BACHELOR OF SCIENCE (EXERCISE AND SPORT SCIENCE) PROGRAMME

COURSE DESCRIPTION

Level 100
ALL CORE UNITS

HES 100: First Aid and Safety Education
First Aid: philosophy, principles and practices underlying assistance or treatment for sudden injury or illness before the arrival of professional medical assistance. Safety considerations at home, institutions and in the community. HIV-AIDS and disaster management. Practical / laboratory emphasis: evaluation, assessment, handling, taping, wrapping, strapping, support and evacuation.

HES 101: Foundations of Sports Science
Definitions, nature, scope and interrelationships amongst sports science disciplines; The evolution of anatomy, exercise physiology, physiology, psychology, motor control and motor learning, biomechanics, nutrition and diet, sports technology, anthropometry, kinaanthropometry measurements and performance analysis in sports science. Role and relevance of sports science disciplines to individual and society.

HES 102: Functional Human Anatomy
Terms related to structure and morphology of the human body; Relative Position of Body Parts, Anatomical reference position, Planes and Sections of the Body, Regions of the body, Cavities of the body and Membranes, Organization of the human body: Chemical, Organelle, Cell, Tissue, Organ, Organ system, Organism, Cellular and Tissue levels of organisation. Musculoskeletal structures involved in movement. Practical laboratory emphasis: Identification, handling and manipulation of human models and musculoskeletal structures of the body.

HES 103: Human Physiology I

HES 105: Exercise Biochemistry I

HES 106: Callisthenics and Weight training
Callisthenics: Definition, use of own body weight exercises to develop muscular endurance and muscular strength. Weight training: Definition, Weight training safety tips, Benefits of weight training, free weights versus machine weights, Weight training accessories. Specific
exercises for developing muscular endurance and muscular strength. Weight training routines and techniques.

**HES 107: Kinanthropometry**

**HES 108: Community Health Education**
Definition and scope of health. Role of health education, hygiene and sanitation practices in recreation, exercise and sports. Communicable diseases and their prevention. HIV/AIDS and physical activity. Psychological and economic factors affecting community health. Role of physical activity in individual and community health.

**HRS 101: Recreation, Sport and Environment**
Interrelationship between leisure, sport and recreation services and the conservation of land, water, flora and fauna resources. Forestry principles, wildlife management, watershed protection and soil conservation vis-à-vis the impact of sports and recreation. Land development and recreation and sports needs in developing nations. The impact of selected sports and recreation activities on the environment. Impact of space and place on sports participation and performance. Identification and location of sports and recreation activities and regions. Changing landscape of sport and recreation activities. Spatial organization of sports and recreation. Sport and sustainable development. Visits and case studies to selected areas with an environmental impact.

**HPE 101: Hockey, Netball and Soccer**
History and development of hockey, netball and soccer. Coaching points, drills, lead up and conditioned games. Tactics, team formations and strategies. Rules of each game and practical officiating. Application of the skills in game situations and team formations. Marking, preparation and maintenance of facilities for each of the games. Application and modification of these games for recreation purposes. Organisation of competitions. Conditioning programmes. Practical involvement and field trips.

**HPE 103: Basketball, Handball and Volleyball**
History and development of each game. Basic skills. Drills, rules, lead up and conditioning games. Markings, layout and dimensions of facilities and equipment for each sport. Application and modification of these games for recreation purposes. Organisation of competitions. Conditioning programmes. Practical involvement and field trips.

**HPE 104: Psychology of Physical Education**
Basic concepts of psychology related to learning and coaching of sports skills. The role of psychology in PE, sports and recreation. Psychomotor learning in relation to mental development. Theories of personality and self image in choice and participation. Effects of anxiety, stress and motivation on performance. Aggression and its effects on contemporary sports. Practical application of psychology to winning and counselling in sports.
LEVEL 200
CORE UNITS

HES200: Physical Fitness and Evaluation
Philosophy, aims and values of fitness testing. Physical fitness concepts. Test, measurement and evaluation. Evaluation and analysis of fitness, lifestyle and health. Planning a personal training program. Designing a personal activity program. Executing a personal activity program. Evaluating a personal activity program. Analysis of various laboratory and field tests. Muscle testing. Practical / laboratory emphasis: administering of laboratory and field tests of varying populations and muscle testing.

HES 201: Functional Human Anatomy II (Prerequisite HES 102)

HES 202: Human Physiology II (Prerequisite HES 103)

HES 203: Exercise Biochemistry II (Prerequisite HES 105)

HES 204: Biomechanics in Sports I
Mechanics of human motion: Forms of motion. Body as a system of levers, joint and muscular action, scalar and vector computations, friction, internal and external forces, basic fluid/dynamics, Practical/laboratory emphasis: Laboratory and field techniques of analysing human motion.

HES 205: Motor Development and Learning
Understanding the concepts of motor development and motor learning; Sequence of development, growth and maturation patterns from foetus, childhood to age twelve. Developmental patterns related to age, sex and environment. Relationship between body size and composition to physical activities. Relationship between growth, development and motor skill performance. Perceptual motor development and movement: space, time, body awareness and weight transfer. Cognitive, associative and autonomous phases of motor learning. Beauty, style, grace and power of performance. Designing practice schedules to
develop skills in elite athletes. Fundamental motor skills, planning, feedback and implementation of programs to maximise performance of novices or elite athletes

**HES 206: Exercise and Sports for the Special Populations**
Understanding the nature of the disabling conditions. Effects of the disability on the acquisition of sportive skills and performance. Fitness testing and individualized exercise, evaluation of performance and sports programming for the challenged persons. Contraindications to exercise. Special Olympics and paraplegic sports.

**HRS 200: Legal and Ethical Issues in Recreation and Sport**
Introduction to sources of law, Law as it relates to sports, the working of law in sports and society, law and freedom, social control through law. Tort law and negligence, duty of care, Employers and occupiers liability, product liability, contract formation, international laws governing sports, tort defenses and risk assumption, safety issues in sports, recreation, exercise and fitness technology, substance abuse, anti-doping, Kenyan employment law and sexual harassment, gender equity; insurance against sport injuries. Professional values and ethics in recreation and sport.

**HRS 201: Public Relations in Recreation and Sport**
Nature, scope and functions of PR, theories in PR, function and philosophy of PR in sport and recreation, qualities of PR practitioners, PR strategy and tactics, careers in PR, publics in PR practice, planning of PR programmes, ethics of PR, media and tools of PR, media, community and government relations, the practice of PR, sponsorships as a form of PR, budget and budgeting in PR, financial PR, corporate communication management in PR-practice-press release, planning and executing press conference, crisis and issues management, speech communication.

**HRS 205: Sociology of Recreation and Sport**

**HRS 207: Aerobics and Dance**
History of aerobics, responsibilities of an aerobics instructor, anatomical, physiological rationale underlying aerobics and conditioning, components of an aerobics session, impact and intensity in aerobics, aerobics modes, choreography, cueing and communication. Origin and development of various selected traditional and modern dances. Dance forms, elements and value. Analysis of selected traditional and contemporary dances. Dance, music, costumes and choreography. Dance adjudication and practical performance.

**HPE 201 Athletics I, Softball and Swimming I**
Softball: History and development. Basic skills, drills, rules, lead up and conditioning games. Markings, layout and dimensions of facilities and equipment.
LEVEL 300
CORE UNITS

HCU 300; Introduction to Research Methods
(to harmonize synopsis across SAHS dept)

HCU 301; Introductory Statistics
(to harmonize synopsis across SAHS dept)

HES 301: Exercise and Wellness
Exercise, fitness standards and its components. Major problems associated with sedentary life-style and their risk factors in the world today, non-communicable diseases, their social and economic impact. Physical Fitness. Benefits and significance of participating in lifetime fitness programs. The role of fitness in the prevention and treatment of debilitating conditions. Exercise and rehabilitation Motivation and behaviour modification techniques to enhance participation.

HES 302: Application of Computer Technology in Recreation & Sport
Introduction to computer technologies and their influence on recreation and sport. Application of software for design of memos, reports, creation of newsletters, publicity material, web pages, creation and analysis of budgets spreadsheets, design of presentations, evaluation of software applications used specifically in the recreation and sports field (e.g. SPSS, Nutri-survey, Open Fitness, Dartfish, Runtastic, Sports scheduling software, Facilities scheduling software, Fitness and wellness softwares, etc).

HES 304: Nutrition and Sport Performance

HES 305: Prevention and Management of Sport Injuries
HES 306: Applied Exercise Physiology (prerequisite HES 103 and HES 202)
Effects of training and exercise on various systems such as the cardiorespiratory, muscular, endocrine, metabolic systems as well as bioenergetics. Methods of physiological assessments catering for the trained and untrained individual, the elderly and children. Environmental aspects of sports performance and related problems that are faced during exercise in a hot and humid environment, altitude training, circadian rhythm and jet lag.

HES 307: Principles of Training and Conditioning
Principles of training and conditioning. The responsibilities of an exercise leader in training. Training phases Performance factors in training and competition. General characteristics of athletics’ abilities and application to different sports. Guidelines governing athletic training; training methods and exercise prescription.

HRS 301: Business of Recreation and Sport

Electives

HES 308: Talent Identification in Sports
Explanation of concepts; identification, detection, nurturing and development. Theories and models of talent identification in sport. Use of sport science and multi disciplinary approaches to talent identification. Application to specific categories of sport; aquatic, racket, team/ball, martial and batting. Use of sport camps and sport academies. Country examples: USA, Russia, Australia, Cuba, South Africa and Kenya. Issues and challenges in sport talent development.

HES 309: Sport Ergonomics

HES 310: Biomechanics in Sports II (Prerequisite HES 204)
Biomechanical relationships in specific anatomical regions: the muscles, bones and joints involved. Linear movement responses to applied forces. Application of biomechanics to neuromuscular fitness: movements and resistance devices. Analysis of projectile-related activities: Practical/Laboratory emphasis: specific skills analysis, manual and computer assisted analysis techniques.

HES 311: Physical Therapy in Exercise and Health
Musculoskeletal, pulmonary and cardiovascular system functions. Therapeutic modalities and therapeutic exercise. Management of patients in the acute phase of healing from soft tissue

**HES 312: Design and Improvisation of Sports Facilities and Equipment**
Design elements and application to facilities. Principles and factors involved in design, use, maintenance and repair of sport facilities and equipment. Field marking exercises for selected sport and recreational facilities. Improvisation of sport equipment. Equipment and facility sharing strategies. Field visits and assessment of field facilities.

**HES 313: Hydrodynamics and Aquatic Activities**
Buoyancy and flotation. Resistance propulsion and their forces in aquatic skills. Aquatic efficiency, speed and forces affecting velocity in water. Analysis of aquatic activities/skills; water polo, diving and other selected water sports. Practical/laboratory emphasis.

**HRS 303: Recreation and Sports Marketing**

**HRS 305: Leadership in Recreation and Sport**

**HPE 309: Stress Management and Physical activity**
Concepts, theories and models of stress as applied to physical activity. symptoms of stress. Physical activity as a stressor and as a reliever. Reactions to stress, psychological, physiological and behavioural. Effect on learning and the school environment. Other methods of stress management

**LEVEL 400**
**CORE UNITS**

**HCU 400; Project Design, Monitoring and Evaluation**
(to harmonize synopsis across SAHS dept)
HES 401: Research Project in Human Performance
Students in fourth year will undertake a research project in a selected area in recreation management or sports science. Research projects will involve the preparation, execution and analysis of the research problem. The project must be conducted during the semester and the results of the research presented in a seminar.

HES 402: Ergogenic Aids in Sports and Exercise

HES 404: Practicum
Three months internship: attachment to recreation and sport organizations such as: sport equipment manufacturing plants, sport facility construction firms, sport retail outlets, health, fitness and sport clubs, stadia, sport community organizations, sections with recreation and sport programs, physiotherapy centres and hospitals and other relevant organisations. Candidates will be attached on a full-time basis and shall perform duties allocated by host organization. Keep full record of all internship activities, programmes, be visited and assessed by University supervisors and adhere to internship requirements as per university regulations.

HRS 400: Adventure Recreation and Training
Basic facilitation techniques, adventure trip organization, technical skills in outdoor adventure leadership, organizational skills for outdoor adventure leaders, LNT philosophy, group dynamics, adventure leadership and teambuilding, reflective processes in experiential learning, ropes and course circuit training, jungle and plains expeditions, map reading, wilderness medicine, day and night navigation, PRACTICAL involvement in five to fourteen days outdoor pursuits TRIP.

HRS 401: Financial Management in Recreation and Sports

HPE 400: Test and Measurements in physical Activity
(to harmonize synopsis with HPE dept.)
Purpose of testing in physical activity. Criteria for selecting fitness tests. Administration of selected tests on components of fitness. Methods of recording and processing data.

ELECTIVES
HE 405: Racket and Batting Games
History and development of any three of the following racket games; badminton, squash, tennis, golf, and cricket. Equipment and facilities. Rules, regulations and etiquette. Fundamental skills and techniques for each game such as: - service, forehand, volleys, lob, smash, drop shot, hits, the catch and runs. Play formation such as Singles and doubles. Training Drill, strategies and tactics. Design and implementation of training programs. Practical officiating, marking and preparation of play areas. Field visits to local facilities and events.

HE 406: Drugs Abuse and Control in Leisure and Sports (Old Code SSS 407)
Drugs abuse in sports and community at large. Commonly abused drugs in sports and community. Factors contributing to drug abuse. Psychological maladjustments and socio-economic effects of drugs abuse. Preventive, therapeutic and rehabilitative measures through recreation, sports and other means. Effectiveness of the preventive measures instituted by the state and international sports federations.

HE 407: Coaching Science
Understanding coaching and coaching science; coaching roles and styles; coaching objectives and process; observation and analysis in the coaching process emphasis on practical approach; evaluation and feedback in the coaching process; planning in the coaching process including long term and short term plan, planning for different age groups, planning for elite sports, training and periodization of training; training methods and principles; training sessions; evaluation and match analysis during training and competition sessions; application of biomechanical principles of human movements in sports coaching; fundamentals of muscle functions in relation high and low intensity activities; Metabolic equipments for high performance and nutritional needs for athletes during intensive training; Enhancement of performance through appropriate safety measures in a sporting environment, facilities and motivation.

HE 408: Individual Fitness Programme Design
Responsibilities of a personal trainer. Individualised exercise counselling. Exercise prescription for obese, diabetic and the Pregnant; those with chronic obstructive pulmonary disease, elderly arthritic people, and those with blood pressure. Candidates will write a seminar paper on the above issues.

HRS 406: Ageing and Human Performance
Epidemiology of ageing, ageing theories, effects of ageing on: immune function, respiratory system, mental function, cardiovascular function, joints and skeletal system, muscular system, diseases associated with ageing, diet, nutrition and antioxidants, ageing interventions, role of exercise and sport in the modulating ageing process.