modules for single semester or non-Biochemistry & Immunology
visiting students**

Code	Semester	Module Name	ECTS	Assessment
BI3915	Semester 1 (Michaelmas)	Protein Structure	5	100% by examination

This module consists of lectures covering proteins and enzymes. In particular lectures focus on protein structure and function, enzyme regulation and enzyme activity.

Code	Semester	Module Name	ECTS	Assessment
BI3925	Semester 1 (Michaelmas)	Membrane & Cell Biology	5	100% by examination

This module covers the structure and function of biological membranes, the cytoskeleton, signal transduction pathways and associated pathological conditions important to human health that are related to these aspects of cell physiology.

Code	Semester	Module Name	ECTS	Assessment
BI3935	Semester 1 (Michaelmas)	Innate immunity	5	100% by examination

This module looks at cells, receptors and soluble components of the innate immune system and how they function to eliminate pathogens. Topics covered include Toll-like receptors, cytokines, neutrophils and natural killer cells.

Please note: BI3935 **CANNOT** be combined with BI3915, BI3925 or BI3955.

Code	Semester	Module Name	ECTS	Assessment
BI3945	Semester 2 (Hilary)	Nucleic Acids	5	100% by examination

This module consists of lectures covering the structure and function of nucleic acids and the molecular basis of gene regulation, including DNA replication and repair, transcription and translation.

Code	Semester	Module Name	ECTS	Assessment
BI3955	Semester 2 (Hilary)	Biochemistry in Health and Disease	5	100% by examination

This module explores how imbalances in metabolism result in disease. It covers biochemical defence mechanisms against infection and also looks at pharmaceutical drug discovery.

Please note: BI3955 **CANNOT** be combined with BI3935.