Title of Paper: RESEARCH METHODS AND STATISTICS-I
Paper Code: PEM-7001

UNIT-I

1.1 Introduction:
1.1.1 Meaning and Definition of Research.
1.1.2 Nature and Characteristics of Research.
1.1.3 Needs of research in Physical Education.
1.1.4 Classification of Research – Basic and Applied.
1.1.5 Major steps in Research.

1.2 Developing the Problem:
1.2.1 Identifying the Research Problem
   (i) Locating the Research Problem
   (ii) Criteria of Selecting the Research Problem

UNIT-II

2.1.1 Research Hypothesis and its types.
2.1.2 Delimitations
2.1.3 Limitations

Survey of Related Literature:
2.1.4 Need for Surveying Related Literature
2.1.5 Purpose for Surveying Related Literature
2.1.6 Kinds of Related Literature
2.1.7 Literature Sources – Primary and Secondary
2.1.8 Steps in Literature Search.

UNIT-III

3.1 Design
3.1.1 Experimental Designs.
3.1.2 Primary and Secondary sources of Data
3.1.3 Sampling, types and size of sampling.
3.1.4 Research Report.
Ethical Issues in Research

3.1.5 Areas of Scientific Dishonesty
3.1.6 Ethical Issues regarding Copyright
3.1.7 Responsibilities of Researchers
3.1.8 Working Ethics with Faculty
3.1.9 Protecting Human Participants

Books Recommended:
2. Bose N.M., Research Methodology (Sher Niwas Publication, Jaipur (India) 2005).
7. Fern F. Adward, Advanced focus group research (Saye Publication, New Delhi, 2001).
8. Silverman David, Doing qualitative research (Saye Publications, New Delhi, 2000).
Title of Paper: KINANTHROPOMETRY-I  
Paper Code: PEM-7002

UNIT-1

Introduction and Application of Kinanthropometry:
1.1 Musculo-skeletal Anatomy in Kinanthropometry.
1.2 Indices and Customization of Kinanthropometry.
1.3 Anthropometric Instruments: Tools and General Techniques.
1.4 Techniques for Assessing Body Composition.

UNIT-2

Growth, Development, and Maturity:
2.1 Trends and Concepts of Different Ages.
2.2 Relationship of Physical Activity to Growth and Maturation.
2.3 Prediction of Adult Height; Growth Curve; Peak Height Velocity; and Determination of Velocity Curve.
2.4 Application of Anthropometry to Health & Body Composition.

UNIT-3

Concepts in Physique Development:
3.1 Role of Physique in Sports; and Selected Clinical Conditions Affecting Physique.
3.2 The Kinanthropometric Profile.
3.3 Physique in Different Sports Activities.
3.4 Contemporary Issues in Kinanthropometry.

References:


DEPARTMENT OF PHYSICAL HEALTH & SPORTS EDUCATION
SYLLABUS (SESSION: 2011-12)
MASTER OF PHYSICAL EDUCATION (M.P.Ed.)

Semester: 1st
Max. Marks: 100          Credits: 04
Semester Exam: 75                Sessional: 25
Duration: 2 Hrs.

Title of the Paper: TEST, MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION-I
Paper Code: PEM-7003

UNIT-I

1.1 Historical Review of Test and Measurement.
1.2 Meaning of Test, Measurement and Evaluation and its Functions.
1.3 Importance of Test, Measurement and Evaluation in the field of Physical Education.
1.4 Principles of Test, Measurement an Evaluation in Physical Education.

UNIT-II

Test and Measurement of Organic Functions, Motor Abilities and Motor Fitness Test:
2.1 Meaning, Definition and classification of Test.
2.2 Health Relates Tests: Cooper’s 12 minutes continuous run/walk test, Turtle pulse ratio test, Harvard step test.
2.3 Physical Fitness Test: National physical efficiency test, AAHPER D Fitness test.
2.4 Motor Fitness and Motor Ability Tests: JCR Test, Indiana Motor Fitness test, Barrow General Motor ability test, Scott Motor ability test.

UNIT-III

Sports Skill Test:
3.1 Volley ball:- Brady Volleyball test, Russel large volleyball test.
3.2 Basketball:- Johnson Basketball ability test, Knox Basketball ability test.
3.3 Soccer:- McDonald soccer ability test, SAI football skill test.
3.4 Field Hockey:- Smithal French field hockey test, SAI Hockey skill testing.
3.5 Badminton:- Miller Volley test, Lock-hart & McPherson Badminton test.

Books Recommended:
Title of the Paper: **SCIENTIFIC PRINCIPLES OF SPORTS TRAINING-I**

Paper Code: PEM-7004

**UNIT-I**

Introduction:

1.5 Meaning and definition of Sports Training, Coaching and Conditioning.
1.6 Aim, Tasks and characteristics of Sports Training.
1.8 Principles of Sports Training.

**UNIT-II**

Training load and Motor Abilities:

2.5 Training load: Components of training load, Super compensation; adaptation process; Laws of adaptation of load. Overload: Causes and symptoms, Methods of tackling overload.
2.6 Strength: Definition and Importance, factors determining strength, classification of strength.
2.7 Methods of Improving Strength.
2.8 Endurance: Definition and Importance, factors determining Endurance, classification of Endurance.
2.9 Methods for Improving Endurance.

**UNIT-III**

Motor Abilities and their Development:

3.6 Speed: Definition and Importance, factors determining Speed. Forms of Speed.
3.7 Methods for Improving Speed.
3.8 Flexibility: Definition and Importance, factors determining Flexibility, classification of Flexibility.
3.9 Methods for improving flexibility.
3.10 Coordinative Abilities: Definition and Importance, factors determining Coordinative Abilities, classification of Coordinative Abilities.
3.11 Methods for Improving Coordinative Abilities.

**Books Recommended:**
Title of Paper: RESEARCH METHOD AND STATISTICS-II
Paper Code: PEM-8001

UNIT-I
1.2 Need of Statistics in Physical Education.
1.3 Nature of Data and its types.
1.4 Graphical representation of Data: Guidelines for constructing the graph. Line Diagram, Pie Diagram and Bar Diagram, Frequency Polygon, Frequency Curve, Histogram, Ogive.
1.5 Measures of Central Tendency: Mean, Median, Mode, Percentiles, Deciles & Quartiles.
1.6 Measures of Dispersion: Range, Mean Deviation, Quartile deviation, Standard Deviation, Coefficient of Variation.

UNIT-II
2.2 Normal Distribution: Properties of Normal Curve, Skewness & Kurtosis, Uses of Normal Distribution.
2.3 Developing norms in the form of grading, Percentile Scale, T-Scale, Z scale, 6 Sigma, 7 Sigma.
2.4 Testing of Hypothesis – Region of Acceptance & Region of Rejection, Null & alternative Hypothesis, Level of Significance, Type I & Type II errors, One tail & Two tail test.

UNIT-III
3.1 t test, z-test
3.2 Analysis of variance & Post hock test
3.3 Correlation Co-efficient
3.4 Partial correlation
3.5 Chi square
3.6 Multiple Correlation

Books Recommended:
Title of Paper: KINANTHROPOMETRY - II
Paper Code: PEM-8002

UNIT-I
Aging and Exercise:
1) Physiological Changes Accompanying Aging
2) Training Adaptation in the Aged
3) Reversibility in Body Composition in the Aged
4) Limiting Factors for Physical Work Capacity in Old Age

UNIT-II
Aging, Growth, and Rehabilitation:
1) Definition and the importance of Geriatric Rehabilitation
2) Biological Factors Governing Rehabilitation in Old Age
3) Indications for Rehabilitation in Old Age
4) Resources and Method of Geriatric Rehabilitation

UNIT-III
Aging and Sports Performance:
1) Categories of Aging and Physical Activity and Longevity
2) Physical Activity and Body Composition during Aging
3) Difficulties of Studying the Effect of Aging on Performance
4) Aging Clock, Motor Capacity, and Athletic Performance

Books Recommended:
12. Some useful websites:
   http://home.hia.no/~stephens/exphys.htm
   http://www.gssiweb.com/
   http://www.pecentral.org/
   http://www.sportsci.org/
   http://www.tahperd.sfasu.edu/links3.html
DEPARTMENT OF PHYSICAL HEALTH & SPORTS EDUCATION
SYLLABUS (SESSION: 2011-12)
MASTER OF PHYSICAL EDUCATION (M.P.Ed.)

Semester: II\textsuperscript{nd}

Max. Marks: 100  
Credits: 04  
Semester Exam: 75  
Sessional: 25  
Duration: 2 Hrs.

Of the Paper: TEST, MEASUREMENT AND EVALUATION IN PHYSICAL EDUCATION-II  
Paper Code: PEM-8003

UNIT-I
Selection and Construction of Tests:
1.9 Criteria of Test Selection-Scientific Authenticity, (Reliability, Validity, objectivity, norms) Administrative Feasibility and Educational application. Classification of Tests-Standardised and teacher made tests (objective and subjective tests).
1.10 Construction of Tests-knowledge tests (Written tests) and skill tests.
1.11 Suggestions for administering tests. Medical Examination, Testing Personal. Time and testing, Economy of testing. Test records, preparation of reports, construction of table groups, purpose of reporting, justification of particular phases of the programme, worth of a change in methodology.

UNIT-II
Posture:
2.10 Measures of Postures, Anthropometry Social Efficiency and Psychological Factors.
2.11 Measures of Postures-IOWA Postures Test (Cureton’s).
2.12 Anthropometric Measurements:
(i) Girth Measurement-Upper arm, forearm, calf, chest.
(ii) Width Measurement-Bicromial chest iliac crestal, Biepicondylar (Femur and Humerus). Height Measurement-Stature and Sitting height.

UNIT-III
Psycho-Physical Measurement:
3.12 Somatotype-Sheldon’s technique-an-introduction
(i) Social Efficiency
(ii) Socio-metric techniques: Introduction
3.13 Psychological Factors:
(i) Anxiety Scale-Speil-berger’s Competitive State-Anxiety Scales.
(ii) Eysenck Personality Inventory (H.J. Eysenck and Sybil B.G. Eysenck).
Books Recommended:
DEPARTMENT OF PHYSICAL HEALTH & SPORTS EDUCATION
SYLLABUS (SESSION: 2011-12)
MASTER OF PHYSICAL EDUCATION (M.P.Ed.)

Semester: II<sup>nd</sup>

Max. Marks: 100
Credits: 04
Semester Exam: 75
Sessional: 25
Duration: 2 Hrs.

Title of the Paper: SCIENTIFIC PRINCIPLES OF SPORTS TRAINING-II
Paper Code: PEM-8004

UNIT-I

Technique and Tactics:
1.12 Definition of technique, skill and style, characteristics of technique.
1.13 Phases of skill acquisition, characteristics and implications in various phases.
1.14 Methods of techniques training.
1.15 Strategy and Tactics: Definition, aim and importance, difference between strategy and tactics.
1.16 Classification of tactics.
1.17 Attack: Classification & Principles of Attack.

UNIT-II

Periodisation:
2.13 Meaning and aim of periodisation, Top form (Peaking) and its determining factors.
2.14 Types of periodisation: Single, Double and Multiple periodisation.
2.15 Aims and contents of various periods: Preparatory period, competition period, Transitional period.
2.16 Competition: Definition, meaning and importance.
2.17 Classification of competition: Build-up, Major, Main competitions.
2.18 Special preparation for competition.

UNIT-III

Planning:
3.14 Meaning, definition and importance of planning.
3.15 Types of Plan: Long term and short term plans.
3.16 Principles of Planning.
3.17 Steps in formulation of yearly plan.
3.18 Selection process, criteria of selection, steps of selection.
Books Recommended:
Title of Paper: EXERCISE PHYSIOLOGY-I
Paper Code: PEM-9001

UNIT-I

Exercise Physiology:
1.7 Exercise Physiology and its role in the field of physical Education and Sport.
1.8 Conditioning & Training with their physiological implications.
1.9 De-training, Re-training and maintenance of training effects.
1.10 Biochemical Changes.
1.11 Cardio respiratory changes.
1.12 Exercise and training for health and fitness.

UNIT-II

Nervous Control of Muscular Activity:
2.5 Neurons and motor unit
2.6 Bio-electric potentials
2.7 Neuro-muscular junction and transmission of nerve impulse across it.
2.8 Proprioception and Kinesthetic sense – tone, posture and equilibrium.
2.9 Molecular Structure of muscle fiber and sliding filament theory.
2.10 Fast twitch and slow twitch muscle fibers.

UNIT-III

Exercise and Training in Females:
3.7 Body size and Body composition
   ▪ Body Weight
   ▪ Body fat
   ▪ Possible Body structure Difference
   ▪ Age and Body size difference
3.8 Strength
   ▪ Strength Differences
   ▪ Effect of Weight training
3.9 Physiological changes following training.
3.10 Gynecological considerations
- Mensuration
- Pregnancy

3.11 Guidelines for female participation in Sports.

**Books Recommended:**


17. Karpovic, P.V. and Sinning Wayne E. Physiology of muscular activity.

Title of the Paper: SPORTS MEDICINE-I
Paper Code: PEM-9002

UNIT-I
Introduction:
1.19 Concept of Sports Medicine, its aim and objectives, need & scope of sports medicine in Physical Education.
1.20 Classification of Sports injuries, prevention and prophylaxis of sports injuries, Assessment of Sports Injuries.
1.21 Common skin problems, sun damage during sports competitions hypothermia, contact dermatitis pediculosis, scabies, its facts.

UNIT-II
Sports Medicine (Problems and Management):
2.19 Low back problems and management; Stretching and strengthening exercise for back problems.
2.20 Advantages and Disadvantages of exercises before, during and after pregnancy.
2.21 Psychological aspects of Sports Injuries.

UNIT-III
Therapeutic Modalities and Procedure of individual Modalities:
3.19 Hydro collateral Packs (Hot and Cold) Hydrotherapy (Whirlpool).
3.20 Diathermy, Ultrasound, Electrical muscle stimulation, combination of ultrasound and Electrical muscle stimulation.
3.21 Cry therapy and Compression, Cryokinetics, cold spray, contrast bath, Paraffin bath.
3.22 Ultra violet rays diapulse and laser therapy.

Books Recommended:
DEPARTMENT OF PHYSICAL HEALTH & SPORTS EDUCATION
SYLLABUS (SESSION: 2011-12)
MASTER OF PHYSICAL EDUCATION (M.P.Ed.)

Semester: IIIrd

Max. Marks: 100
Credits: 04
Semester Exam: 75
Sessional: 25
Duration: 2 Hrs.

Title of the Paper: SPORTS PSYCHOLOGY-I
Paper Code: PEM-9003

UNIT-I
1.22 Meaning, nature and scope of Sports Psychology.
1.23 Development of Sports Psychology in India & the World.
1.24 Importance of Sports Psychology to Physical Education teachers and coaches.
1.25 Psychological Principles and their application in sports.

UNIT-II
Psychological Considerations of Young Athletes:
2.22 Psychological peculiarities of Adolescents.
2.23 Inter-play of heredity and environment.
2.24 Role of family School and Society in participation of children in sports.
2.25 Psychological problems of young athletes.
2.26 Methods in Sports Psychology.
   - Experimental Method, Questionnaire method, interview.
   - Methods, case study method.

UNIT-III
Cognitive Process in Sports:
3.23 Meaning and mechanism of cognitive process.
3.24 Factors influencing cognitive process in sports.
3.25 Role of sensation and perception.
3.26 Importance of attention, concentration, thinking anticipation and memory.

Books Recommended:
Title of Paper: SPORTS BIOMECHANICS-I
Paper Code: PEM-9004

UNIT-I

1.13 Introduction of Biomechanics:
   a) Definition, Explanation, need and importance of Sports Biomechanics.
   b) Contribution of Sports Biomechanics in the field of Sports Achievement.

1.14 Newton’s Laws of Motion:
   (a) Law of Inertia – Its Principles and Application.
   (b) Law of Acceleration – Its Principles and Application.
   (c) Law of Reaction – Its Principles and Application.

UNIT-II

2.11 Lever:
   (a) Classification of Levers, Lever Arms.
   (b) Principles of lever, Mechanical advantage.
   (c) Mechanical ratio.
   (d) Movement of point on lever, Human body levers.
   (e) Concept of theoretical and actual mechanical advantage.

2.12 Force:
   (a) Definition and Explanation.
   (b) Effects of Forces.
   (c) Properties of Force.
   (d) Internal and External Forces.
   (e) Centripetal and Centrifugal Forces.

UNIT-III

3.12 Friction:
   (a) Definition and Explanation
   (b) Type of Friction: Static and Kinetic
   (c) Coefficient of Static and Kinetic Friction.
   (d) Gravitational Force

3.13 Fluid Dynamics:
(a) Air and water Resistance
(b) Buoyancy Force and Flotation
(c) Introduction of Drag
(d) Introduction of Magnus Effect

Books Recommended:
Title of Paper : EXERCISE PHYSIOLOGY-II
Paper Code: PEM-X001

UNIT-1
Bio-energetic and measurement of energy cost
1.15 ATP: its structure, source and functions.
1.16 Aerobic and anaerobic systems during rest and exercise.
1.17 Replenishment of energy stores.
1.18 Recovery of lactic acid from blood and muscle.
1.19 Recovery Oxygen.
1.20 Measurement of energy cost of exercise.

UNIT-II
Nutrition and exercise performance
2.13 General nutrients of the diet and their proportion in it.
2.14 Food Requirement of athletes engaged in different sports activities.
2.15 Appropriate Diet Before, During and After Sports Activities.
2.16 Ergogenic aids.
2.17 Exercise prescription.
2.18 Obesity and weight control.

UNIT-III
Exercise and Environment:
3.14 Effects of high altitude on physical performance.
3.15 Altitude acclimatization.
3.16 Exercise in Heat and Heat Disorders.
   ▪ Exercise in Heat
   ▪ Heat Disorders in Athletics and Other Sports.
3.17 Prevention of Heat Disorders
   ▪ Salt and water replacement
   ▪ Acclimatization to Heat
Exercise and Temperature Regulation in hot and cold climate.

Books Recommended:
25. Karpovic, P.V. and Sinning Wayne E. Physiology of muscular activity.
DEPARTMENT OF PHYSICAL HEALTH & SPORTS EDUCATION
SYLLABUS (SESSION: 2011-12)
MASTER OF PHYSICAL EDUCATION (M.P.Ed.)

Semester: IV\textsuperscript{th}

Max. Marks: 100
Credits: 04
Semester Exam: 75
Sessional: 25
Duration: 2 Hrs.

Title of the Paper: SPORTS MEDICINE-II
Paper Code: PEM-X002

UNIT-I
Rehabilitation-Meaning, Goals, Factors affecting its programme:
1.26 Principles of Rehabilitation in Sports.
1.27 Means and methods of rehabilitation in Sports.
1.29 Rehabilitation Programme.
1.30 Application of Proprioceptive Neuromuscular Facilitation (PNF).

UNIT-II
Emergency care and Athletic first Aid:
2.27 First-Aid Principles.
2.28 Diagnosis of injuries, signs and symptoms of dangerous illness/injuries.
2.29 Means and Methods for transportation of a injured player.
2.30 First Aid
(i) Loss of consciousness
(ii) Drawing
(iii) Bleeding from a wounds, Nosebleeds
2.31 Athletic Bandages and Massage-its classification, indication and contra indication, General Principle of massage.

UNIT-III
Legal liability of injuries and Doping:
3.27 Supervision of injured Sports Persons.
3.28 Instruction, First Aid, Medical Assistance.
3.29 Reporting form of student status.
3.30 Meaning, classification of doping, its side effects.
3.31 Legal liability of Coach regarding doping.

Books Recommended:
DEPARTMENT OF PHYSICAL HEALTH & SPORTS EDUCATION
SYLLABUS (SESSION: 2011-12)
MASTER OF PHYSICAL EDUCATION (M.P.Ed.)

Semester: IVth

Max. Marks: 100
Credits: 04
Semester Exam: 75
Sessional: 25
Duration: 2 Hrs.

Title of the Paper: SPORTS PSYCHOLOGY-II
Paper Code: PEM-X003

UNIT-I
Psychological Aspects of Motor Learning:
1.31 Motor learning definition and phases of learning physical skills.
1.32 Laws of learning.
1.33 Factors affecting motor learning.
1.34 Plateau: Causes and remedies.
1.35 Motivation: Meaning, classification, role of motivation in sports, Factors affecting achievement motivation, Motivation techniques.
1.36 Goal setting: Importance, Types of goals, process of goal setting.

UNIT-II
Personality and Sports Performance:
2.32 Definition, types and important personality traits.
2.33 Concept of Athletic Personality.
2.34 Personality traits of elite athletes.
2.35 Sports participation and personality development.

Emotional Process and Sports Performance:
2.36 Definition and types of emotion, Role of Emotion in Sports.
2.37 Emotional arousal and Sports Performance.
2.38 Yerkes Dodson law.
2.39 Psychologica manifestations of prestart states: Competitive readiness, pre-start fever, pre-start apathy.

UNIT-III
Psychological Aspects of Sports Performance:
3.32 Determinant factors of competitive behaviour.
3.33 Anxiety, Fear, frustration, Aggression, Conflict and their effects on performance.
3.34 Psychological stress and its management: Causes and symptoms, Psychoregulatory techniques.
3.35 Effects of Audience on Sports performance, Audience behaviour, Types of Audience.

**Books Recommended:**
DEPARTMENT OF PHYSICAL HEALTH & SPORTS EDUCATION
SYLLABUS (SESSION: 2011-2012)
MASTER OF PHYSICAL EDUCATION (M.P.ED.)

Semester-IVth

Max. Marks: 100
Credits: 04
Semester Exam: 75
Sessional: 25
Duration: 2 Hrs.

Title of Paper: SPORTS BIOMECHANICS-II
Paper Code: PEM-X004

UNIT-I

1.21 Concept of Biomechanical Analysis:
   1.1.1 Qualitative and Quantitative Analysis
   1.1.2 Overview of Kinematics and Kinetic Analysis of Human motion.
   1.1.3 Introduction to the Deduction and Inductive type of Mechanical Analysis.

1.22 Introduction to Mechanical Analysis:
   1.2.1 Introduction to Photographic Analysis System (data acquisition and data reduction).
   1.2.2 Introduction to Electronic Analysis System (data acquisition and data reduction).

UNIT-II

2.19 Introduction to Mechanical Analysis:
   2.1.1 Components of Linear Displacement.
   2.1.2 Measurements of Linear Displacement.
   2.1.3 Components of Angular Motion (Definition of Radian, Finding the conversion factor between Degree and Radians).

2.20 Kinematics Analysis:
   2.2.1 Analysis of Linear speed.
   2.2.2 Analysis of Linear velocity – Average and Instantaneous.
   2.2.3 Analysis of Linear Acceleration – Average and Instantaneous.

UNIT-III

3.19 Projectile:
   3.1.1 Definition and Explanation of Projectile and free falling bodies.
   3.1.2 Analysis of vertical projection.
   3.1.3 Calculation of Time of Flight and Height
   3.1.4 Analysis of Horizontal Projection / Trajectory.
   3.1.5 Calculation of Time of Flight, Maximum Height and Range of Flight.

3.20 Projectile from different surfaces:
   3.2.1 Calculation of Time of Flight.
3.2.2 Calculation of Range of Flight.
3.2.3 Calculation of Maximum Height.

Books Recommended:
Basically, a research paper is one of the types of papers where scholars analyze questions or topics, look for secondary sources, and write papers on defined themes. For example, if an assignment is to write a research paper on some causes of global warming or any other topic, a person must write a research proposal on it, analyzing important points and credible sources. Although essays focus on personal knowledge, writing a research paper cover sources by following academic standards. A Methodology or Materials and Methods covers explanations of research designs. Basically, techniques for gathering information and other aspects related to experiments must be described in a research paper. This paper presents methods to measure steady state and transient behavior of polymer electrolyte membrane fuel cells (PEMFC). An active load that enables all required measurements is described. Furthermore, a simple large-signal dynamic PEM fuel cell model is introduced of which the parameters can be found with an interrupted current method. This method estimates the parameters of the dynamic model. However, there was doubt whether the influence of small-signal disturbances in the fuel cell operation could be analyzed with the interrupted current method.