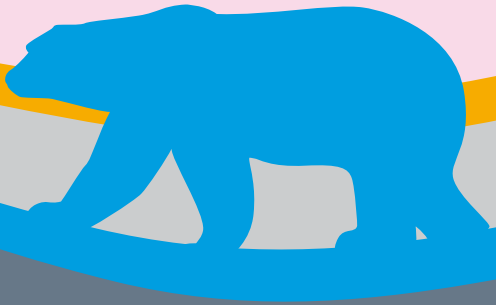
Science

Did you know?

The RVC was founded in 1791, the same year as the eminent scientist, Michael Faraday was born, the great composer Mozart died and in the same year as the foundation stones were laid for the building of Washington, DC.

Did you know?

The polar bear skeleton in the anatomy museum was the basis for the CGI polar bear featured in The Golden Compass.



Did you know?

The Research Assessment Exercise in 2008 ranked the RVC as England's best veterinary school, amongst institutions whose research is exclusively veterinary-related.

BSc Bioveterinary Sciences

D300 | Three-year course

In recent years, advances in human medicine have had a tremendous impact on the diagnosis and treatment of disease in animals and vice versa. Today's veterinary scientists hold prominent positions in government-led laboratories, research institutes and the pharmaceutical and agricultural industries. There is also a growing need for bioveterinary scientists to play an important part in the nationwide promotion of animal health and welfare, as well as the wider sphere of human health.

Programme Content

This degree course is aimed at aspiring bioscientists who wish to study the basic biological sciences that inform clinical practice and research in both veterinary and human science. By focusing on the domesticated animals which form the bulk of veterinary work, this degree aims to give you a sophisticated understanding of their physiology, cellular and molecular biology, and the mechanisms of disease.

Year One

The first year deals with the healthy animal, and includes the following modules:

– Form and Function is an introductory course in mammalian physiology and anatomy
– Control and Regulation moves beyond organs and tissues to reveal the cellular and molecular mechanisms underpinning normal animal function
– Foundations of Science covers experimental design, scientific method, statistics and epidemiology
– Problem Definition and Investigation introduces you to problem-based learning approaches and the research laboratory environment
– Project: an extended library-based literature review of a current research topic in animal or biomedical science.

Underpinning the BSc is a tutorial programme which allows students to work in small groups with a tutor, and develop the transferable and professional skills needed to complete the main taught parts of this degree.

Year Two

The second year deals with disease and its treatment, and includes the following modules:

– The Enemy Within explains the molecular basis of challenging degenerative and proliferative conditions, including neoplasia, cancer and autoimmune diseases
– The Enemy Without covers microbiology and parasitology, the role of infection in animal disease, including the factors determining transmission and virulence, and pathological effects
– Pharmacology Principles and Practice shows how cutting-edge pharmaceuticals can be used to probe normal and diseased mechanisms, and form a basis for therapy
– From Lab to Market gives students a taste of the world of business, as well as exploring important transferable skills such as teamwork.

The tutorial programme continues to develop your skills-base and begins to look at career opportunities and work on related skills, such as interviewing.

In the final term of Year Two, you will put the learned theory into applied research by undertaking a project during a supervised laboratory placement.

Year Three

In your third and final year, you progress to more specialised, in-depth study. You may choose from a variety of subjects, including: Comparative Animal Locomotion, Advanced Skeletal Pathobiology, Infection & Immunity, Advanced Reproduction & Development, Animal Behaviour & Welfare, Veterinary Pathology, Advanced Concepts in Biobusiness, Endocrine & Metabolic Syndromes, Parasitology of Tropical Human & Veterinary Disease, Practical Investigative Biology, and Prevention vs Cure. We are currently developing additional third year modules.

There is also the opportunity to study modules that are offered at King's College London if you so wish.

Essential Information

Course type BSc Bioveterinary Sciences
UCAS Code D300
Institution Code RVET R84

Entry requirements for D300

A Level (AL) grades/subjects required BBB including Chemistry and either Maths/Physics/Biology.

AS Level grades/subjects required None.

14-19 Advanced Diploma Considered with B grades in AL Chemistry and either Biology/Maths/Physics.

GCSE At least 5 C grades including minimum grade B Double Award Science, English, Maths.

BTEC/NPTC (City & Guilds) DDM in Extended Diplomas in Applied Science and Animal Management considered with specified units required.

Access Science-based Diplomas with minimum 15 Level 3 credits in Chemistry and 15 Level 3 credits in a second science subject.

Scottish Qualifications 5 SH passes including Chemistry and either Maths, Physics, Biology. AH: BB including Chemistry and either Maths, Physics, Biology.

Cambridge Pre-U M2 or higher in Chemistry, Biology/Maths/Physics and one other Principal subject.

Welsh Baccalaureate Core accepted alongside grade B in AL Chemistry and either Biology/Maths/Physics.

The Irish Leaving Certificate BBBBBB at Higher Level including Chemistry and either Biology/Maths/Physics plus English Language, Maths, Physics minimum grade B at Ordinary Level if not taken at Higher level.

International Baccalaureate Grade 555 Chemistry and either Biology/Maths/Physics and one other subject at Higher Level.

BMAT Not required but applicants who wish to be considered for Merit scholarship must take the BMAT in the year of application. www.bmat.org.uk

IELTS 6.5 or above.

Pearson Test of English Overall score of at least 65.

NOTICE This panel gives basic entry requirements only – for complete entry requirement information, including specific subjects required, please go to **www.rvc.ac.uk/undergraduate/bscbiovetsci/entrancereq.cfm**

Need to know more?

+44 (0) 20 7468 5147
www.rvc.ac.uk
www.ucas.com

Projects

In the final year you will also undertake a substantial research project and write a report. At the end of Years One and Two you will have completed two supervised science reports, developing sound laboratory and analytical skills alongside your theoretical knowledge. Independent project work will also be extremely valuable later on in your career, should you decide to pursue academic or industrial research.

Please see the website www.rvc.ac.uk/studentresearch for a more extensive list and more information about student research at the RVC.

Summer Vacation Placements

Funding for several supervised research laboratory placements for undergraduate students is supplied by the RVC. They run for between six and ten weeks according to the subject area. Recent first and second year summer vacation projects have investigated:

– friendly fire: the eosinophil as protector or enemy
– regulation of equine trophoblast differentiation
– the relationship between compromised blood circulation and striated muscle development
– the vitrification of bovine spermatozoa
– influence of maternal nutrition on fat deposition in the liver of offspring.

Please note: A BSc Bioveterinary Sciences degree does not make you a member of the Royal College of Veterinary Surgeons, or allow you to practice as a veterinary surgeon.

Applicants whose first language is not English must have an acceptable English Language qualification e.g. IELTS at 6.5 or above.

For more information or advice on any aspect of our entry requirements, please don't hesitate to contact the Admissions Office. You can telephone us on +44 (0) 20 7468 5147 or email us at enquiries@rvc.ac.uk

Application Information

Applications for admission to the BSc Bioveterinary Sciences should be made through UCAS during the period 1 September to 15 January for entry in the following September. It may be possible for late applications to be considered.

www.ucas.com
UCAS code D300
Institution code RVET R84

If you are made an offer you will be invited to visit the College. You will have the opportunity to discuss the course with a tutor and to meet current students.

Entry Profiles

Further information about the course and application processes can be found in the Entry Profile on the UCAS website (www.ucas.com).

'I really like the intimacy of the class size, and the familiarity we have with our lecturers – it creates a very comfortable environment to learn in. I've particularly enjoyed my research projects which give us the opportunity to put all the theory and background knowledge taught in lectures into practice, whilst getting to make scientific discoveries of our own.'

Samantha Wilkinson
BSc Bioveterinary Sciences

BSc Bioveterinary Sciences with a Certificate in Work-based Learning & Research

D301 | Four-year course

The Work-based Placement Year

This programme is our BSc Bioveterinary Sciences degree (see page 32) with the addition of a Work-based Placement Year after completion of the second year of the degree. This placement will enable you to learn on-the-job whilst spending a year working in industry, charity, a government institute or research institute. During this year you will further develop your practical skills, gain an invaluable understanding of the workplace and the biological sciences sector, and form new contacts, all of which are likely to increase your chance of securing your chosen job on graduation.

Placement information

A placement must last a minimum of 30 weeks and you will need to complete a Placement Project during the year which will form part of your assessment.

You are required to be pro-active in searching for, applying to and securing your own placement. Support and guidance will be provided in specific timetabled sessions and further advice will be available during lecturers' office hours.

Most placements are salaried and students can expect to earn between £8,000 and £15,000 during the year. A placement may lead to an offer of a position after graduation or future sponsorship for studying a PhD and you can certainly expect to extend your professional network.

In order to progress into the Placement Year students must:
– Complete Year 1 with a pass mark of at least 60%
– Complete and pass Year 2
– Have a written offer of a work-based placement from a placement provider
– Have proposed a placement project which addresses the Learning Outcomes.

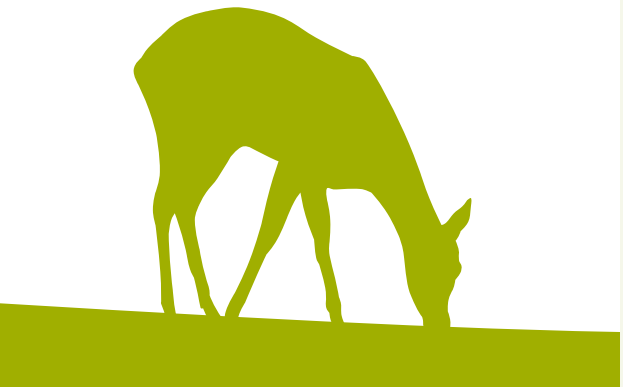
Students who do not satisfy the above progression requirements can transfer into the three year BSc Bioveterinary Sciences degree provided they satisfy the normal progression requirements for the course. Such students will not be taking a placement and will be studying only for the BSc in Bioveterinary Sciences.

The initial entry requirements for the course are the same as those for the three year BSc Bioveterinary Sciences (see page 33).

For more information on the Work-based Placement Year please see www.rvc.ac.uk/undergraduate/bscbiovetsci_4year/index.cfm or contact the Admissions Team on enquiries@rvc.ac.uk.

'Having completed a year-long industrial placement can vastly improve a candidate's employability.'

The Association of the British Pharmaceutical Industry (ABPI), August 2010.



Essential Information

Course type BSc Bioveterinary Sciences with a Certificate in Work-based Learning and Research
UCAS Code D301
Institution Code RVET R84

Entry requirements for D301

A Level (AL) grades/subjects required BBB including Chemistry and either Maths/Physics/Biology

AS Level grades/subjects required None.

14-19 Advanced Diploma Considered with B grades in AL Chemistry and either Biology/Maths/Physics.

GCSE At least 5 C grades including minimum grade B Double Award Science, English, Maths.

BTEC/NPTC (City & Guilds) DDM in Extended Diplomas in Applied Science and Animal Management considered with specified units required.

Access Science-based Diplomas with minimum 15 Level 3 credits in Chemistry and 15 Level 3 credits in a second science subject.

Scottish Qualifications 5 SH passes including Chemistry and either Maths, Physics, Biology. AH: BB including Chemistry and either Maths, Physics, Biology.

Cambridge Pre-U M2 or higher in Chemistry, Biology/Maths/Physics and one other Principal subject.

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International Baccalaureate Grade 555 Chemistry/Biology/Maths/Physics and one other subject at Higher Level.

BMAT Not required but applicants who wish to be considered for Merit scholarship must take the BMAT in the year of application. www.bmat.org.uk

IELTS 6.5 or above.

Pearson Test of English Overall score of at least 65

NOTICE This panel gives basic entry requirements only – for complete entry requirement information, including specific subjects required, please go to **www.rvc.ac.uk/undergraduate/bscbiovetsci_4year/entrancereq.cfm**

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www.ucas.com

BSc Intercalated Options

Available to BVetMed D100 students only | One-year course

Many BVetMed students recognise that intercalation gives them a more rounded education and broadens their career options. Often their aim is to gain a BSc, and though they usually opt to intercalate between their second and third years, intercalation after the third year is also possible.

Students have the option to do an intercalated BSc during their BVetMed course. This is an opportunity for students to study a topic of their interest in more depth and involves an extra year of study from which they will gain a BSc. We run two intercalated courses at the RVC in Veterinary Pathology and Bioveterinary Sciences (see below for details). There are also many intercalated courses available to veterinary students in other universities.

BSc Veterinary Pathology

As the science of disease, pathology comprises all aspects of how a pathogen and a host interact and is thus central to the understanding and conduct of veterinary research and clinical medicine. This degree provides a unique opportunity for students to experience first-hand the excitement of contemporary pathology, and its far-reaching scientific relevance.

BVetMed students are eligible to compete for ten dedicated Wellcome Trust Scholarships, which include the payment of tuition fees and a £5,000 bursary. The competition and interviews for these are held in January/February of the year preceding enrolment.

Programme Content

This dedicated programme includes two compulsory taught modules (The Diseased Cell and The Diseased Animal) and a personal research project. It explores some of the most important issues in pathology today, including Foot and Mouth Disease, Bovine Spongiform Encephalopathy, Avian Influenza, Tuberculosis and Bovine Viral Diarrhoea Virus.

The taught modules combine lectures by outstanding academics from a variety of research institutions with small group seminars and practical classes, including regular necropsy examinations and pathological case conferences.

The two taught modules are structured as follows:

The Diseased Cell

Module lasts six weeks and covers:
– Differentiation of normal cells
– Gene regulation manipulation
– Molecular processes in inflammation and immunity
– Cellular markers in diseases of the immune system
– Cell cycle, cell death and repair
– Malignancy and comparative oncology in veterinary species.

The Diseased Animal

Module lasts six weeks and covers:
– Plagues – old, new and those yet to come
– Pathogenesis of persisting viruses
– Neurodegenerative diseases
– Introduction to toxicological pathology
– Wildlife diseases and zoonosis
– New technologies in (veterinary) research such as genomics, proteomics and functionomics.

Research Project

Having studied the taught modules, you have four and a half months to complete an independent project involving the design, development and execution of detailed research into a subject or species that particularly interests you.

Supervised by scientists of distinction, it may be undertaken at the RVC, the Veterinary Laboratories Agency, the Institute of Animal Health, or the laboratories of the Animal Health Trust or Cancer Research UK. Funding for your research project is provided by the College.

For further information on any aspects of the course, please visit www.rvc.ac.uk/education/undergraduate/bscvetpathology

Intercalated BSc in Bioveterinary Sciences

The fields of veterinary medicine and medicine are rich areas for biomedical research, yet the time constraints of many veterinary/medical undergraduate courses prevents the opportunity to become exposed to these areas of research. Our Intercalated BSc in Bioveterinary Sciences has been developed from the final year of our highly successful Bioveterinary Sciences degree, and features a broad range of modules to allow specialisation in several areas of bioveterinary science.

What does the course provide?

The programme aims to equip you with the following:
– A passion for biomedical research, within the context of a diverse range of species
– An appreciation of the fundamental principles of bioveterinary disciplines
– An understanding of the complexity of comparative biology.

Who should apply?

This degree is aimed at second and third-year veterinary and medicine undergraduates with a strong interest in research.

Scholarships

Potential intercalating students are currently eligible to compete for a number of Wellcome Trust Scholarships.

How to apply:

To find out more about this course and how to make an application, please visit our website at:
www.rvc.ac.uk/undergraduate/BScBiovetSci_inter

How and What is Taught?

Each student needs to complete two modules, from a combination of the following:

Half modules

– Advanced Concepts in Biobusiness
– Endocrine & Metabolic Syndromes
– Parasitology of tropical human & veterinary diseases
– Practical Investigative Biology
– Wild Animal Biology

Full modules

– Advanced Reproduction & Development
– Advanced Skeletal Pathobiology
– Animal Behaviour & Welfare
– Comparative Animal Locomotion
– Prevention vs Cure

Typically, these modules attract between 10 and 20 students, which makes the learning environment considerably more personalised than is possible on veterinary or medical degree courses. Teaching is usually a mix of seminar presentations, small group learning (including directed learning), practicals and tutorials. You will be taught by an extensive range of scientists and clinicians who are knowledgeable from their own experience of animal disease and research. This means we will cover virtually every aspect of animal biology, management and disease that is likely to interest you.

The Research Project

Special emphasis is placed on the research project, which accounts for half of the intercalated degree programme. You will have a choice of over 70 different projects, from a broad range of specialisation including locomotion, reproduction, cell & molecular biology, physiology, epidemiology, infection & immunity. Several of these research projects contribute to publications every year, either as conference abstracts or as full articles in peer-reviewed journals.