

FACULTY OF SPORTS MEDICINE AND PHYSIOTHERAPY

SYLLABUS

FOR

**CERTIFICATE IN
SPORTS ANTHROPOMETRY**

SESSION: 2019–20



**GURU NANAK DEV UNIVERSITY,
AMRITSAR**

**Note: (i) Copy rights are reserved.
Nobody is allowed to print it in any form.
Defaulters will be prosecuted.**

**(ii) Subject to change in the syllabi at any time.
Please visit the University website time to time.**

Scheme of Examination
Certificate in Sports Anthropometry
(Under Credit Based Continuous Evaluation Grading System)
Programme Code: CKZ

Course No.	C/E/I	Course Title	L	T	P	Total Credits	Marks (Mid Semester + Major Exam)
Core Courses							
CKL 001	C	Basic Medical Sciences	4	0	0	4	20+80:100
CKL 002	C	Kinesiology	4	0	0	4	20+80:100
CKL 003	C	Research Methodology	4	0	0	4	20+80:100
CKL 004	C	Kinanthropometry	4	0	0	4	20+80:100
Total:			16	0	0	16	

A. Theory (Examination)

Instructions to Paper Setters:

The paper setters should set 8 questions (of equal marks), two in each of the four sections (Section A to D, corresponding to the distribution in the syllabi). Further, the paper setters shall be instructed to make sub-sections (not exceeding 4) of the questions and allocate appropriate marks to the each section. The candidates shall be asked to attempt five questions by selecting one question from each section and the fifth question may be attempted from any section.

* 1 hr of theory and dissertation is counted as 1 credit. 2 hr of practical /clinical training is counted as 1 credit.

* A candidate shall be required to maintain minimum of 4 SGPA at the end of each semester. A student getting 'F' grade in any course in this discipline will be treated as having failed in that course and shall have to repeat the core/elective courses/or repeat/opt. another course in lieu of interdisciplinary/outside department course with approval of Board of Control, and will have to obtain at least 'P' grade in that course within specified period as per the prevailing rules. The weights of 'F' Grade will not be counted in SGPA or CGPA (according to syndicate proceeding, dated: 24.5.2010, para no. 34).

**Certificate in Sports Anthropometry
(Under Credit Based Continuous Evaluation Grading System)**

CKL 001: BASIC MEDICAL SCIENCES

**L T P
4 0 0**

**Max. Marks: 100
Mid Term: 20
Major Exam: 80**

Section-A General Anatomy

1. General features of the following bones: Scapula, Ribs, Vertebrae, Bones of skull, Humerus, Radius, Ulna, Hip bone, Femur, Tibia and Fibula, Bones of hands and feet.
2. Joints: Definition and Classification of joints: Shoulder, Elbow, Knee, Ankle, Inter-vertebral joints, wrist joint, small joints of hand and foot.
3. Origin, insertion, nerve supply and action of all important muscles related to human movement.

Section-B General Physiology

1. Blood:
 2. The various components of blood
 3. Viscosity correlation
 4. Oxyhemoglobin Dissociation curves
 - d. Interrelationship between pressure flow and resistance
 - e. Pressure volume curves
2. Cardiovascular system:
 - a. Physical characteristics of systemic circulation
 - b. Oxygen demand theory of local blood flow circulation
 - c. Nervous control of blood circulation
 - d. Humorous control of blood circulation
 - e. Cardiac output and its regulation
 - f. Methods of measuring cardiac output
3. Temperature regulation:
 - a. Regulation of body temperature

Section-C General Physiology (1)

1. Neuromuscular System
 - a. Basic physics of membrane potentials
 - b. Mechanism of muscle contraction
 - c. Sources of energy for muscle contraction

Section-D General Physiology (2)

2. Respiratory System:
 - a. Review of mechanics of respiration
 - b. Pulmonary volumes and capacities
 - c. Transport of oxygen in blood
 - d. Regulation of respiration

References:

1. Synopsis of Surgical Anatomy – John Wright & Sons, Bristol
2. Gray's Anatomy – Williams & Warwick – Churchill Livingstone.
3. Grants – Methods of Anatomy – Basmajian & Sloncker – Williams & Wilkins.
4. Clinical Anatomy for Medical Students – Snells – Lippincott.
5. Textbook of Medical Physiology – Guyton – Mosby.

**Certificate in Sports Anthropometry
(Under Credit Based Continuous Evaluation Grading System)**

CKL 002: KINESIOLOGY

**L T P
4 0 0**

**Max. Marks: 100
Mid Term: 20
Major Exam: 80**

Section-A

Introduction:

1. Definition, aims, objectives and role of Kinesiology in sports sciences
2. Review of fundamental concepts: centre of gravity, Line of gravity, Planes, Lever system in Body, Fundamental starting positions.

Section-B

Anatomical Concepts in Kinesiology

Frame work and joints of the body: Influence of trauma and classification of the muscles, Relation of structure, functions, role of muscles, types of Muscle, contractions (Static, Concentric and Eccentric), Two joint Muscles, Angle of pull, Role of Gravity affecting muscular action.

Section-C

Motion, type of motion, Distance and speed, Displacement and velocity, Acceleration, Angular distance and Angular displacement, Angular Speed, Angular Velocity, Angular Acceleration, Inertia, mass, weight, Newton's Laws of motion, Units in linear and angular motion.

Section-D

Force and its characteristics, internal and external forces, Classification of force system, Composition and resolution of forces. Friction, impact, elasticity, principles of spin and rebound, Eccentric forces. Couple, moment, Principles of Lever, Rotatory force, Gravity, Methods of finding centre of gravity, Principles of Equilibrium, Fluid mechanics, principles of projectile.

References:

1. Brunnstrom – Clinical Kinesiology, F.A. Davis.
2. Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion
3. Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
4. White and Punjabi – Biomechanics of Spine – Lippincott.
5. Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
6. Mishra: Clinical Neurophysiology, B.I. Churchill Livingstone.

**Certificate in Sports Anthropometry
(Under Credit Based Continuous Evaluation Grading System)**

CKL 003: RESEARCH METHODOLOGY

**L T P
4 0 0**

**Max. Marks: 100
Mid Term:20
Major Exam: 80**

Section-A

- 1. Introduction:**
 - a. Importance of research in clinical practice
 - b. Scientific approach
 - c. Characteristics
 - d. Purposes and limitations.
- 2. Ethical issues in research.**
- 3. Research Questions:**
 - a. Selection and statement of problem
 - b. Literature review
 - c. Meta-analysis.

Section-B

- 1. Types of Research:**
 - a. Basic and Applied
 - b. Qualitative & Quantitative
 - c. Descriptive & Experimental
 - d. Longitudinal & Cross-sectional
- 2. Data Analysis:**
 - a. Statistical Tests of significance
 - b. Correlation
 - c. Reliability
 - d. Validity
 - e. Parametric and Non-parametric statistics

Section-C

- 1. Experimental Research:**
 - a. Types of Sampling
 - b. Variables
 - c. Experimental design
 - d. Factorial design
- 2. Survey Research:**
 - a. Conducting a survey
 - b. Questionnaires
 - c. Steps in conducting survey research
 - d. Epidemiological research

Section-D

- 1. Presentation**
 - a. Symposia
 - b. Seminar
 - c. Conference
 - d. Journal
 - e. Thesis
 - f. Book

**Certificate in Sports Anthropometry
(Under Credit Based Continuous Evaluation Grading System)**

2. Presenting Research

- i. Writing and submitting papers
 - a. Strategies of paper writing
 - b. Design of paper writing
 - (c) Tactics of paper writing
- ii) Poster presentation of a research paper
 - a. Pre ample
 - (b) Poster space
 - (c) Standard format

3. Oral Presentations at Conferences/Seminars

- i. Preparing presentation
- ii. Duration of presentation
- iii. What to present

References:

1. Mohsin S.M.: Research Methods in Behavioral Sciences: Orient Publications.
2. Colton: Statistics in medicine, Little Brown Company, Boston.
3. Mahajan: Methods in Biostatistics, Jay Pee Brothers.
4. Vincent: Statistics in Kinesiology, Human Kinetics.
5. Hicks: Research for Physiotherapists, Churchill Livingstone

**Certificate in Sports Anthropometry
(Under Credit Based Continuous Evaluation Grading System)**

CKL 004: KINANTHROPOMETRY

L T P
4 0 0

Max. Marks: 100
Mid Term: 20
Major Exam: 80

Section-A

1. Introduction Significance of kinanthropometric knowledge in sports medicine.
2. Age determination a. Skeletal age b. Dental age
3. Body measurements a. Gross size and mass b. Lengths or heights of body parts c. Circumstances of body parts d. Skinfold thickness
4. Kinanthropometric study group measurements a. Planes of the body b. Axes of the body c. Landmarks on the body

Section-B

1. Body Proportions:
 - a. Body mass index
 - b. The phantom stratagem
 - c. The Z – scores
 - d. The O – scale system

Section-C

Body Composition:

- a. Different Body composition
- b. Various methods to estimate body composition
- c. Water displacement method
- d. Under water weighing methods
- e. Kinanthropometric determination of the body composition (skinfold thickness)
- f. Application of surface anthropometry (the body profile)
- g. Bioelectrical impedance analysis
- h. Ultrasound assessment of fat
- i. Arm X–ray assessment of fat
- j. Computed tomography (CT) assessment of fat

Section-D

1. Somatotyping
 - a. Sheldon’s method of somatotyping
 - i. Critical evaluation of Sheldon’s method of somatotyping
 - b. Heath – Carter method of somatotyping
 - ii. The rating scales
 - iii. Kinanthropometric measurements
 - iv. First, Second and Third Components
 - v. Somatotyping
 - vi. Somatotype distribution
2. Growth, maturation and physical performance

**Certificate in Sports Anthropometry
(Under Credit Based Continuous Evaluation Grading System)**

Practicals: The students will undergo hands on training on various Kinanthropometry equipment for body composition analysis, somatotyping and age determination.

References:

1. Singh and Malhotra: Kinanthropometry, Lunar Publications
2. H.S. Sodhi: Sports Anthropometry (A Kinanthropometric Approach), Anova Publications
3. Verma and Mokha: Nutrition, Exercise and Weight Reduction, Exercise Science Publication Society
4. Ostym, Beunen and Simons: Kinanthropometry II, University Park Press, Baltimore
5. James A.P. Day: Perspectives in Kinanthropometry, Human Kinetics Publishers, Inc. Champaign, Illinois
6. L.S. Sidhu Et. Al: Sports Sciences – Health, Fitness and Performance, IASSPE
7. L.S. Sidhu Et. Al: Trends in Sports Sciences, IASSPE