

Changes to previous information

During the global COVID-19 pandemic, we prioritised the health, wellbeing and safety of our students and staff.

As we start the new academic year, your health, wellbeing and safety remains our top priority. This means when we return to our campuses and buildings in September 2020 social distancing and other health and safety measures will be in place. This is to help keep you, and others around you, safe. We will respond to the requirements of vulnerable students regarding their personal safety on an individual basis.

We remain committed to delivering an outstanding education and student experience both on campus and online. Like most universities, we'll be providing a mix of on-site face-to-face and digital learning and teaching. The exact mix will vary between courses and course modules taking into account teaching requirements and other considerations such as meeting the safety of vulnerable staff.

It is important to emphasise that a face-to-face, on-site experience will be delivered within the Government and Public Health England guidance and providing there are no serious unforeseeable public health issues that result in the Government introducing further lockdown measures.

Our response to the pandemic means we may have made changes to your course. This is to take account of these important health and safety measures.

We ask you to read the information provided about course changes carefully. We detail what we include in our online prospectus and explain what has changed.

You should read our statement of changes alongside any information provided in videos, at open days or in other promotional materials. This is because the information may also have been affected by the changes we had to make. We are providing this information so you can make an informed choice about whether the course remains suitable for you.

When you register for your course, you will be asked to confirm you have read about our changes and you agree to them. It means that by choosing to continue with your application, and register with us, you accept these changes and are happy to study your course with us.

We really look forward to seeing you in the next academic year. In the meantime, if you want to find out more about University life from this September, and being part of our supportive and welcoming community, please visit our [September 2020 web pages](#).

		Current published course related information	
Course title	Biomolecular Science		
Award level	BSc - Single honours only		
How do you want to study?			
Start Date	Sept 2020		
Modes of study	Full-time Part-time		
Duration	3 years full-time 6 years Part-time		
UCAS code	C700		
Location	Canterbury		
Partner institution	N/A		
Available with a Foundation Year	Yes		
Overview			
	<p>This industry-focused course gives you the opportunity to see, analyse and discover life, up close.</p> <p>The sector is developing rapidly, opening exciting career opportunities in the biomedical and pharmaceutical sectors. You'll cover a broad range of topics including genetics, molecular biology and more. The industry-focused nature of this course also provides opportunities for you to enter direct employment with biotech companies.</p> <p>You will study in existing campus facilities, at our Life Sciences Industry Liaison Lab in Discovery Park, Sandwich, and labs in our brand new STEM building.</p>	<p>There will still be a focus on the development on practical skills in the laboratory but opportunities to work with employers will depend upon the current COVID-19 situation. The STEM building will be available by January 2021</p> <p>The practical week will be supported by supplementary online demonstrations of key laboratory techniques. In the event of further COVID 19 interruptions, further face to face contingency arrangements are planned to support student learning</p>	
Why study Biomolecular Science?			
	<p>The exciting and rapid advances in the biomolecular sciences have wide-reaching applications in biotechnology, biochemical and medical research, the pharmaceutical industry and biology in general.</p> <p>All biological phenomena have their origins at the molecular level and our Biomolecular Science course encompasses the study of</p>	<p>Please note that the running of the optional 'Added Value' programmes will depend upon the situation with COVID-19.</p>	

	<p>genetics, biochemistry and molecular biology to ensure you gain important practical skills and knowledge in these key areas.</p> <p>You'll be spending a significant amount of time at our innovative Life Sciences Industry Liaison Lab where we have collaborations with a number of research-based companies. Here you'll be able to develop your skills as part of our 'Added Value' programme, and take advantage of our strong links with industry, connect with biotech companies and gain valuable experience to build your CV.</p> <p>At the University, you'll be taught by staff with a wide range of academic and industry experience. They will share their knowledge, experience and research insights with you and support you so you can reach your full potential.</p>	
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Entry requirements	For entry to the three-year full-time course (6 year part-time) candidates usually require between 88-112 UCAS tariff points. Of which 32 UCAS tariff points or equivalent (e.g. A level grade C or BTEC grade Merit) are in a science subject for example biology, chemistry.	
About the course		
Year 1	In Year 1, you'll study the fundamental aspects of biochemistry, its chemical underpinnings, microbiology and the diversity of living organisms as well as the importance of evolution and genetics.	
Year 2	During Year 2, you'll deepen your knowledge of molecular biology, animal and plant genetics and the chemistry of natural products while further developing experimental and analytical skills. You'll also have the option to study aspects of animal or plant disease, further your chemistry knowledge or undertake a work placement.	The running of the optional Work Placement module at level 5 and summer internship positions will depend upon the COVID-19 situation in the summer of 2021.
Year 3	In Year 3, you'll develop advanced skills in bioinformatic analysis, investigate the processes of drug discovery and development, and undertake a piece of novel research in collaboration with an industry partner. You can tailor your learning through optional modules, such as immunology and cancer biology or further plant genetics	
Module information		
Please note that the list of optional modules and their availability may be subject to change. We continually review and where appropriate, revise the range of modules on offer to reflect changes in the subject and ensure the best student experience. Modules will vary when studied in combination with another subject.		
Core year 1		
	<p>Biochemistry Core module - (20 Credits)</p> <p>You will be introduced to the basic concepts and chemical foundations of biochemistry and cell biology to develop your understanding of structure and function of animals at the molecular level. You will be introduced to the basics of immunology and endocrinology and you'll undertake a number of practicals based on the theory you have learnt.</p>	<p>The practical sessions associated with this module are part of an intensive practical week.</p> <p>The practical week will be supported by supplementary online demonstrations of key laboratory techniques. In the event of further COVID 19 interruptions, further face to face contingency arrangements are planned to support student learning</p>

	<p>Chemistry Core module - (20 Credits)</p> <p>Life at the molecular level is essentially applied chemistry and this module aims to give you the necessary theoretical and practical background in chemical processes to help you understand how life works at the molecular level.</p>	<p>The practical sessions associated with this module are part of an intensive practical week.</p> <p>The practical week will be supported by supplementary online demonstrations of key laboratory techniques. In the event of further COVID 19 interruptions, further face to face contingency arrangements are planned to support student learning</p>
	<p>Diversity of Life Core module - (20 Credits)</p> <p>Life on earth is amazingly diverse, colourful and multifaceted. This module introduces you to this variety, tracing the tree of life from its roots to its branches. Beginning with simple, single-celled organisms like bacteria and protists, you'll discover the various forms of complex life that have evolved and how to classify them in a taxonomic system using characteristic features of each group. The module features a large number of practical sessions in which you'll engage with plants, animals and other organisms.</p>	<p>The practical sessions associated with this module are part of an intensive practical week.</p> <p>The practical week will be supported by supplementary online demonstrations of key laboratory techniques. In the event of further COVID 19 interruptions, further face to face contingency arrangements are planned to support student learning</p>
	<p>Genetics and Evolution Core module - (20 Credits)</p> <p>You will learn about key concepts in genetics and evolutionary biology, providing you with a broad knowledge of Mendelian genetics and the mechanism of evolution. You will undertake a number of practicals in cell biology and DNA methods and will utilise bioinformatics to access, evaluate and interpret genetic and phylogenetic data.</p>	<p>The practical sessions associated with this module are part of an intensive practical week.</p> <p>The practical week will be supported by supplementary online demonstrations of key laboratory techniques. In the event of further COVID 19 interruptions, further face to face contingency arrangements are planned to support student learning</p>
	<p>Microbiology Core module - (20 Credits)</p> <p>This module will introduce you to principal taxonomic groups of microorganisms; you will examine their growth, physiology and culture, and their importance to humans and the biosphere. The module equips you</p>	<p>The practical sessions associated with this module are part of an intensive practical week.</p> <p>The practical week will be supported by supplementary online demonstrations of key laboratory techniques. In the event of further COVID 19</p>

	with the necessary skills to carry out safe, aseptic practices with such organisms in a laboratory environment.	interruptions, further face to face contingency arrangements are planned to support student learning
	<p>Science Skills and Introduction to Statistics Core module - (20 Credits)</p> <p>You will develop the necessary background in science communication, skills and methods essential for a degree in life sciences. You will learn how to analyse quantitative biological data, including statistics and experiment design and how to understand scientific publications and write scientific papers.</p>	
Optional year 1		
	N/A	
Core year 2		
	<p>Data Handling Core module - (20 Credits)</p> <p>In this module, you'll develop the techniques necessary to handle quantitative biological data analysis and you'll start to explore bioinformatics. You will be introduced to the powerful statistical programming language, R, which is critical to current approaches to handling/analysing data, particularly "big data".</p>	
	<p>Genetics of Animal Breeding Core module - (20 Credits)</p> <p>This module will provide you with an understanding of strategies employed for the genetic improvement of both livestock species and other domesticated animals, taking into consideration the associated ethical implications. You will develop a further understanding of key genetic principles and there will be a particular emphasis on the various applications of modern genetic techniques such as genome wide association studies, cloning and transgenesis.</p>	
	<p>Genetics of Plant Breeding 1 Core module - (20 Credits)</p> <p>In this module, you'll develop an understanding of basic concepts in plant genetics/breeding and how these</p>	

	<p>fundamental principles could be applied to develop high yielding and more resilient crop plants for the future.</p>	
	<p>Molecular Biology and Biotechnology Core module - (20 Credits)</p> <p>In this module, you'll develop diverse laboratory skills associated with the isolation, handling and manipulation of DNA and proteins. You will cover the main areas of theoretical molecular biology knowledge and its practical applications in current research.</p>	
	<p>Natural Product Chemistry Core module - (20 Credits)</p> <p>This module aims to introduce you to the chemistry of natural products and the links between molecular structure and properties, establishing connections with the behaviour of these compounds in biological systems. It also allows you to develop valuable techniques in purification and analytical methods that can be used in the isolation and identification of natural compounds.</p>	
Optional year 2		
	<p>Animal Pests and Diseases Optional module - (20 Credits)</p> <p>In this module, you'll study pests, parasites and pathogens which affect animals, and how they affect the wider world. You'll learn about the taxonomy and biology of these organisms, the economic impacts they have on societies around the world, and the ways in which animals have evolved to fight infection and infestation. You will then discuss and comment on the mechanisms by which humans have attempted to control pests, parasites and pathogens such as the use of antibiotics, pesticides, vaccination and biological control.</p>	
	<p>Chemistry of the Environment Optional module - (20 Credits)</p> <p>In this module, you'll learn about the natural chemical processes underlying aquatic, terrestrial and atmospheric environments, as well as the different</p>	

	<p>practical analytical methods that can be used to monitor these environments. You'll become familiar with the natural chemical processes in soil, water and air, and you'll be encouraged to analyse and discuss environmental issues, such as smog, acid rain, global warming, ozone depletion and water pollution.</p>	
	<p>Plant Pests and Pathogens Optional module - (20 Credits)</p> <p>You'll develop an understanding as to how common important plant pests and diseases can affect plant growth and yield, and how you can recognise them in the field. You'll also develop an ability to analyse and interpret published data through discussions about specific pests and diseases and their control.</p>	
	<p>Work Placement Optional module - (20 Credits)</p> <p>This module gives you the opportunity to undertake a summer placement in a commercial environment to develop key skills and work experience. By the end of this module, you will be able to critically reflect and review your own competencies and development requirements.</p>	<p>This optional module may be available depending upon the COVID-19 situation in 2021</p>
Core year 3		
	<p>Bioinformatics 1 Core module - (20 Credits)</p> <p>In this module, you'll develop a systematic understanding of the role of computing in biological research, the fundamentals of molecular biology and the key concepts and techniques in bioinformatics. A major focus will be on computer practicals to reinforce the theory within the interactive lectures.</p>	<p>Computer practical sessions for this module will be online-based. Lectures will be pre-recorded and the theory will be reinforced using interactive online workshops.</p>
	<p>Bioinformatics 2 Core module - (20 Credits)</p> <p>This module provides a more in depth investigation of the techniques and analyses introduced in Bioinformatics 1 focusing on building the programming and computational skills to allow you to design and undertake complex analyses. You will build an understanding and ability to use various industry standard tools. A major</p>	<p>Computer practical sessions for this module will be online-based. Lectures will be pre-recorded and the theory will be reinforced using interactive online workshops.</p>

	focus will be computer practicals to reinforce the theory learnt.	
	<p>Drug Discovery and Development Core module - (20 Credits)</p> <p>You'll develop an understanding of how pharmaceutical companies operate, from the beginnings of the drug discovery process through to the development phase and clinical studies, to critical regulatory approval and the importance of effective marketing of pharmaceutical products.</p>	
	<p>Honours Project Core module - (40 Credits)</p> <p>In this module, you'll undertake a piece of commercially/socially relevant research working on a research project usually derived from a problem provided by an industrial collaborator. You will carry out this research project at our Industry Liaison Laboratory at Discovery Park. This module aims to give you experience of independent research, analysis and experience of presenting findings in two styles: a written scientific paper and a presented poster to a non-specialist audience.</p>	
Optional year 3		
	<p>Current Science Issues Optional module - (20 Credits)</p> <p>In this module, you will develop a wider understanding of how science influences and affects society. You will develop your independent research and analysis skills as you comment on important science issues. The weekly section research / visiting speaker lecture will be used as a base to discuss topics.</p>	
	<p>Genetics of Plant Breeding 2 Optional module - (20 Credits)</p> <p>In this module, you'll develop a deeper understanding of concepts in plant genetics/breeding gained from the Genetics of Plant Breeding 1 module. You'll learn how linkage maps are used to map QTLs and clone genes of desirable traits. You'll also develop a good understanding of different methods for breeding cross-pollinated crops and you'll explore hybrids</p>	

	<p>and hybrid seed production. As you explore genetic and epigenetic mechanisms of heterosis, you'll engage in discussions about why molecular basis of heterosis are still elusive. You will also learn about RNAi technology, phenomics and abiotic stress breeding.</p>	
	<p>Immunology and Cancer Biology Optional module - (20 Credits)</p> <p>In this module, you will obtain a comprehensive understanding of the biology and genetics of cancer and the role of the immune system in tumour development in humans and other animals. You'll explore a range of medical techniques used to diagnose cancer and you'll study the latest cutting-edge treatments and the molecular mechanism used by those treatments. You will participate in discussions on the impact cancer has on people's lives and how patients are cared for including end of life care.</p>	

How you'll learn

<p>Teaching</p>	<p>You will be taught through a combination of lectures, laboratory practicals, field trips, visits to employers, seminars, guest speaker lectures and practical workshops. You'll also benefit from tutorial sessions where you can discuss your work and progress with an individual personal tutor, and small group seminars focusing on specific topics.</p> <p>The course is designed to support you in becoming a confident, independent learner and some of your learning will be through experimentation and observation.</p> <p>In the first year, two thirds of each module are delivered as practical experimentation either in laboratories, IT labs or in the field. These sessions are supplemented by lectures, and seminars/workshops where you feedback from your structured independent study.</p> <p>In the second year, you'll continue laboratory and field based experimentation and you'll start analysing published research.</p> <p>In the final year the teaching will move into student-led workshops where you'll discuss published research papers.</p> <p>All teaching material is posted on the virtual learning environment.</p> <p>Your actual contact hours depend on the option modules you select.</p> <p>All courses are informed by the University's Learning and Teaching Strategy 2015-2022.</p>	<p>The practical component will be condensed into an intensive practical week rather than being spread across the semester and so minimise your time on campus due to the COVID-19 situation.</p> <p>We will use a "blended learning" approach in your studies that consists of a mix of timetabled face-to-face sessions and intensive practical weeks on campus, together with timetabled interactive workshops online. This will involve "flipped learning" approach, which means that it is essential that you read material, watch video content or undertake tasks in preparation for a session.</p> <p>The practical week will be supported by supplementary online demonstrations of key laboratory techniques. In the event of further COVID 19 interruptions, further face to face contingency arrangements are planned to support student learning</p>
<p>Independent study</p>	<p>When not attending lectures, seminars, workshops or other timetabled sessions you will continue learning through self-study. Typically, this involves reading journal articles and books, undertaking research in the library, working on projects, and preparing for coursework assignments/examinations, workshops and seminars. Your module director will direct you towards specific readings and/or activities to complete before class through</p>	

	<p>the virtual learning environment.</p> <p>For the 40 credit Individual Study in your final year, you will undertake independent research working under the supervision of a member of the teaching team who you will meet with regularly.</p>	
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<p>Overall workload</p>	<p>Each 20 credit module requires 200 hours of study which includes formal contact (lectures, practicals, tutorials, workshops), structured independent learning (prescribed reading and/or online exercises) and independent learning.</p> <p>Each module in Year 1 has 60 hours of formal contact, supplemented with 40 hours of structured independent learning. As you develop and become more independent, formal contact and structured learning reduces to 50 hours of contact and 30 hours of structured independent learning per module in Year 2 and 40 hours of contact and 20 hours of structured independent learning per module in Year 3.</p>	<p>Each 20 credit module requires 200 hours of study but the proportion and delivery methods will be more varied. At Level 4, each module will have 48 hours of face-to-face contact supplemented by structured independent learning. You will also receive an intensive week (30 hours) of practical laboratory sessions in each semester to give you the essential laboratory skills relevant to your modules.</p> <p>At Level 5, your sessions will be delivered as a blended learning mix of on-campus face-to-face sessions and online interactive class workshops. You will have 9 hours of face-to-face sessions on campus dedicated to your programme with 9 hours of interactive online class workshops. We will employ a “flipped learning” approach where we will expect you to prepare for the online class workshops by undertaking the directed study beforehand. You will also receive an intensive week (30 hours) of practical laboratory sessions each semester to give you the essential laboratory skills relevant to your modules.</p> <p>At level 6 substantial elements of programme delivery will be interactive online delivery using the “flipped learning” approach. Each programme has a 3-hour programme specific session with each module consisting of 12 hours of online interactive workshops. In addition, your Honours Project module will have 96 hours timetabled in each semester to enable you to carry out your research.</p>
<p>Academic input</p>	<p>The teaching team consists of highly qualified academics with a range of expertise and experience. They are research-active and have experience in delivering research-informed teaching.</p>	

	<p>All our core team members hold doctoral qualifications and most hold or are working toward postgraduate teaching qualifications. You can find out more about the current teaching on our Meet the Team web page.</p> <p>Postgraduate students sometimes assist in teaching and assessing some modules, however, experienced academics teach the vast majority of lectures and seminars.</p> <p>You should note that members of the teaching team might change.</p>	
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How you'll be assessed

	<p>Assessment is by both coursework and examination. The course provides you with opportunities to test your understanding of the subject informally before you complete the formal assessments that count towards your final mark. Each year you will be set formative assignments to go through with your tutor. There will also be 'formative' assessment within some of the modules. Practice assessments are developmental and any grades you receive for them do not count towards your module mark.</p> <p>There are also formal or 'summative' assessments. Assessment methods include written examinations and a range of coursework assessments such as essays, reports, portfolios, performance, presentations and your final year individual study project. The grades from formal assessments count towards your module mark.</p> <p>Coursework assessments permit you to develop key scientific and transferable skills and assignments include: scientific lab/log books, written reports, written scientific papers, discursive essays, PowerPoint presentations and poster presentations. There is a maximum of two assessments per 20 credit module studied.</p> <p>Feedback You will receive feedback on all practice assessments and on formal assessments undertaken by coursework. Feedback on examination performance is available upon request from the module leader. Feedback is intended to help you learn and you are encouraged to discuss it with your module tutor. We aim to provide you with feedback within 15 working days.</p>	<p>Examinations may take the form of take-home online examinations.</p>
Year 1	60% coursework 40% written exams	
Year 2	50% coursework 50% written exams	
Year 3	65% coursework 35% written exams	
Fees		

UK/EU	Full-time £9,250	
	Full-time - placement year £1,850	
	Part-time £4,625	
Overseas	Full-time £13,000	
	Full-time - placement year N/A	
	Part-time N/A	

Course specific costs		
	N/A	
Professional accreditation	N/A	
Industry links	<p>The University's Industry Liaison Lab works with many companies in healthcare research and development, drug discovery and equipment design and manufacture.</p> <p><i>"Venomtech have been very impressed with our partners at Canterbury Christ Church University, this partnership has enabled us to progress projects much faster than we could on our own. This includes being able to generate novel data on the use of our products through student projects, advancing research into new antibiotics and cancer therapies from venoms and increasing the understanding of invertebrate welfare. Generation of this proof of concept data has, and continues to have, a positive influence with our potential customers and therefore our business. I also impart my 10+ years industrial drug discovery experience directly to the students as part of the Drug Discovery and Development module.</i></p> <p><i>As a science employer in the area, Venomtech benefit greatly from being directly involved in the curriculum to make sure the new graduates have the skills useful to employers. This includes an understanding of applied drug discovery that will make CCCU graduates stand out from others in job interviews."</i></p> <p>Steve Trim, CEO, Venomtech Ltd</p>	
Other important information		
Specialist Facilities	<p>This course is associated with the university's Industry Liaison Labs at Discovery Park, Sandwich. You will have the opportunity to undertake laboratory work at this site. The location of these specialist facilities within an industrial setting facilitates access to and collaboration with biotechnology and pharmaceutical companies.</p>	
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