Bachelor of Clinical Exercise Physiology (HM44)

Overview
HM44 Bachelor of Clinical Exercise Physiology will replace HM42 Bachelor of Applied Science (Human Movement Studies) from 2010 for all commencing students.

The Bachelor of Clinical Exercise Physiology provides students with both foundation knowledge in the exercise and movement sciences and the skills to apply this knowledge to a range of disorders. On graduation students will have met the professional requirements to work as Accredited Exercise Physiologists in clinical settings (subject to accreditation by the Australian Association for Exercise and Sports Science).

Career outcomes
Graduates pursue a broad range of careers including those in corporate and community health, wellness and fitness, and sports performance. In addition, Exercise Physiologists may obtain employment in the private and public sectors providing exercise rehabilitation for a range of cardiovascular, metabolic, musculoskeletal, neurological and psychological disorders.

Pathways
Students wishing to pursue higher degree studies may apply for the Master of Applied Science (Research) and progress to doctoral studies.

Professional recognition
Accreditation with the Exercise and Sports Science Australia (ESSA) is being sought for the course to give graduates professional recognition as Accredited Exercise Physiologists.

Further information
For information about this course, please call the School of Human Movement Studies on +61 7 3138 4697 or email enquirieshms@qut.edu.au

Deferment
All domestic applicants offered admission to undergraduate award courses may apply to defer commencement of their study. A deferment application will not normally be considered for courses where specific admission requirements apply, for example submission of folios or undertaking auditions. Applicants are not entitled to hold a deferred place and hold a place in another QUT course for the same period.

Course structure

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OR
INB102 Emerging Technology
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in Maths B AND Chemistry

Year 2, Semester 2
HMB272 Biomechanics
HMB273 Exercise Physiology 1
HMB275 Exercise and Sport Psychology
HMB282 Resistance Training

Year 3, Semester 1
HMB362 Biomechanics 2
HMB373 Cardiorespiratory and Metabolic Disorders
HMB381 Exercise Physiology 2
HMB382 Principles of Exercise Prescription

Year 3, Semester 2
HMB361 Functional Anatomy 2
HMB371 Motor Control And Learning 2
HMB378 Neurological, Psychological and Musculoskeletal Disorders
HMB470 Practicum 1

Year 4, Semester 1
HMB476 Practicum 2A
HMB481 Clinical Exercise for Cardiorespiratory and Metabolic Disorders

Year 4, Semester 2
HMB477 Practicum 2B
HMB482 Clinical Exercise for Neurological, Psychological and Musculoskeletal Disorders

Potential Careers:
Community Education Officer, Community Health Officer, Director of Health Programs and Services, Exercise Physiologist, Fitness Assessor/Personal Trainer, Health Educator, Health Policy Officer, Health Promotion Officer, Health Researcher, Public Health Officer, Public Health Program Manager, Rehabilitation Professionals, Sports Scientist, Trainer.

UNIT SYNOPSES

HMB110 INTRODUCTION TO EXERCISE AND MOVEMENT SCIENCE
This unit introduces students to the field of exercise and movement science and allows students to develop knowledge and academic skills required both for undergraduate study and professional practice. Students will undertake structured tutorial activities on selected topics in exercise and movement science that include measurement and observation, analysis, and the preparation of reports.
Credit points: 12  Teaching period: 2010 SEM-1

HMB172 NUTRITION AND PHYSICAL ACTIVITY
This unit is an introduction to principles of nutrition in relation to the physical activity setting, and the role of nutrition and physical activity in weight management. This unit also covers the essential elements of child growth and development (auxology) in relation to nutrition and health. The unit is designed to underpin studies in exercise physiology and sports nutrition.
Credit points: 12  Contact hours: 3 per week  Campus: Kelvin Grove  Teaching period: 2010 SEM-2

HMB271 FOUNDATIONS OF MOTOR CONTROL, LEARNING AND DEVELOPMENT
This unit introduces students to the behavioural and neural bases of movement control through an examination of the central nervous and neuromuscular systems, hierarchical control, human information processing and dynamical systems. It covers elements of sensory mechanisms related to movement. Foundations of motor learning and adaptation are introduced, linking underlying mechanisms of learning with principles that may be applied in teaching, coaching and rehabilitation.
Prerequisites: LSB131 or LSB231 or LSB255  Credit points: 12  Contact hours: 4 per week  Campus: Kelvin Grove  Teaching period: 2010 SEM-1

HMB272 BIOMECHANICS
This unit includes the application of mechanics as they apply to Human Movement including: kinematics and dynamics of human body models; quantitative analysis; impact; work and power; fluid dynamics; material properties.
Prerequisites: LSB131  Credit points: 12  Contact hours: 4 per week  Campus: Kelvin Grove  Teaching period: 2010 SEM-2

HMB273 EXERCISE PHYSIOLOGY 1
This unit describes the immediate physiological responses to exercise, and the adaptations that occur with long-term exercise training. Exercise places a demand on the human body to provide sufficient energy to perform. The metabolic, hormonal, cardiovascular and pulmonary systems must...
adapt to meet the challenge of homeostasis. The active skeletal muscle must increase extraction and utilisation of oxygen and other fuels, the cardiovascular system must respond to improved gas and fuel transport, and lung function must change to facilitate increased respiratory gas exchange.

NOTE for Summer Semester students: Teaching will not commence until January 2010, but some unit information will be available from 16 November 2009.

Students wishing to enrol up to the beginning of January will need to email enquirieshms@qut.edu.au

**Prerequisites:** LSB231 or LSB142    Credit points: 12
**Contact hours:** 4 per week   **Campus:** Kelvin Grove
**Teaching period:** 2010 SUM-2, 2010 SEM-2 and 2010 SUM-1

**HMB274 FUNCTIONAL ANATOMY**
This unit includes the following: surface anatomy of the trunk and upper and lower limb; morphological and mechanical properties of bone, muscle-tendon units with implications for physical activity; joint structure and function; analyses of movement tasks including walking and running; cinematography and electromyography in functional anatomy of movement tasks.

**Prerequisites:** LSB131 or LSB255    Credit points: 12
**Contact hours:** 4 per week   **Campus:** Kelvin Grove
**Teaching period:** 2010 SEM-1

**HMB275 EXERCISE AND SPORT PSYCHOLOGY**
This unit includes the following: introduction to the psychological factors which influence performance, participation and adherence to both sport and exercise programs; personality and the athlete; attention and arousal; relaxation theory and practice; aggression and psycho-social development; leadership and team cohesion.

**Prerequisites:** PYB100 or PYB102 or EDB002    Credit points: 12
**Contact hours:** 3 per week   **Campus:** Kelvin Grove
**Teaching period:** 2010 SEM-2

**HMB276 RESEARCH IN HUMAN MOVEMENT**
This unit includes principles of research: purposes, philosophy, applications. It addresses quantitative research including basic statistics, descriptive, ANOVA, correlation, regression and non-parametrics, and basic research design hypothesis testing. Qualitative research includes methodology, data collection, and theory building. Research presentation includes: writing a research report and developing conclusions. This unit also considers application of research, examples in human movement, related literature, computer data analysis, and information retrieval.

**Credit points:** 12   **Contact hours:** 3 per week   **Campus:** Kelvin Grove
**Teaching period:** 2010 SEM-2

**HMB277 EXERCISE AND SPORT NUTRITION**
This unit considers the relationship between nutrition and exercise and physical activity. Areas covered include dietary and energy requirements in exercise and sport and substrate utilisation at the cellular level during exercise. The influence that nutrition has on performance via changes in body composition, fuel utilisation, blood biochemistry and ergogenic aids will also be covered. Nutritional supplements and water and electrolyte balance in exercise and sport are also part of this unit.

**Prerequisites:** HMB172 or PUB201    Credit points: 12
**Contact hours:** 3 per week   **Campus:** Kelvin Grove
**Teaching period:** 2010 SEM-1

**HMB282 RESISTANCE TRAINING**
This unit aims to equip students with the basic knowledge, skills and competencies required for exercise prescription in resistance training for muscular fitness. Students build on prior knowledge of biomechanics, anatomy, physiology and motor control to develop understanding of the mechanical and physiological determinants of muscular fitness. The unit incorporates a blend of theoretical background, practical knowledge and skills in the main areas of muscular hypertrophy, strength, power and endurance. This understanding is then used to critically analyse resistance training programs.

**Prerequisites:** LSB131    Credit points: 12   **Campus:** Kelvin Grove
**Teaching period:** 2010 SEM-1

**HMB361 FUNCTIONAL ANATOMY 2**
This is a project-based unit designed to enable students with a background in functional anatomy to develop greater expertise in one or a combination of the following areas: electromyography; orthopaedic biomechanics; kinesiology of sport and work; comparative functional anatomy; locomotion and posture; research techniques in functional anatomy.

**Prerequisites:** HMB274    Credit points: 12   **Campus:** Kelvin Grove
**Teaching period:** 2010 SEM-2

**HMB362 BIOMECHANICS 2**
This unit includes the following: measurement techniques within biomechanics; analysis of force systems; photographic, goniometric andaelctrographic analysis of movement; an introduction to viscoelasticity and biological materials; material properties; mass and inertial characteristics of the human body; applied aspects of biomechanics undertaken from a research project perspective.

**Prerequisites:** HMB272 and HMB274    Credit points: 12
**Contact hours:** 4 per week   **Campus:** Kelvin Grove
**Teaching period:** 2010 SEM-1
HMB371 MOTOR CONTROL AND LEARNING 2
This is an advanced unit which provides an in-depth view of theories and concepts in motor learning and control; how we control actions in both everyday and skilled behaviours, and how this capability is acquired. This course provides a multidisciplinary perspective, drawing on research from psychology, neuroscience, biomechanics, robotics, neural networks and medicine. The unit is organised around the theme of sensorimotor integration as related to posture and balance, locomotion and arm movements such as reaching, grasping and pointing.
Prerequisites: HMB271  Credit points: 12  Contact hours: 4 per week  Campus: Kelvin Grove  Teaching period: 2010 SEM-2

HMB381 EXERCISE PHYSIOLOGY 2
This unit examines the integrated regulation of the organ system examined in Exercise Physiology 1. Within this integrated perspective current research areas will be highlighted, including but not limited to (1) exercise performance and environmental stress, (2) special aids to exercise training and performance, and (3) limitations to exercise in healthy normal individuals, elite athletes and selected patient populations.
Prerequisites: HMB273  Credit points: 12  Contact hours: 3-4 per week  Campus: Kelvin Grove  Teaching period: 2010 SEM-1

HMB382 PRINCIPLES OF EXERCISE PRESCRIPTION
In this unit, students examine the physiological principles and methods used in training and conditioning programs at all levels of physical activity. The integration of fitness assessment and exercise prescription is a major component of the unit, introducing the student to these requirements in the context of aerobic conditioning, resistance training, weight loss and flexibility. There is a strong emphasis on putting theory into practice, including the development and utilisation of appropriate practical skills in both fitness assessment and exercise prescription.
Prerequisites: HMB273 and HMB282  Credit points: 12  Contact hours: 4 per week  Campus: Kelvin Grove  Teaching period: 2010 SEM-1

HMB470 PRACTICUM 1
In the first of the Human Movement dedicated practicum units, students undertake in-depth experience at two different workplaces (40 hours each) while maintaining ongoing involvement in the School's clinics (20 hours). The student is provided with an extended opportunity to apply classroom learned knowledge and skills under the supervision of Human Movement Practitioners. Workplace involvement is preceded by a vocational skill seminar and workshop program while an interactive analysis program is instigated post practicum.
Prerequisites: HMB382  Credit points: 12  Campus: Kelvin Grove  Teaching period: 2010 SEM-1 and 2010 SEM-2

INB102 EMERGING TECHNOLOGY
The aim of this unit is to provide you with a conceptual framework so that you clearly identify Information Technologies and their purpose. This task will be fun as it covers a wide spectrum of ideas and allows us to examine some currently popular technologies. Information Technology has become so entwined with everyday life that identifying its scope is difficult, which also makes it difficult to identify opportunities where IT might further infiltrate into our daily lives for work and play. To achieve these aims, the unit introduces you to some of the theories and engineering practicalities that have already resulted in technological advances in the area of information technology. Concepts leading to existing technologies are introduced during lectures, which are followed by laboratory sessions where students will be encouraged to discuss social change, future information tools and explore the concepts required for constructing these technologies.
Antirequisites: ITB005  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1 and 2010 SEM-2

LSB111 UNDERSTANDING DISEASE CONCEPTS
This unit introduces the structure and function of the body, reviews the body systems and links those to mechanisms of disease. Systems and topics covered are: integumentary, skeletal, muscular, nervous, endocrine, blood, heart and circulation, lymphatic, immune, respiratory, digestive (including nutrition and metabolism), urinary, reproductive, concepts of growth and development, genetics. Examples of diseases introduced are: heart disease and hypertension, cancers (lung, breast, skin, colon, prostate, testicular, cervical), diabetes, depression, Parkinson's disease, asthma and chronic obstructive lung diseases.
Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1

LSB131 ANATOMY
This unit includes basic concepts of anatomy: an overview of the structure of cells, body tissues, and body systems; aspects of surface anatomy which are relevant to human movement; musculoskeletal systems.
Antirequisites: LSB142, LSB182, LSB258  Equivalents: LSB145  Credit points: 12  Contact hours: 5 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1

LSB231 PHYSIOLOGY
This unit covers the general physiological principles such as homeostasis and how all systems in the body contribute to it. Topics include cells, transport processes, cardiovascular system, cardiac electrical activity, cardiac output, regulation...
of blood pressure, respiratory system, endocrine system, pulmonary ventilation and its function.

**Antirequisites:** LSB250  
**Equivalents:** LSB245  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-2

**MAB105 PREPARATORY MATHEMATICS**

This unit is a substitute for Senior Mathematics B for those students who need the equivalent background for the successful study of units which assume it. It includes: basic number facts, natural numbers, integers, rational numbers, real numbers and their operations; basic algebra; functions and equations, graphs, linear functions, equations and applications; systems of linear equations; quadratic, exponential, logarithmic and trigonometric functions, properties and applications; introduction to calculus; rates of change, derivatives, rules of differentiation, second derivatives, maxima and minima and applications; integration and applications. This unit is incompatible with an exit assessment of High Achievement or better in Senior Mathematics B.

**Assumed knowledge:** Year 10 Level 6 Mathematics is assumed knowledge

**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

**PYB007 INTERPERSONAL PROCESSES AND SKILLS**

Psychology is generally a people-based profession with many positions involving not only understanding and testing people but communicating with them. More broadly however in most areas of modern work, and indeed within personal relationships, people need developed interpersonal skills and the ability to conceptualise interactive processes. The microskills for communication are also the foundation for helping relationships and counselling.

**Antirequisites:** PYB074, HHB113, PYB111  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point and Kelvin Grove  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

**PYB012 PSYCHOLOGY**

The body of knowledge which defines Psychology as a discipline is basic to an understanding of human behaviour and interaction. Psychological theories, concepts and methods of investigation provide ways of evaluating personal and professional practice. Informed practice can then seek to meet the needs of individuals, groups and communities. All professional people need to have frameworks for understanding their own behaviour and that of others. This unit provides students with essential knowledge as a basis for their personal and professional effectiveness. It is the foundation for understanding further study in psychology and its many applications.

**Equivalents:** PYB100, PYB101  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point and Kelvin Grove  
**Teaching period:** 2010 SEM-1 and 2010 SEM-2

**SCB113 CHEMISTRY FOR HEALTH AND MEDICAL SCIENCE**

A challenging chemistry unit designed for students undertaking health and/or medical science degrees. A range of topics from sub-discipline areas of general, physical and organic chemistry are covered. General/physical chemistry content includes atomic and molecular structure, electronic structure, bonding, molecular geometry, stoichiometry, thermochemistry, gases, kinetics, equilibrium, acids, bases, buffers, and electrochemistry. Organic chemistry content includes functional group chemistry, reaction mechanisms, stereochemistry, chirality as well as topics of biological significance including the chemistry of peptides, sugars and DNA. The unit is complemented by a practical program involving a range of experiments illustrating important chemical concepts.

**Antirequisites:** SCB111, SCB121  
**Credit points:** 12  
**Contact hours:** 5 per week  
**Campus:** Gardens Point  
**Teaching period:** 2010 SEM-1