

## 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	Chemistry for Drug Discovery	No Change
Award level	BSc - Single honours only	No Change
How do you want to study?		
Start Date	Sept 2020	No Change
Modes of study	Full-time	No Change
Duration	3 years full-time	No Change
UCAS code	F151	No Change
Location	Canterbury	No Change
Partner institution	N/A	No Change
Available with a Foundation Year	Yes	No Change
Overview		
	<p>Taught using the “Conceive, Design, Implement, Operate” education method, this course has been designed to help you confidently develop your knowledge and skills and achieve your full potential.</p> <p>You will learn how to apply scientific knowledge to contemporary challenges and develop your practical skills through a significant amount of laboratory work. This means that you get to spend more time “doing science”, making learning more effective and exciting.</p> <p>The foundation year will cover basic chemical, biological, physical and mathematical skills needed to help you progress on to your degree studies. This course will help you to further a career in scientific research or in the pharmaceutical industry.</p>	<p>The School of Psychology and Life Sciences will be delivering your course using a ‘blended’ approach using a range of teaching methods. This potentially offers the best of both worlds: great face-to-face teaching in small groups, including seminars, workshops and tutorials, support by a mix of online interactions to help you understand and explore your subjects. We will work closely with our partners to adapt the delivery of work placements (or their alternative) to the circumstances and incorporate the ways modern professionals work and collaborate online. We will be using Collaborate (accessed through Blackboard) and exploring the use of Microsoft teams as well. This blended approach will be flexible so we can meet your individual needs and adapt as the world around us changes. We will still be covering the same content as we would have done under normal circumstances and will be assessing you against the same learning outcomes.</p>

		<p>You will continue to receive expert, research-informed teaching through the CDIO (Conceive, Design, Implement, Operate) engineering education method and we hope that you will be able to undertake practical work throughout your studies to generate new data within the laboratory. If this is not possible due to further COVID-19-based disruptions, research projects and/or laboratory practicals may use previously generated data and pre-recorded simulations or demonstrations of techniques to enable you to complete your learning.</p> <p>If we are unable to meet face to face, then teamwork or group work-based projects will be run online using appropriate professional conference/meeting software.</p> <p>Please note that there is no foundation year included on this three-year programme.</p>
<p>Why study Chemistry for Drug Discovery?</p>		
	<p>Our Chemistry for Drug Discovery course combines biochemistry and chemistry with a strong focus on the development of drugs and pharmaceutical products at both a research and production level. This critical area of the sciences is at the core of the rapidly expanding healthcare sector, making it an excellent choice if you are looking for a career in scientific research or in industry.</p> <p>Throughout the course, you'll develop a deep knowledge of chemistry, biochemistry and molecular biology as well as studying maths and computing. You'll gain lots of hands-on experience putting science into practice in our industry standard labs, which will prepare you for undertaking a project in Year 2 where you'll tackle a current issue</p>	<p>We really hope that you will be able to undertake practical work throughout your studies to generate new data within the laboratory. However, if we face further COVID-19-based disruptions then research projects or laboratory practicals may use previously generated research data and/or pre-recorded simulations or demonstrations of techniques that will enable you to complete your learning.</p> <p>Please note that guest lectures and seminars may be delivered as online sessions where applicable.</p> <p>We will endeavour to run our</p>

	<p>faced by the science industry.</p> <p>You'll receive expert research-informed and involved teaching from our science academics who have a diverse range of experience working in and with the sector. They will help you develop research skills to prepare you for a major research project in your final year, which aims to help you organise your thinking in a scientific context, increase your confidence in your ability to deal with scientific problems and issues and gain valuable practical experience in modern biochemical research techniques.</p> <p>You'll use the pioneering CDIO (Conceive, Design, Implement, Operate) approach to problem solve scientific issues. The CDIO approach is an international education model, developed by the Massachusetts Institute of Technology (MIT). It allows you to learn in a practical, hands-on way to find creative, evaluated solutions to industry related challenges. We are one of only a handful of universities in the UK to offer CDIO.</p> <p>The course also includes guest lectures and seminars delivered by industry professionals and you'll have opportunities to work alongside industrial collaborators at the forefront of scientific research.</p>	<p>programme of optional 'Added Value' courses but may not be able to if we face further disruption. As the Added Value programmes are offered in addition to your core studies, then if these do not run then this will not affect your studies.</p> <p>We hope to be able to run the optional Work Placement module at level 5; however, if we face further COVID-19 disruptions, it is likely that this module will not run. If this does happen, you will be enrolled upon the Molecular Biology module. As we have carefully integrated employability skills across the modules within your programme, even if this optional module does not run, you will continue to develop these essential skills.</p>
--	--	---

Entry requirements	For entry to level 4, candidates require 88-112 UCAS tariff points or equivalent 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, chemistry, biology or physics.	No Change
About the course		
Year 1	During Year 1, you'll study modules in chemistry, biochemistry, mathematics and computing, giving you a firm grounding in scientific knowledge, laboratory and analytical skills. You will also contribute to solving a real research problem in a large project that is based on the Conceive, Design, Implement, Operate (CDIO) education approach.	<p>At Level 4, we plan that each module consists of mostly face-to-face contact sessions on campus, supplemented by directed independent learning.</p> <p>We hope that you will be able to undertake practical work within our laboratories to generate data for the CDIO-based project. However, if we face further COVID-19-based disruptions, research projects and laboratory practicals may use previously generated research data, pre-recorded simulations or demonstrations of techniques that will enable you to develop your knowledge of these techniques and complete your learning.</p>
Year 2	In Year 2, you'll deepen your knowledge of chemistry, biochemistry and molecular biology and you'll study organic, inorganic and analytical chemistry. In addition, there is an optional work placement module that will enable you to gain valuable work experience within a relevant employment sector. You'll undertake a further CDIO-based project that will address a question of interest and relevance to industry. This project will allow you to apply your knowledge and to develop as a scientist.	<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. 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 of practical laboratory sessions each semester to give you the essential laboratory skills relevant to your modules.</p> <p>We hope that you will be able to undertake practical work within our laboratories to generate data for the CDIO-based project. However, if we face further COVID-19-based disruptions, research projects and laboratory practicals may use</p>

		<p>previously generated research data, pre-recorded simulations or demonstrations to enable you to complete your learning.</p> <p>If we are unable to meet face-to-face, then teamwork or group work-based projects will be run online using appropriate conference/meeting software and file sharing.</p> <p>We hope to be able to run the optional Work Placement module at level 5; however, if we face further COVID-19 disruptions, then it is likely that this module will not run. If this does happen, you will be enrolled upon the optional module Molecular Biology as an alternative. Employability skills have been carefully integrated across the modules within your programme to ensure that you will continue to develop these essential skills.</p>
--	--	--

Year 3	<p>In the final year, you'll demonstrate your scientific competence and independence by devising and undertaking a piece of novel research which will be presented as a fully referenced scientific paper and in the form of an oral presentation of a poster. You'll also develop and apply advanced chemical and bioanalytical techniques, advanced chemical synthesis and you'll discuss the major therapeutic areas of today.</p>	<p>At level 6, substantial elements of programme delivery will be interactive online delivery using the “flipped learning” approach, which means that it is essential that you read material, watch video content or undertake tasks in preparation for an interactive session.</p> <p>You will also undertake a research project as part of your studies that can be carried out in any of our science laboratories.</p> <p>We hope that you will be able to undertake practical work within our laboratories to generate data for your honours project. However, if we face further COVID-19-based disruptions, research projects may use previously generated research data for subsequent analysis and critique within the project.</p>
<p><b>Module information</b> 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.</p>		
Core year 1		
	<p>Introduction to Physical Chemistry and Thermodynamics Core module - (20 Credits)</p> <p>You'll develop an understanding of basic chemical kinetics, quantum mechanics and thermodynamics, to help you identify whether a chemical reaction is likely to occur or not and its rate.</p>	No Change
	<p>General Chemistry Core module - (20 Credits)</p> <p>You'll develop your capabilities in fundamental chemistry theory and practice. You will also develop knowledge in physical, inorganic and organic chemistry, as well as developing further key laboratory skills.</p>	<p>You will develop the key practical skills associated with this module as part of an intensive practical week.</p> <p>In the event of future COVID-19 related disruptions preventing the use of the science laboratories, practical sessions may consist of pre-recorded</p>

		simulations or demonstrations of techniques.
	<p>Fundamental Chemistry Theory and Practical Core module - (20 Credits)</p> <p>In this module, you'll explore key chemical concepts such as atomic structure, chemical nomenclature, bonding, stoichiometry, acid-base reactions, redox reactions and introduction to organic chemistry. You'll also develop basic chemistry laboratory skills through a significant amount of practical work.</p>	<p>You will develop the key practical skills associated with this module as part of an intensive practical week.</p> <p>In the event of future COVID-19 related disruptions preventing the use of the science laboratories, practical sessions may consist of pre-recorded simulations or demonstrations of techniques.</p>
	<p>Mathematics and Computing Core module - (20 Credits)</p> <p>This module is designed to provide you with the mathematics knowledge and skills related to the chemical and biological sciences, as well as helping you to develop the techniques necessary to handle quantitative data analysis. You'll learn about the powerful statistical programming language, R, which is critical to current approaches to handling/analysing data. This module will enable you to become comfortable with the console-based software and to use it for statistical and data display needs.</p>	No Change
	<p>Introduction to Drug Discovery Core module - (40 Credits)</p> <p>In this module, you'll develop an overview of the fundamental topics within the drug discovery and development process. You'll gain a working knowledge of the development, approval, manufacturing and marketing of pharmaceutical products, providing you with a basis for more advanced study in later modules.</p>	No Change
Optional year 1		
	N/A	No Change
Core year 2		
	Inorganic and Organic Chemistry	No Change

	<p>Core module - (20 Credits)</p> <p>You will examine both main group and transition metal chemistry, as well as the synthesis, structure and reactive mechanisms found in carbon-based compounds.</p>	
	<p>Enzymology and Kinetics Core module - (20 Credits)</p> <p>In this module, you'll explore enzymes and enzyme function, inhibition and regulation in detail. Topics include reaction steady state, enzyme inhibition, auto-association, allosteric regulation and the application of enzymes in an industrial setting.</p>	<p>No Change</p>
	<p>Analytical Chemistry Core module - (20 Credits)</p> <p>You'll learn the up-to-date techniques used to identify and understand physical and chemical properties of matter. Analytical techniques covered will include gas chromatography, high performance liquid chromatography, nuclear magnetic resonance, atomic absorption/emission spectroscopy and ion chromatography.</p>	<p>You will develop the key practical skills associated with this module as part of an intensive practical week.</p> <p>In the event of future COVID-19 related disruptions preventing the use of the science laboratories, practical sessions may consist of pre-recorded simulations or demonstrations of techniques.</p>
	<p>Topics in Drug Discovery Core module - (40 Credits)</p> <p>Building on the earlier Topics in Drug Discovery module, you'll explore in greater detail key pharmaceutical topics such as structure activity relationships and pharmacokinetics. This module takes a project-based format, enabling you to gain experience in teamworking and group problem solving, and helping you to develop your professional skills and attributes.</p>	<p>Sessions are planned to be delivered as flipped learning with directed pre-study and online interactive workshops.</p> <p>You will develop the key practical skills associated with this module as part of an intensive practical week.</p> <p>In the event of future COVID-19 related disruptions preventing the use of the science laboratories, practical sessions may consist of pre-recorded simulations or demonstrations of techniques.</p> <p>If we are unable to meet face-to-face, then teamwork or group work-based projects will be run online using appropriate conference/meeting software and file sharing.</p>

Optional year 2		
	<p>Molecular Biology Optional module - (20 Credits)</p> <p>In this module, you'll build on the fundamental knowledge you developed in earlier modules, and you'll gain an in-depth perspective of the theory, practical and commercial applications of molecular biology. You'll develop a range of fundamental molecular biology techniques which are not only essential for studying bio-molecules within a laboratory research setting, but also highly desirable for future employment.</p>	<p>You will develop the key practical skills associated with this module as part of an intensive practical week.</p> <p>In the event of future COVID-19 related disruptions preventing the use of the science laboratories, practical sessions may consist of pre-recorded simulations or demonstrations of techniques.</p>
	<p>Placement Module Optional module - (20 Credits)</p> <p>This module provides you with the opportunity to develop key skills and experience while working in a commercial environment. You will develop critical reflection skills as you review your own competencies and development requirements.</p>	<p>We hope to be able to run the optional Work Placement module at level 5; however, if we face further COVID-19 disruptions, then it is likely that this module will not run. If this does happen, you will be enrolled upon the optional module Molecular Biology as an alternative. Employability skills have been carefully integrated across the modules within your programme to ensure that you will continue to develop these essential skills.</p>
Core year 3		
	<p>Applied Biological Chemistry Core module - (20 Credits)</p> <p>This module builds on the Analytical Chemistry module. You'll become familiar with up-to-date techniques used to purify and characterise biomolecules (including DNA, lipids, secondary metabolites, proteins, carbohydrates), and you'll gain valuable, hands-on experience.</p>	<p>Sessions are planned to be delivered as flipped learning with directed pre-study and online interactive workshops.</p> <p>Practical sessions may consist of pre-recorded simulations or demonstrations of techniques depending upon laboratory availability and COVID-19 situation.</p>
	<p>Major Therapeutic Areas Core module - (20 Credits)</p> <p>You'll examine several key therapeutic areas for which there is, or projected to be, a demand for the development of new drugs</p>	<p>No Change</p>

	<p>and therapies. You'll discuss the molecular and biological causes of each area, together with the associated social and medical challenges faced by society and the pharmaceutical industry.</p>	
	<p>Advanced Synthesis with Pharmaceutical Applications Core module - (20 Credits)</p> <p>This module covers the synthesis of a selection of natural products and pharmaceuticals using synthetic organic chemistry. Each of the chemicals synthesized will demonstrate a certain concept, which will be explained and illustrated in the synthesis example. The examples used will include currently available drugs such as HIV protease inhibitors and statins.</p>	<p>Sessions are planned to be delivered as flipped learning with directed pre-study and online interactive workshops.</p> <p>Practical sessions may consist of pre-recorded simulations or demonstrations of techniques depending upon laboratory availability and COVID-19 situation.</p>
	<p>Biotechnology for Drug Discovery Core module - (20 Credits)</p> <p>In this module, you'll investigate the biological and bioengineering principles underlying the development, synthesis, production and purification of biomolecules as therapeutics. Topics covered will range from biological considerations affecting the eventual product (such as post-translational processing and secretion), to host expression choice, in vitro cultivation, bioreactor design and control, protein recovery and purification and determination of final yield and costs. You'll take part in practical sessions that will illustrate key steps within the production and purification process.</p>	<p>Sessions are planned to be delivered as flipped learning with directed pre-study and online interactive workshops.</p> <p>Practical sessions may consist of pre-recorded simulations or demonstrations of techniques depending upon laboratory availability and COVID-19 situation.</p>
	<p>Research Project in Drug Discovery Core module - (40 Credits)</p> <p>In this module, you'll have a degree of autonomy in your learning. You'll have the opportunity to pursue in depth a study of a topic of your own choice or that related to an industrial partner. This will enable you to practice organising your thinking in a scientific context, increase your confidence in your ability to deal with scientific problems and issues, and gain valuable practical experience in modern biochemical research techniques. In particular, you'll be</p>	<p>We hope that you will be able to undertake practical work within our laboratories to generate data for your research project. However, if we face further COVID-19-based disruptions, research projects may use previously generated research data for subsequent analysis and critique within the project.</p>

	encouraged to take a questioning approach to science and scientific method.	
--	---	--

How you'll learn		
Teaching	<p>This course has a strong focus on problem-based learning and it uses approaches based on the Conceive, Design, Implement, Operate (CDIO) education model. There is lots of 'hands on' work with real projects, as well as input from industry experts and teaching from staff actively engaged with industry.</p> <p>Practical experimentation and problem-based learning approaches are supplemented by lectures and seminars/workshops. In addition, you will meet with your academic personal tutor.</p> <p>All courses are informed by the University's Learning and Teaching Strategy 2015-2022.</p>	<p>Throughout your programme, there remains a focus on the development of practical skills, project work and problem-solving skills. We will use a "blended learning" approach to 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 component at levels 4 and 5 will be condensed into intensive practical weeks rather than being spread across semesters to minimise your time on campus due to the COVID-19 situation.</p> <p>We hope to be able to run practical sessions but in the event of further disruption practical sessions may consist of pre-recorded simulations or demonstrations of techniques.</p>
Independent study	<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.</p> <p>For your research project in your final year, you will undertake independent research working under the supervision of a member of the course team, who you'll meet with regularly.</p>	No Change
Overall workload	Each 20 credit module requires 200 hours of study, which includes formal contact (lectures, practicals, tutorials, workshops),	Each 20 credit module requires 200 hours of study but the proportion of delivery methods will be more varied as

	<p>structured independent learning (prescribed reading and/or online exercises) and independent learning.</p> <p>In in the foundation year and Year 1, each module 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>you progress through your programme. At Level 0 and at Level 4, we plan that each module will have timetabled face-to-face contact on campus supplemented by structured online independent learning. You will also receive an intensive week 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. 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 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. In addition, your Research Project module will have timetabled laboratory hours in each semester to enable you to carry out your research.</p>
--	--	---

Academic input	<p>The team consists of highly qualified academics that have a range of expertise and experience.</p> <p>All our team members hold doctoral and teaching qualifications and are research-active. You will be taught by staff at all academic levels including lecturer, senior lecturer, principal lecturer and professorial level. They have experience in delivering research-informed teaching. You can find out more about the current teaching on our Our Staff webpage. You should note members of the teaching team might change.</p> <p>Postgraduate students sometimes assist in teaching and assessing some modules. However, experienced academics teach the vast majority of lectures and seminars.</p>	No Change
<b>How you'll be assessed</b>		
	<p>Assessment is by coursework and examination, both written and practical. Individual modules are assessed either solely by coursework or by an equally-weighted combination of coursework and examination.</p> <p>Examination allows assessment of your understanding of important key concepts and accounts for less than half the assessment of the programme. Examinations may take the form of written examinations or practical examinations that assess laboratory skills. Coursework assessments 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.</p> <p>There are a maximum of two assessments per 20 credit module studied. Exams happen twice a year at the end of each semester.</p>	Please note that depending upon possible future disruption, examinations may take the form of take-home online examinations.
<b>Fees</b>		
UK/EU	Full-time £9,250	No Change
	Full-time - placement year £1,850	No Change
	Part-time £4,625	No Change

Overseas	Full-time £13,000	No Change
	Full-time - placement year N/A	No Change
	Part-time N/A	No Change

Course specific costs		
	N/A	No Change
Professional accreditation	N/A	No Change
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><b>Steve Trim, CEO, Venomtech Ltd</b></p>	No Change
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>	<p>Your studies will not depend upon the access to Industry Liaison Laboratory. In the case of future disruption, use of any of the University's science laboratories will be sufficient for the completion of your studies.</p>
Date of publishing	29/6/2020	