FORENSIC SCIENCES

Canterbury
ACADEMIC EXCELLENCE AND INSPIRATIONAL TEACHING

Kent is one of the UK’s leading universities. All of our academic schools produce world-class research, and Kent is rated as internationally excellent, leading the way in many fields of study. Forensic science is a high-profile subject in the UK, especially since the well-publicised miscarriages of justice in the 1970s.

World-leading research
Research within the School of Physical Sciences at Kent – which includes Forensic Sciences – was highly rated in the most recent national Research Assessment Exercise (RAE, 2008) and our Functional Materials Research Group ranked 2nd nationally in the Metallurgy and Materials discipline. Our undergraduates work alongside lecturers and tutors who are not just teachers, but researchers actively working at the forefront of their field.

Current forensic research projects include the detection of drugs in fingerprints, detection of cosmetics as trace evidence, detection of GHB and recovery of fingerprints from metal surfaces, trace metal content of street drugs, contamination of drugs with gunshot residue and colour determination using fibre optic visible spectroscopy. Facial identification software developed by researchers at Kent is being used by most UK police forces.

We are currently working closely with operational forensic scientists to establish research projects in the field of fire investigation as well as the identification of fibres.

Inspirational teaching
Kent offers some of the best teaching, student support and learning resources in the country.

The science component of your degree is taught by the School of Physical Sciences and the School of Biosciences, while the law component is taught by Kent Law School, one of Britain’s most innovative law schools. All three schools received good ratings in their most recent Teaching Quality Assessments.

We also have strong collaborative links with forensic science services, local health authorities, and with biotechnology, chemical and pharmaceutical companies in the UK and Europe. We have a close association with Interpol and deliver many forensic consultancies worldwide.

Excellent learning environment
Through substantial investment over a number of years we are able to provide our students with the best possible learning experience. The School has been commended by the Forensic Science Society for our laboratory refurbishments, the range of analytical and forensic equipment available for use by students and for the support offered by staff. Our students appreciate the fact that the teaching of theory and practical skills is fully integrated.

Specialist links
Students on our Forensic Sciences degrees are taught not only by our in-house expert lecturers, but also by industry specialist lecturers from the Home Office and the Forensic Explosives Laboratory. Students also have the opportunity to visit a police firearms unit during their second year.

The Forensic Science Society
Kent has excellent links with The Forensic Science Society, the professional body for forensic scientists. Many of our staff are professional members of the Society as well as practising within their respective fields of expertise. We are one of only two universities nationally to offer all our students free membership of their professional body. We encourage you to participate in conferences and professional events, as these will help you to build up a portfolio of continuing professional

“"The skills of a forensic scientist are founded on the principles of physical science applied within a legal context – and Kent is uniquely placed to deliver a well balanced programme.”"

Dr Chris Solomon
Reader in Forensic Science
Year in industry
At Kent you are given the option of studying for a four-year degree, spending a year in industry. This gives you the opportunity to gain valuable experience and earn a salary. It can also greatly enhance your employment prospects after graduation. To make sure you get the most out of the experience, you are assigned an academic supervisor who approves the company’s programme of work in consultation with your industrial supervisor. For further information, see p14.

Professional recognition
All our programmes are formally accredited by The Forensic Science Society for all three component standards: crime scene investigation, interpretation, evaluation and presentation of evidence, and laboratory analysis. Legal modules on our programme are already recognised by the Law Society. Likewise, modules in chemistry and biosciences are recognised by their respective learned societies.

Flexible entry levels
A Foundation Year course is available for students who do not have the appropriate background for direct entry into the standard three-year degree programme. The Foundation Year, which includes lectures in chemistry, mathematics and essay writing, together with practical classes, is taught entirely on the Canterbury campus, and successfully caters for students with a wide range of backgrounds and experience. Providing you pass the Foundation Year, you are automatically granted a place on either a Forensic Science or Forensic Chemistry degree programme.

A successful future
As well as providing a first-rate academic experience, we want you to be in a good position to face the demands of a tough economic environment. During your study, you develop key transferable skills considered essential for a successful career. Most recently a number of our students have gained employment with major forensic science suppliers with many more heading off to work within the field of physical science.

For more information on the careers help we provide at Kent, see p8 or visit our Employability webpage at www.kent.ac.uk/physical-sciences/employability.html

development. Combining academic qualifications with professional development will give you the best possible chance of success.

A global outlook
Our student and staff community come from a diverse range of backgrounds and from all over the world, which helps to create a dynamic environment and gives your studies an international context.

Supportive academic community
We want our students to feel that they are part of the academic community at Kent, and welcome the contributions they make. When they arrive, all of our students are assigned an Academic Adviser, who is available for academic issues and the School has a dedicated Student Support Adviser for any pastoral issues.
SUPERB STUDENT EXPERIENCE

Our campus at Canterbury provides a stunning location for your studies and offers first-class academic and leisure facilities.

First-class facilities
As a Forensic Sciences student you have access to a superb range of state-of-the-art equipment and work in our new £2.5 million laboratories. With a further investment of £1.8 million to update facilities in the School’s Ingram Building. Facilities include: a dedicated ballistics and firearms kit; Leybold laboratory equipment; two scene-of-crime facilities that allow students to apply the theory of crime scenes, evidence recovery and fingerprinting; and dedicated document examination machinery which can be used in the detection of forged documents.

International community
Kent has a diverse student population with 145 different countries represented on campus.

Excellent study resources
The study resources on campus are excellent. The Templeman Library has extensive printed and electronic collections specifically aimed at supporting the courses and subject areas taught at Kent. There are also over a thousand PCs on campus and a range of support services for help or advice.

Kent’s Student Learning Advisory Service also provides information and advice on all aspects of effective learning and study skills, and is available to students from the time they arrive at the University. See www.kent.ac.uk/learning for more information.

Beautiful green campus
Our campus has plenty of green and tranquil spaces and is on a hill giving a view of the city and Canterbury Cathedral. The campus has its own cinema, theatre and a student nightclub.

Kent has a reputation for being a very friendly university with a cosmopolitan environment. There are many restaurants, cafés and bars, as well as a sports centre and gym. Everything you need on campus is within walking distance, including a general store, an off-licence, a bookshop, a medical centre and a pharmacy. From campus, it’s a 25-minute walk or a short bus-ride into the city.

Attractive location
Canterbury is a lovely city with medieval buildings, lively bars and atmospheric pubs, as well as a range of shops. The attractive coastal town of Whitstable is close by, and there are sandy beaches further down the coast. London is just under an hour away by high-speed train.

DID YOU KNOW?
Kent was ranked 20th in the UK in The Guardian University Guide 2014.
Chloe Furniss is in her third year studying Forensic Science.

Why did you come to Kent?
I visited the campus and felt I could be happy here. Also, Kent has a great reputation for forensics and does well in the league tables.

Why did you choose to study forensic science?
I chose Forensic Science because it is a very interesting degree, in a field that is ever-expanding and the science learnt is applicable to many specialisms. Also, the high content of analytical chemistry made Kent stand out from other courses.

How is the course going?
In the first year you build up your skills in chemistry and maths in particular, and then in your second year you apply what you have learnt to your forensics work. I wasn’t fantastic at chemistry before I came but it is now my strongest area.

What modules have you particularly enjoyed studying?
I enjoy chemistry; the modules get more interesting as you progress and now, in Stage 3, we are able to use most of the laboratory equipment and are doing the kind of work we would do in industry. In our second year, we did a module on forensic physical methods where we put on our suits, went outside and recovered evidence. It was fun as well as being a great way to learn. We also do a module where we write a report as if we were going to appear in court as an expert witness and are then questioned by the staff in the School. It’s good to get experience of this area, as it is something you may well have to face in the future.

Kent also offers a Master’s year, which is something not many other universities do. In this fourth year, you gain an understanding of what it would be like to manage a crime scene or a group of forensic scientists.

What about your fellow students
It is quite a varied group with people from different backgrounds and of different ages. Also, people have studied quite a range of subjects prior to university, which makes it interesting.

Are the lecturers supportive?
The lecturers are outstanding; they really care about the students and are passionate about their subject which comes across in their teaching. A lot of the lecturers are well known in the field and the new Director of Undergraduate Studies is secretary of The Forensic Science Society. All undergraduate students are now members of the Society and are encouraged to attend conferences; this is very helpful for us as we get to make contacts and meet people working in the industry.

What are the facilities like?
The School’s laboratories were renovated recently at a cost of £2.5 million so they are excellent and all the equipment is brand new and state of the art.

How is the social life at Kent?
There are a lots of societies run by the students’ union and it is a good idea to get involved in as much as you possibly can so that you get the most out of university. The social facilities are good – bars, the nightclub, cafés, etc – and in your first year, if you don’t want to, you really don’t have to leave campus.

I like Canterbury too, it is a friendly city with lovely shops; it is not London but it is not tiny either and it’s just 10 miles from the coast.

What do you plan to do next?
There are lots of areas you can go into with a Forensic Science degree, not just the criminal evidence side. This particular degree gives you the option of going into a straight analytical chemistry role, so it is quite flexible. However, I have always wanted to go to medical school and so I am applying to study medicine. My time at Kent has made me a more well-rounded person. I am glad I came here; it has been a fantastic experience.

What advice would you give to potential students?
If you want to do forensic science Kent is in a fantastic location and has staff with incredible knowledge and first-hand experience of the subject. The course is well established with an excellent reputation but also changes with the times so that the information you get is current. The degree is well-respected among forensic scientists and that is important when you are going into a competitive industry.
A SUCCESSFUL FUTURE

Kent equips you with essential skills to give you a competitive advantage when it comes to getting a job. We are consistently in the top 20 of graduate starting salaries and, six months after graduation in 2012, all of our Forensic Science graduates were in employment or further study.

Good career prospects
Forensic science provides many more opportunities for graduate employment than in its traditional perceived role in the service of the law. Forensic skills are now used in a wide range of professions and industries, for instance at disaster scenes, within archaeology and in the food and pharmaceutical industries.

Recent legislation has stimulated the demand for authentication of materials, and for experts and analytical companies to carry out the work. In addition, because of increasing interest and investment in the subject, scientific liaison officers are being appointed by the police service, and so the knowledge and communication gap between the scientists and the police at the crime scene has narrowed.

Our graduates go into areas such as government agencies, consultancies, emergency services, local authorities, contract laboratories, research or further vocational training.

Gain transferable skills
The skills you gain through the degree also equip you for a range of jobs where the ability to analyse problems and combine disciplinary perspectives is required. So your degree will open up specialised opportunities, without closing off access to general opportunities.

Careers advice
The University’s Careers and Employability Service can give you advice on how to choose your future career, how to apply for jobs, how to write a good CV and how to perform well in interviews and aptitude tests. It also provides up-to-date information on graduate opportunities before and after you graduate. For more information on how Kent helps you to plan for your future career, go to www.kent.ac.uk/employability

DID YOU KNOW?
Four Forensic Science graduates now work at the Forensic Explosives Laboratory – part of the Ministry of Defence, providing scientific support to the Police and Crown Prosecution Service.
Pieter Rhodes graduated from the MSci in Forensic Science in 2013. He now works for LGC Forensics as a Drug Analyst.

What attracted you to Kent and to this particular programme?
I liked the location and thought the facilities, such as the laboratories and the machinery were first-class. I also thought the fact that the course had accreditation from the Forensic Science Society was a good sign.

How were your studies?
I really enjoyed the course and was particularly impressed with the variety of areas it covered.

What did you think of the teaching?
The teaching at Kent was good. The lecturers were all friendly and happy to help; if you had a query about your studies or a problem with something on the course, the lecturers were all approachable.

Was the course flexible enough to allow you to pursue your own passions?
Most of the modules are compulsory, perhaps because of the accreditation process, but the programme does cover a lot of ground, which gives you options when you graduate.

How would you describe your fellow students?
They were a very friendly group, quite diverse but everybody was accepting of each other’s differences.

What did you gain from your studies?
In addition to forensic skills and general academic skills, such as the ability to write academic papers, I also gained a lot of the skills that are essential in the workplace, such as working effectively with people. I gained confidence in myself and became better at public speaking.

How did you enjoy your time at Kent in general?
The social life at Kent is good with plenty of places to go and things to do for all sorts of tastes. I was a member of the Forensic Science Society and later became Vice-President and finally President. I also did a lot of outreach work, which involved visiting schools in the community and working with young people, encouraging them to try science and hopefully inspiring them to like it.

Did you receive any careers advice at Kent?
Yes, there was advice available; we were given guidance on how to write a good CV and helped with interview techniques. There was also information about which companies would be good to approach as Forensic Science graduates.

Has your degree helped you find work?
I wouldn’t have the job I have now, as a Drug Analyst at LGC Forensics, without the forensics knowledge I acquired during my studies. Also, as I mentioned, I gained many transferable skills, which have made adapting to a working environment much easier than it might have been.

What would you recommend about studying at Kent?
Forensic Science is a good course and the University of Kent has excellent facilities; the campus is very scenic and Canterbury is a nice city.
Not sure which programme to choose? Here’s a quick guide to the degrees on offer.

**Forensic Science/Forensic Science with a Year in Industry**
These programmes offer a general approach to science, alongside an understanding of key legal topics.

On the Year in Industry programme you spend a year between your second and final year working on an approved placement.

**Forensic Science with a Foundation Year**
This programme is for students who lack the qualifications needed for direct entry to Stage 1 of the BSc.
It includes lectures in chemistry and mathematics, together with practical classes, and is taught entirely on the Canterbury campus.

**Forensic Chemistry/Forensic Chemistry with a Year in Industry**
These programmes put a stronger emphasis on the study of chemistry, but maintain the integration of scientific skills within a legal context. You take core modules in organic, inorganic and physical chemistry.
On the Year in Industry programme, you spend a year between your second and final year working on an approved placement.

**MSci Forensic Science or Forensic Chemistry**
These are four-year programmes, which aim to build an advanced knowledge of the science and practice underpinning modern forensics. You take modules on subjects ranging from advanced laboratory analysis and substances of abuse to major incident management. These programmes prepare you for professional practice or postgraduate study.

**Teaching and assessment**
There are approximately eight one-hour lectures a week, with one or two days of laboratory classes. Laboratory classes emphasise different aspects of the subject and are assessed on results and written reports. Problem-solving seminars also play an important role in our teaching programme. These are usually integrated within the lecture programme and discussions focus on difficulties that you may encounter within your written work.

Assessment is by written examinations at the end of each year, with some continuous assessment based on laboratory classes and other assignments. You must pass Stage 1 to go on to Stage 2. Marks from Stages 2 and 3 count towards your final degree result, as does the Year in Industry.

**Further information**
For further information on our degree programmes, please contact:
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F: +44(0)1227 827558
E: spsrecruit@kent.ac.uk

www.kent.ac.uk/physical-sciences/prospective/undergraduate/forensic-science

“The teachers in the School are highly qualified and have very effective ways of teaching difficult chemistry topics in an interesting and easily understood way. The level of support is remarkable – the staff truly care about the students and work their hardest to support them through the degree programmes.”

Rebecca Tanney
Forensic Chemistry
STUDYING AT STAGE 1

Stage 1 is the first year of your degree programme. It provides you with the broad base of knowledge on which forensic science is founded.

All students take the following modules:
- Chemical Skills for Forensic Scientists
- Fundamental Chemistry for Physical Scientists and Bioscientists
- Introduction to Ballistics
- Introduction to Forensic Science
- Introduction to Biochemistry and Drug Chemistry
- Molecules, Matter and Energy
- Skills for Forensic Scientists.

Modules: Stage 1

Chemical Skills for Forensic Scientists
Having been instructed in the safe use of equipment and chemicals in the laboratory, you go on to conduct set experiments in organic and analytical chemistry. You also learn how to write scientific reports succinctly, conduct literature searches and use library catalogues, and to use appropriate referencing.

Fundamental Chemistry for Physical Scientists and Bioscientists
This module introduces and revises the basic concepts of organic and bio-inorganic chemistry. You study functional group organic chemistry, reaction mechanisms and spectroscopy of organic molecules.

Introduction to Ballistics
This module introduces some basic mathematics that relates to the flight of projectiles as well as a range of weapon systems that may be encountered during firearms-related investigations. Practical work is carried out in trajectory analysis and ammunition identification.

Introduction to Forensic Science
This module looks at the role of forensic scientists and the procedures they are involved in at crime scenes. Topics include: evidence and the scene of the crime; document examination; fires, explosions and firearms; drugs of abuse, alcohol and forensic toxicology; body fluids; the presentation of forensic evidence.

Introduction to Biochemistry and Drug Chemistry
You are introduced to the nature of drugs and the fundamentals of medicinal chemistry. You gain an overview of the subject, which serves as a platform for further study. You examine the importance of the relationship between chemical structure, chemical properties and drug action.

Molecules, Matter and Energy
The objectives of this module are to introduce and revise the basic concepts of chemistry, including atomic and molecular structure, properties of gases, liquids and solids, and thermodynamics.

Skills for Forensic Scientists
This module develops your experimental and teamwork skills. It provides training in incident-scene mapping, laboratory safety, communication skills, experimental science, project work, error analysis, mathematics and computer skills.
STUDYING AT STAGE 2

Stage 2 is the second year of your degree.

All students take the following modules:
• Chemical Identification Techniques
• Criminal Law for Forensic Scientists
• Forensic Physical Methods
• Inorganic and Materials Chemistry
• Numeracy Skills for Forensic Science.

Students in Forensic Chemistry take the following modules:
• Inorganic and Polymeric Materials
• Organic Reaction Mechanisms
• Thermodynamics and Spectroscopy.

Students in Forensic Science take the following modules:
• Digital Forensics
• Firearms & Ballistics
• Forensic Archaeology.

Modules: Stage 2

Chemical Identification Techniques
You develop an understanding of the theory and application of techniques for chemical identification. You study symmetry, nuclear magnetic resonance, mass spectrometry, infrared and Raman spectroscopy, spectrophotometry/fluorimetry, basic diffraction methods and electron spin resonance.

Criminal Law for Forensic Scientists
You are introduced to aspects of the procedure and practice of the criminal process. You gain grounding in the concepts and principles underlying criminal law and look at specific offences, in particular relating to homicide and non-fatal offences, which are especially relevant to forensic science students.

Forensic Physical Methods
This module outlines and defines the scope and purpose of forensic physical methods in developed countries and encourages critical thinking in relation to these methods and their application. Topics studied include crime scene management, interviews, evidential procedures and witness reliability. You develop your knowledge and understanding of the major physical forensic methods and your ability to identify and present your findings. You also become aware of emerging developments in forensic science.

Inorganic and Materials Chemistry
This module introduces and revises the basic concepts of inorganic chemistry. It covers some general background and then goes on to study s- and p-block (main group) chemistry and d-block (transition metal) chemistry.

Numeracy Skills for Forensic Science
This module develops mathematical tools and the critical assessment of data. It provides you with the basis for understanding chemical arithmetic, the quantitative analysis of reacting chemical and enzymatic systems, reaction kinetics, and the application of statistics in a forensic context.

Inorganic and Polymeric Materials
You develop an understanding of the links between crystal structure and chemical bonding and the classification of solids on the basis of chemical bonding. You explore the nature of defects and non-stoichiometry in solids, the chemistry of zeolites and their applications, and the types of polymer and their properties.

Organic Reaction Mechanisms
Organic chemistry underpins the relationship between the natural world and humans and is primarily concerned with the chemistry of carbon. The properties of carbon form the basis for life as we understand it. Our bodies are predominantly organic, medicines and drugs are organic chemicals, plastics and rubbers are organic materials and even electronic displays such as LCDs and LEDs can be composed of organic compounds. From the synthesis and effects of synthetic drugs to the identity of plastics found at crime scenes, organic chemistry
fundamentally affects how humanity and its products relate to the world. This module gives you a basic understanding of how organic chemistry ‘works’ through the transformation of chemical compounds and describes why organic reactions take place, how they take place and what uses they can be put to.

**Thermodynamics and Spectroscopy**

In this module, you discover how chemical equilibrium and change can be quantified to shed light on the stability of molecules and how they react. Looking at the foundations of thermodynamics in statistical mechanics, you learn how to explain thermal, transport and spectroscopic properties.

**Digital Forensics**

This module investigates methods of facial identification in relation to policing and security. It includes an introduction to digital image processing, image analysis techniques and digital forensics analysis.

**Firearms & Ballistics**

You are introduced to ballistics in relation to firearms and trajectories, and build an understanding of the mechanisms and processes associated with collisions.

**Forensic Archaeology**

You gain an appreciation of the advantages of using modern scientific archaeological techniques. You discover the scientific background to techniques such as seismic detection, nuclear decay dating, palynology, and their applicability to the non-invasive detection of archaeological remains.

“I thought the course was interesting, challenging and enjoyable. The help at hand was excellent and I left university with an abundance of knowledge.”

**Melissa Sampson**

Former graduate, now Scientific Officer with Kent Police
If you choose to take a Year in Industry, it comes between Stages 2 and 3.

Finding a placement
Work placements are usually advertised nationally and students apply by sending in a CV or application form. We guide you through the process, giving you valuable feedback on the placements that are likely to enhance your career prospects, how to write a winning CV and how to hone your interview skills.

Salary and benefits
Students will usually work on placement for the entire calendar year. Salary and holiday entitlements vary according to the employer you work for. However, many students find that they earn enough to be able to save some of their income, and this often helps them in their final year at Kent.

Study and career benefits
A work placement provides practical experience that can be put to good use in your final year of study. It gives you a sense of how the theory works in practice and improves your skills in many areas. It also allows you to evaluate a particular career path, and gain knowledge of the working environment.

At the end, you write a report of the work you did during the placement and on returning to Kent for your final year of study, present a lecture on your experiences. Previous year in industry students have worked for Abbott Laboratories, Cranfield Defence and Security, GlaxoSmithKline, Kent and Canterbury Hospital and Procter & Gamble among many others. Your year in industry counts towards your final degree classification. In general, the year in industry is very popular with employers, because of the skills you gain. If your placement is a success, you may even be offered a job with the same employer after graduation.

Keeping in touch with Kent
To make sure you get the most out of the experience, you are assigned an academic supervisor who approves the company’s programme of work in consultation with your industrial supervisor. Your year in industry counts towards your final degree classification.

DID YOU KNOW?
The Forensic Imaging Group at the University of Kent provides digital image processing services for businesses and crime prevention organisations. Clients include Kent Police.
STUDYING AT STAGE 3

Stage 3 is the final year of the BSc degree programme.

All students take the following modules:
- Advanced Topics in Forensic Science
- Analytical Chemistry
- Fires and Explosions
- Forensic Expert Witness Skills
- Law of Evidence for Forensic Scientists.

Students in Forensic Science take the following modules:
- Forensic DNA Analysis I
- Forensic Science Project.

Students in Forensic Chemistry take the following modules:
- Chemistry Research Project
- Topics in Functional Materials.

All MSci students take:
- Advanced Forensic Project Laboratory.

Modules: Stage 3

Advanced Topics in Forensic Science
This module covers the latest techniques affecting the delivery and development of forensic science and uses contemporary case studies in order to place the scientific analysis into context. Areas covered include: the pharmacology and pharmacokinetics of alcohol, forensic toxicology, susceptible victims and the screening and confirmatory methods of analysis. Through analysis of a number of case studies, including the 2005 London bombings, you develop an advanced appreciation of biometric databases. You also gain an understanding of the importance of Bayesian statistics to determine examination strategies and provide a quantitative assessment of the weight of evidence.

Analytical Chemistry
This module looks at a range of physical techniques currently used in analytical chemistry and explores their potential applications. Topics covered include atomic emission/absorption spectrometry, separation methods, ion chromatography, x-ray fluorescence by SEM, electro-analytical chemistry, and automating analytical chemistry.

Fires and Explosions
The investigation of causes of fires is one of the most difficult studies undertaken by forensic scientists. This module includes the study of combustion and explosion, flammability, ignition, and chain reactions. The forensic aspects are illustrated with case studies.

Forensic Expert Witness Skills
In this module, you investigate how science is reported in the media and develop your skills in presenting scientific material and arguments clearly and correctly in writing and orally to a range of audiences. To assist in this, you act as an expert forensic science witness, discovering first-hand the challenges this presents.

Law of Evidence for Forensic Scientists
This module covers the general principles of the law of evidence and proof, with an introduction to the context in which the rules of
STUDYING AT STAGE 3 (CONT)

evidence operate, namely criminal civil procedure and the nature of adversarial trial. You also consider fact analysis and the rules relating to the testimony of witnesses and the major exclusionary rules relating to hearsay, character evidence and opinion.

Medicinal Chemistry
The principles and practice of drug design are covered in this module. You look at historical aspects of drug development and modern approaches to drug design, including their mechanism of action and the development and use of quantitative structure activity relationships. You gain a working knowledge of a range of drugs and an understanding of the mechanism of action of selected agents. You will also be able to suggest modifications to molecular structures.

Forensic DNA Analysis I
This module covers the following topics: polymerase chain reaction (PCR): principles, applications and pitfalls; DNA sequencing; genetic fingerprinting case studies; interpretation of DNA profiles; mitochondrial DNA analysis; ‘ancient’ DNA; sample preparation for DNA analysis; examination of body fluids; basic principles of DNA fingerprinting; analysis of DNA from single cells; forensic applications of DNA analysis in non-violent crimes; comparison of the advantages and disadvantages of DNA-based and non-DNA-based analytical techniques; forensic entomology; and forensic botany.

Forensic Science Project / Chemistry Research Project
This module provides an introduction to research methods and skills and prepares you for a research career either in industry or at postgraduate level. It also provides you with training in, and experience of, communicating research results orally and in writing. In addition, you deepen your knowledge of a specialised area of forensic science/chemistry.

Advanced Forensic Project Laboratory
This module gives you the opportunity to gain hands on experience of complex instruments used in forensic analysis such as x-ray diffraction (XRD), raman spectroscopy and nuclear magnetic resonance (NMR) spectroscopy. You also undertake short research projects on these pieces of equipment enhancing your understanding of forensic analysis.

Topics in Functional Materials
As a result of changing technology, there is a growing need for materials with specific functions. This module looks at new materials that are being created for the energy industry (batteries and fuel cells), the optics and electronics industry (semiconductors, lasers and wave-guides), and the environment (sensors, actuators and ‘smart’ materials).
STUDYING AT STAGE 4

For those taking the MSci programme, Stage 4 represents the final year of your degree.

All students take the following modules:
- Forensic Science Research Project MSci
- Incident Management
- Physical Science Research Planning
- Substances of Abuse.

Modules: Stage 4

Forensic Science Research Project MSci
Scientific research is at the forefront of innovation and design, driving advances in many areas including manufacturing technologies, materials development, medicine and forensic science. The ability to tackle problems and continually assess research project/experiment direction are key skills and vital if new knowledge is to be contributed to a field. In forensic science, research has allowed for the development and validation of new methodologies, materials and approaches which continue to shape and expand our ability to collect and analyse potential evidence. In this module, you undertake a research project which gives you the opportunity to develop key research skills and to gain further experience of scientific instrumentation.

Incident Management
Managing a major incident, such as an air crash, a major chemical spill, or a rail accident represents an enormous challenge. Thankfully such events are rare. However, when one does occur, systems and organisations move immediately to minimise loss of life, damage to property, and to preserve evidence so that lessons can be learned. This module defines the role of statutory and non-statutory agencies in identifying and responding to major threats and events. You are introduced to the difficulties and challenges associated with running a command structure at a major incident. Finally, the module prepares you for the role of court reporting officer; you produce an incident report which you then defend under hostile cross examination at court.

Physical Science Research Planning
The creation of new knowledge and innovation is no accident; it requires considerable planning and perspiration before a new concept can emerge. Thomas Edison knew all about sweat: genius is 99 per cent perspiration and one per cent inspiration. And Einstein said that if we knew what we were doing, it wouldn’t be called research. This module gives you the opportunity to develop the seed of an idea into a concrete proposal where all aspects of the intentions, schedules, collaborations and equipment are worked out. The feasibility and expectations of the research itself are argued within a Dragons’ Den environment as well as in written form. You also have the opportunity to critically review the science case of others and to learn how the funding process operates in the UK and elsewhere. In this module, you are trained to argue your case for support, a skill which can be transferred into work life in general.

Substances of Abuse
In this module, you acquire a theoretical knowledge and understanding of the chemistry and principles of analysis and identification of several chemicals that are substances of abuse. These include: amphetamines and related compounds, LSD, cannabis and cannabis products, opiate compounds, cocaine; products from Catha edulis and Lophophora williamssii; psilocybin and psilocin from fungi and certain controlled pharmaceutical drugs.

For details of scholarships at Kent, see www.kent.ac.uk/scholarships
VISIT THE UNIVERSITY

Come along for an Open Day or a UCAS Visit Day and see what it is like to be a student at Kent.

Open Days
Canterbury Open Days are held in July and October for potential students, and their families and friends, to have a look round the campus. The day includes a wide range of subject displays, demonstrations and informal lectures and seminars, and the chance to tour the campus with current students to view accommodation and facilities. For more information, see www.kent.ac.uk/opendays

UCAS Visit Days
UCAS Visit Days take place between January and April and include a tour of the campus with a current undergraduate and a talk about University life. You also have the chance to talk to one of the academics and discuss any queries about the course. For more details, see www.kent.ac.uk/visitdays

Informal visits
You are welcome to visit the campus at any time. The University produces a leaflet that can take you on a self-guided tour and, in certain instances, you may be able to meet up with an academic member of staff. For more details, please contact the Information and Guidance Unit (see right).

More information
If you would like more information on Kent’s courses, facilities or services, or would like to order another subject leaflet, please contact the Information and Guidance Unit.

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Freephone (UK only): 0800 975 3777
www.kent.ac.uk/ug

You can also write to us at:
Information and Guidance Unit,
The Registry, University of Kent,
Canterbury, Kent CT2 7NZ.

For the latest departmental information on studying Forensic Sciences at Kent, please see www.kent.ac.uk/physical-sciences/prospective/undergraduate/forensic-science
**Location**
Canterbury.

**Award**
BSc (Hons), MSci.

**Degree programme**
- Forensic Chemistry BSc (F1F4)
- Forensic Chemistry MSci (F1FL)
- Forensic Chemistry with a Year in Industry (F1FK)
- Forensic Science BSc (F410)
- Forensic Science MSci (F414)
- Forensic Science with a Foundation Year (F412)
- Forensic Science with a Year in Industry (F411)

**Typical offer levels**
F410, F414, F411: BBB at A level, IB Diploma 34 points inc Biology or Chemistry 5 at HL and 4 in Mathematics, or IB Diploma with 15 points at Higher inc Biology or Chemistry 5 at HL and 4 in Mathematics.

F1F4, F1FL, F1FK: ABB at A level, IB Diploma 34 points inc Biology or Chemistry 5 at HL and 4 in Mathematics, or IB Diploma with 16 points at Higher inc Biology or Chemistry 5 at HL and 4 in Mathematics.

**Required subjects**
F410, F411, F414: A level grade B or equivalent in Chemistry, Biology or Human Biology, plus GCSE Mathematics grade C.

F1F4, F1FL, F1FK: A level grade B in Chemistry, Biology or Human Biology, plus GCSE Mathematics grade C.

F412: Foundation Course – individual consideration.

**Year in Industry**
See p14.

**Further information**
Admissions enquiries
T: +44 (0)1227 827272
www.kent.ac.uk/ug

**Offer levels and entry requirements are subject to change. For the latest course information, see www.kent.ac.uk/ug**

**Terms and conditions:** the University reserves the right to make variations to the content and delivery of courses and other services, or to discontinue courses and other services, if such action is reasonably considered to be necessary. If the University discontinues any course, it will endeavour to provide a suitable alternative. To register for a programme of study, all students must agree to abide by the University Regulations (available online at: www.kent.ac.uk/regulations).

**Data protection:** for administrative, academic and health and safety reasons, the University needs to process information about its students. Full registration as a student of the University is subject to your consent to process such information.
COME AND VISIT US

We hold Open Days at our Canterbury and Medway campuses.
For more information, see:
www.kent.ac.uk/opendays