

SCHOOL OF EXERCISE BIOMEDICAL AND HEALTH SCIENCES

COURSE PLANNER

BACHELOR OF HEALTH SCIENCE: BIOMEDICAL SCIENCE (E70) - 2009

This Course planner provides a step-by-step guide to help you program your future studies. If you encounter any difficulties in using the Course Planner please seek advice from the School Student Support Officer on 6304 5997.

GENERAL INFORMATION

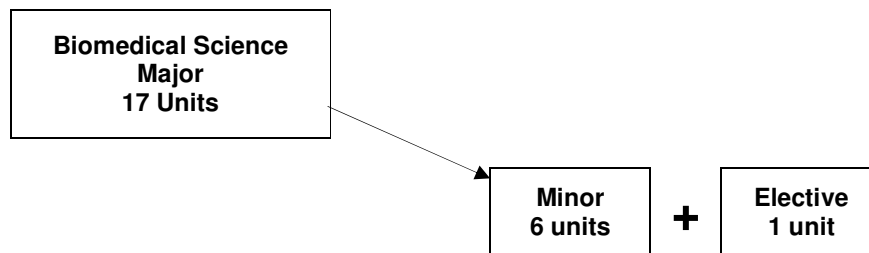
Course Code for Bachelor of Health Science: E70

The degree requires 24 units (**360 Credit Points for graduation**).

Each unit from the Bachelor of Health Science = 15 Credit Points.

Within the 360 Credit Points of the Bachelor of Health Science, there cannot be more than 150 Credit Points obtained from Level I units.

Bachelor of Health Science: Biomedical Science students take a 17 unit Major in Biomedical Science and a 6 unit minor (from the below list or other approved minor) and 1 unit elective.



The approved minors include Addiction Studies, Health Promotion, Nutrition, Occupational Safety and Health, Psychology, Human Biology, Physical Science, Biological Science, Sports Science.

NOTE: PROGRAMS (MINOR) OUTSIDE THESE MUST SEEK APPROVAL FROM COORDINATOR.

Units from outside the School of Exercise, Biomedical and Health Sciences may not hold the same Credit Point weighting.

Course Schedule Planner: The recommended Course Schedule below will assist you. Please note units are only available in the semester indicated below.

Full-time study: 3 – 4 units per semester OR Part-time study: 1 – 2 units per semester

BACHELOR OF HEALTH SCIENCE (BIOMEDICAL SCIENCE) Full-Time Study Program

Unit Code	Unit Name	Pre-requisites	Campus Availability	Unit Code	Unit Name	Pre-requisites	Campus Availability
YEAR ONE							
Semester 1				Semester 2			
SCH1111	Fundamental Biomedical Techniques	NIL	JO	HST1109	Epidemiology	NIL	JO
SCH1134 OR SCH1133	Human Structure and Function Human Genetics	NIL NIL	JO JO	SCH1143 OR SCH1132	Systems Physiology Human Evolution and Ecology	NIL NIL	JO JO
SCC1123	Chemistry for the Life Sciences	NIL	JO	SCC1226	Introduction to Organic Chemistry and Biochemistry	NIL	JO
HST1124	Health Communication	NIL	JO		Minor Unit		
YEAR TWO							
Semester 1				Semester 2			
HST2122	Health Research Methodology	NIL	JO	MAT1114	Introductory Statistics	NIL	JO
SCH2232 OR SCH2226	Medical Biochemistry Human Molecular Genetics	SCH1134 SCH1133	JO JO	SCH2111 OR SCH2142	Applied Physiology Forensic Genetics	SCH1134 NIL	JO JO
SCH2235	Applied Microbiology	SCH1134	JO	SCH2141	Advanced Biomedical Techniques	SCH1111	JO
	Minor Unit				Minor Unit		
YEAR THREE							
Semester 1				Semester 2			
HST3501	Health Research Project	HST2122	JO	SCH3434	Human Reproduction, Development and Ageing	SCH1134	JO
SCH3227 OR SCH3145	The Biology of Human Disease Biomedical Ethics	SCH1134 SCH1133	JO JO	SCH3244	Developmental Biology	SCH2226 or equivalent	JO
	Minor Unit				Minor Unit		
	Minor (or Elective) Unit				Minor (or Elective) Unit		
Recommended Minors:				Recommended Electives:			
Addiction Studies	Biological Sciences			CSI1121	Personal Computing		
Health Promotion	Physical Sciences			SCH1134	Human Structure and Function		
Nutrition	Human Biology			CSV1105	Interpersonal Skills		
Occupational Safety and Health	Psychology			SCH3239	Human Immunology (pre-requisite SCH1134 or equivalent)		
Sports Science					Public Health units		

JO = on-campus

Course Planners 2009 Biomedical Science

BACHELOR OF HEALTH SCIENCE: BIOMEDICAL SCIENCE– Unit Description

SCH1111 – Fundamental Biomedical Techniques

This unit introduces essential biomedical laboratory techniques in three areas: fundamental biomedical laboratory techniques; microbiological techniques; and molecular genetic techniques. Students are also given the opportunity to consult with researchers, diagnosticians, employers and past human biology graduates. Career entry requirements and biomedical research or diagnosis will be investigated.

SCH1134 – Human Structure and Function

This unit is a broadly based, general introduction to fundamental concepts in Human Anatomy and Physiology. It covers (i) cell biology with emphasis upon macromolecules, cytoanatomy, cell bioenergetics and major tissue types, (ii) homeostasis in relation to its ubiquity and steady state system models and (iii) regulatory mechanisms from the perspective of their evolution, complexity and functioning in humans.

SCH1133 – Human Genetics

This unit provides students with information that will help them assess genetic issues they are likely to encounter throughout their lives. It begins with classical genetics: coverage of cell division, transmission of traits from generation to generation, cytogenetics and developmental genetics. Emphasis then shifts to DNA structure, gene expression, mutation and cancer, before cloning and recombinant DNA technology are introduced. One specialised topic 'Genes and the Immune System' is considered before the unit concludes with an analysis of the social, legal and ethical issues arising from reproductive technology, genetic testing and screening, genetic and gene therapies and genetic counselling.

SCC1123 – Chemistry for the Life Sciences

This broadly based unit will introduce the student to important chemical concepts and principles. The unit will give you the essential chemistry background required for courses in the biological, environmental and health sciences. A TEE Chemistry background is not assumed.

HST1124 – Health Communication

This unit is an introduction to communication strategies essential to working in the health professions. It examines written, verbal and group communication strategies in various settings.

HST1109 - Epidemiology

This unit provides an introduction to the epidemiological concepts necessary for studying the distribution and determinants of disease in human populations.

SCH1143 – Systems Physiology

This unit is a general introduction to human anatomy and physiology. It covers (i) the anatomy and physiology of the major human systems, (ii) homeostasis in relation to its ubiquity and steady state system models and (iii) regulatory mechanisms from the perspective of their complexity and functioning in human states of health.

SCH1132 – Human Evolution and Ecology

The place of humans in the natural world is explored through the fossil record, the molecules that make us, the behaviour of living nonhuman primates and the behaviours and biology of modern people. The evidence of our evolutionary past is visible in our DNA, our hominid anatomy, our physiology and our behaviour. Even so, human evolution abounds with controversies: reason versus intelligent design and creationism; the aquatic ape hypotheses; the little people of Flores; human altruism, selfishness and genocide; and is *Homo sapiens* the architect of Planet Earth's sixth mass-extinction?

SCC1226 – Introduction to Organic Chemistry and Biochemistry

Prerequisite :

SCC1123 Chemistry for the Life Sciences, or TEE Chemistry or equivalent

This unit provides a sound introduction to biological chemistry. It covers the structure and reactions of important classes of organic compounds and biomolecules including carbohydrates, lipids, proteins, enzymes, and nucleic acids. Various important applications will be described, including polymers, medicinals, soaps, detergents.

HST2122 – Health Research Methodology

In this unit the emphasis is on the development of quantitative and qualitative research skills which have direct relevance to community health issues. It will equip students with the ability to apply a range of practical research methodologies to health programs and the capacity to critically evaluate health projects.

SCH2232 – Medical Biochemistry

Prerequisite :

SCH1134 Human Structure and Function

In this unit emphasis is given to the energetic metabolic processes of the normal human, and how various disease states are manifestations of abnormalities of biomolecular reactions and processes. Emphasis is also given to gaining an understanding of the principles of major laboratory methods used in diagnostic procedures and biomedical research.

SCH2141 – Advanced Biomedical Techniques

Prerequisite :

SCH1111 Fundamental Biomedical Techniques

This unit sets forth the basic principles of genomics, proteomics and bioinformatics. The major areas covered are genome sequences (genomes and variations), genome expression (microarrays and proteomics) and whole genomes (genome circuits, synthetic biology and systems biology). Students extract and assay a variety of known and unknown DNAs. A selection of PCR amplicons are sequenced and this data is analysed using online shareware applications. Instruction takes place in the context of interesting but complex questions derived from biomedical case studies. Students use bioinformatics to explore the biomedical content and process contained within each case study.

MAT1114 – Introductory Statistics

This unit deals with the methods and skills of organising, summarising and presenting numerical data. The concepts of estimation and hypothesis testing are studied, with the emphasis on analysing real data. Calculators and the computer packages EXCEL and MINITAB are used throughout the unit.

SCH2111 – Applied Physiology

Prerequisites :

SCH1134 Human Structure and Function or equivalent

This unit concentrates on excitable-cell physiology in both muscle and nervous systems. It focuses upon neurophysiology, control of pyramidal and extrapyramidal systems and sensory input before addressing the mechanical properties, structure, energetics and control of muscle. The emphasis is on applications of physiology in clinical, scientific and assessment situations.

SCH2142 – Forensic Genetics

Forensic Genetics is based on DNA-typing. The genetic markers used, the underlying principles of DNA-typing and the techniques employed in DNA forensic laboratories are considered. Paternity testing and crime scene analysis are used to show the application of DNA-typing. Forensic DNA analysis is also applied to recent human ancestors such as the Romanovs and Ice Man; to our more distant ancestors, the Neandertals; and to students own mitochondrial DNA which is sequenced to identify their ancestral mothers, the so-called 'Daughters of Eve'. The importance of population genetic marker allele frequencies to all types of forensic genetic analyses is emphasised. DNA databases and their implications conclude this unit.

SCH2235 – Applied Microbiology

Prerequisite :

SCH1134 Human Structure and Function

The major concepts of microbiology are studies with emphasis upon the relationships between humans and microorganisms. The unit covers topics including: the history of microbiology; the morphology of microorganisms; the nature and structure of viruses; the metabolism of microorganisms; microbial nomenclature; sterilisation and disinfection; antimicrobial drugs; hypersensitivity reactions; microbial diseases; food and water microbiology; biotechnology.

SCH3236 – Pharmacology

Prerequisite :

SCH1134 Human Structure and Function

Basic pharmacology is presented in such a way that students with little background in physiology or biochemistry will be able to understand the principles of drug actions, reactions and interactions. All commonly used drugs will be described with regard to their use, mechanism of action, side effects and abuse potential. Brief descriptions of pathophysiological processes will be given where appropriate.

HST3501 – Health Research Project

Prerequisite :

HST2122 Health Research Project

This unit is designed to consolidate research skills through the production of an independent research report. Specifically students will pursue in depth an area of interest in health science by conducting a health research project.

SCH3227 – The Biology of Human Disease

Prerequisite :

SCH1134 Human Structure and Function

This unit examines the principles and mechanisms of the disease process. The various components and interactions of the body's defense system and the relationship of environmental factors to the disease process are considered. The morphology, pathogenesis and clinical course of diseases are considered in detail.

SCH3145 – Biomedical Ethics

Prerequisite :

SCH1133 Human Genetics

In every area of health based professional activity ethics has assumed an increasingly important status. This unit is focused on developing a critical awareness among prospective health care professionals and student researchers as to the nature, function and importance of ethical issues across a broad range of health, biomedical and health care issues. The unit combines the study of the theoretical bases of ethics in the context of health related areas with discussion of real-life moral dilemmas through a case-study approach.

SCH3239 – Human Immunology

Prerequisites :

SCH1134 Human Structure and Function or equivalent

This unit examines the human body's efforts to detect, contain and remove or destroy foreign or damaging substances. The molecular, cellular and organ components of the system are considered. Both positive and negative aspects of the immune response are presented, along with new ways to manipulate the system to improve transplantation and fight malignancies.

SCH3434 – Human Reproduction, Development and Ageing

Prerequisites :

SCH1134 Human Structure and Function

An in-depth study of human reproduction, development, growth and ageing. This unit will build on the previous physiology units to demonstrate the control of human development and ageing through the neuro-endocrine system and the structure and function of the tissues involved in development.

SCH3244 – Developmental Biology

Prerequisites :

SCH2226 Human Molecular Genetics or equivalent

This unit is an introduction to the study of developmental biology with respect to the influence of genetics on stem cell differentiation: molecular mechanisms defining cell position, migration, differentiation and embryonic patterning; germ layer formation, organ and tissue production and sex determination during embryonic development.