

St. Andrews Module, # of SCOTCAT credits	UVA Course, # of US credits received	Semester Offered
<p>BL 1101 Biology 1, 20 SCOTCAT credits This module is an introduction to molecular and cellular biology. It covers cell diversity and the origins of life, cellular structures and fundamental processes. The central dogma of molecular biology is investigated through the examination of the structure and function of DNA, RNA and proteins, and how this knowledge led to modern developments in biotechnology. The final section of the module gives an introduction into molecular and population genetics with an emphasis on the process of evolution. Throughout the module the lecture material is complemented by extensive practical classes where biological laboratory techniques are taught and practiced through, for example, microscopy, DNA isolation, dissection and thin layer chromatography.</p>	<p>BIOL 2100 Introduction to Biology with Lab: Cell Biology and Genetics 4 UVA credits</p>	Fall
<p>BL2300 Research Methods in Biology, 15 SCOTCAT credits This module will help students develop essential academic and transferable skills, with major emphasis on problem solving. This will be achieved through a combination of interactive lectures, independent datahandling workshops and group work on a mini research project. The module will start with an introduction to the scientific method, experimental design, understanding and presenting data. Students will then learn various statistical tests using a code-based statistical software and build their confidence in independent data-handling workshops. Regular mathematics for biologists classes will allow students to practice manipulating equations, performing laboratory calculations etc. A mini project on which the students work in small groups will help them apply the principles learned. The module will also cover scientific essay writing, record keeping and good laboratory practice.</p>	<p>STAT 2020 Biostatistics 4 UVA direct credits</p>	Fall
<p>BL2301 Cell Biology, 15 SCOTCAT credits The module will introduce the concept of 'a cell', moving on to discuss different types of prokaryotic and eukaryotic cell. The structure and function of a variety of sub-cellular compartments will be examined. The diversity of different cell types within multicellular organisms will be highlighted, together with an overview of how this diversity is achieved.</p>	<p>BIOL 3000 Cell Biology 3 UVA direct credits</p>	Fall

<p>BL2302 Molecular Biology, 15 SCOTCAT credits Molecular biology is an essential tool within modern biology, widely used in biochemistry, cell biology and ecology. This module will provide an introduction to modern molecular biology. Lectures will cover fundamental biological processes such as transcription, translation, DNA replication and repair - as well as touch on the genomics revolution and how this has influenced the field. These concepts will be reinforced through laboratory practical classes where students will develop their practical skills and be exposed to the use of basic bioinformatics resources to analyse and interpret data.</p>	<p>BIOL 3010 Genetics & Molecular Biology 3 UVA direct credits</p>	Fall
<p>BL2303 Evolutionary Biology, 15 SCOTCAT credits Evolution is a fundamentally important component of our understanding of all biological phenomena, from molecular to ecosystem scales. This module will give an overview of the history and major principles of modern evolutionary biology, aimed at contemporary biologists of all backgrounds.</p>	<p>BIOL 3020 Evolution & Ecology 3 UVA direct credits</p>	Fall
<p>BL1102 Biology 2, 20 SCOTCAT credits This module provides an introduction to the diversity of life on Earth and will address key elements of organismal and ecological aspects of life. The module is divided into several sections beginning with the classification of life and an introduction to the kingdoms Monera, Fungi and Protista. Photosynthesis, respiration and the evolution and diversity of plants will be studied. Students will then look at the diversity of animals in the sea and the movement of some groups onto land. The module will also provide an introduction to animal behaviour and developmental biology, before finishing off by introducing ecology and the various factors promoting and threatening biodiversity. Throughout the module the lecture material is complemented by extensive practical classes introducing a variety of fieldwork and laboratory techniques.</p>	<p>BIOL 2200 Intro Biology with Lab: Organismal & Evolution 4 UVA direct credits</p>	Spring

<p>BL2305 Cell Systems, 15 SCOTCAT credits Cells are often considered to be the fundamental unit of life. This module will discuss how cells interact with one another to form complex tissues and organisms. You will consider, the structure-function relationship of a variety of cell types, including those involved in forming muscles, neuronal networks, blood and immunity and infectious diseases. The mechanisms by which cells communicate in order to mediate the complex physiology of an organism will be discussed and you will consider how disruption of these cell systems can lead to disease states.</p>	<p>BIOL 4320 Signal Transduction: How Cells Talk 3 UVA direct credits</p>	<p>Spring</p>
<p>BL2306 Biochemistry, 15 SCOTCAT credits Due to recent technological developments, metabolism and its regulation has re-emerged as an important area of Biology. This module will examine major biological macromolecules, the common motifs which occur in metabolic reactions, explore the properties of enzymes catalysing these reactions and consider the approaches to characterise the small molecule complement (metabolites) of biological systems. A number of central metabolic pathways and their control will be studied in detail, alongside examples of their importance in disease and recent metabolomic studies.</p>	<p>BIOL 3030 Biochemistry 3 UVA direct credits</p>	<p>Spring</p>
<p>BL2307 Ecology, 15 SCOTCAT credits This module introduces basic concepts in population and community ecology and how they relate to biodiversity. It provides an understanding of fundamental ecological concepts including population regulation, intra- and inter-specific competition, species niche as well as taxonomic and functional diversity. This module is suitable for all Biologists and environmental scientists. Although it is an introductory module, it will cover the latest developments in the field of ecology.</p>	<p>BIOL 3450 Biodiversity and Conservation 3 UVA direct credits</p>	<p>Spring</p>

<p>BL2308 Vertebrate Zoology, 15 SCOTCAT credits This module will explore the diversity of vertebrate animals, beginning with the closest relatives of vertebrates and the evolutionary origins of the group. A detailed look at the defining characteristics of the body plans and lifestyles of the key vertebrate groups will illustrate how they carry out basic animal functions in similar or different ways. This will be put in an evolutionary context to reveal the patterns and trends in the vertebrates as a whole, while also highlighting current phylogenetic controversies. The module will then explore some common themes across the key groups, starting with the developmental biology of some vertebrate model systems and the lessons we can learn from these. We will also see how the highly developed brains of vertebrates have allowed the evolution of astonishing sensory capacities and of complex behaviours, and how these are different (or not) from invertebrates.</p>	<p>BIOL 3400 Functional Morphology of Vertebrates 4 UVA direct credits</p>	Spring
<p>BL2309 Applied Molecular Biology, 15 SCOTCAT credits Techniques in molecular biology represent a powerful box of tools that are used to address a wide variety of modern research questions across a broad range of biological disciplines including; ecology, biotechnology, cell biology, medicine, conservation biology, infectious disease, evolution, genetics and synthetic biology. Key molecular biology techniques will be introduced in the context of case studies that will provide examples of how molecular biology techniques are being used in cutting edge research to address real-life questions and problems that impact health, food security, the environment and the economy.</p>	<p>BIOL 4410 Molecular Biology and Genetics 3 UVA direct credits</p>	Spring
<p>BL2310 Comparative Physiology, 15 SCOTCAT credits A comparative physiologist studies organisms to explore the origins and nature of physiological diversity. This module covers the principles of physiological adaptation in a range of animals, including examples from all major taxa and from all habitats. The specific topics and components include: (1) the physiological consequences of body size and scaling effects; (2) respiratory and circulatory systems in vertebrates and invertebrates; (3) thermal physiology; (4) water balance in aquatic and land animals; (5) the mammalian kidney and its functioning; (6) sensory systems in different environments; (7) neural signaling and vertebrate senses; (8) control systems - hormones and pheromones; and (9) immunity and the maintenance of physiological integrity.</p>	<p>BIOL 3230 Animal Physiology 3 UVA direct credits</p>	Spring

Updated 10/31/17