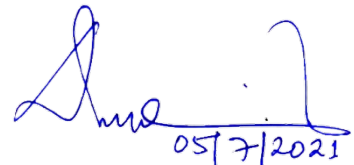


**COURSE CURRICULUM
FOR
DOCTOR OF PHILOSOPHY (PH. D)
IN
PHYSICAL EDUCATION
{w.e.f 2020-21}**



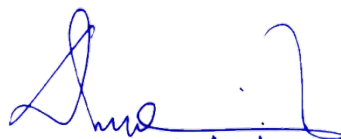
**DEPARTMENT OF PHYSICAL EDUCATION
RAJIV GANDHI UNIVERSITY
RONO HILLS, DOIMUKH
ARUNACHAL PRADESH-791112**


05/7/2021

OVERVIEW

Adhering to the spirit of Choice Based Credit System (CBCS), the Ph.D. Course Curriculum in Physical Education incorporates three broad domains namely Core Papers, Open Elective and Elective Papers. A Ph.D. scholar will be required to study Core Papers on mandatory basis, whereas, Open Elective Paper may be opted by a Scholar of Physical Education as well as from any other department of the University in consultation with Research Advisory Committee (RAC).

A Scholar of Physical Education may opt for any one or two maximum papers among the elective papers on offer in consultation with Research Advisory Committee (RAC). In any case, the minimum credits to be completed by a Ph.D. scholar would be Eight (08) and Maximum upto Sixteen (16). Scholar will have to secure minimum passing marks of 55% each paper in their Term End Examinations for successfully completing the course work.



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Jt. Registrar (Acad. & Conf.)
Rajiv Gandhi University
Rono Hills, Doimukh (A.P.)

Doctor of Philosophy (Ph.D.) in Physical Education

COURSE STRUCTURE

Sl. No.	Paper Code and Title	Max Marks	Credits	Teaching Hours
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CORE PAPERS

1.	PHE 701: Research Methodology	100	4	60 Hours
2.	PHE 702: Research & Publication Ethics	50	2	30 Hours

ELECTIVE PAPER A (Open)

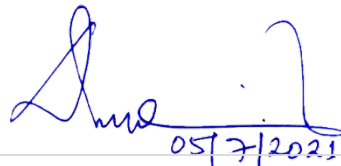
3.	PHE 703: Fitness and Health Management	50	2	30 Hours
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ELECTIVE PAPER B

4.	PHE 704: Applied Sports Physiology and Environmental Exercise Physiology	100	4	60 Hours
5.	PHE 705: Sports and Exercise Psychology	100	4	60 Hours
6.	PHE 706: Sports and Applied Biomechanics	100	4	60 Hours

A Open Elective Paper may be opted by a Scholar of Physical Education as well as from any other department in consultation with Research Advisory Committee (RAC),

B Scholar of Physical education may opt for any one paper among the elective papers in consultation with Research Advisory Committee (RAC).



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CORE PAPER
PAPER - I
PHE 701: Research Methodology

Credit: 04

Total Marks: 100

Distribution of Marks (Semester End/Practical/Internal): [75/25]

No. of Credit Hours and Module: 40 Hours & 04 Modules/Unit

Objectives:

To give student knowledge of Research in Physical Education

To acquaint the scholar with Philosophy of Research in Physical Education

To enable scholar with different data collection tools and the procedure of developing them

To enable the student to understand and apply different types and methods of research

To build capacity for analyzing data and drawing subject specific inferences and insights.

Unit 1: Basics of Research

- a. Basic concept of Research, types and Steps of Research
- b. Methods of Research: Qualitative and Quantitative
- c. Hypothesis: Meaning, Basis, Types,
- d. Testing of hypothesis- Type I Error, Type II Error, One Tailed Test and Two Tailed Test.

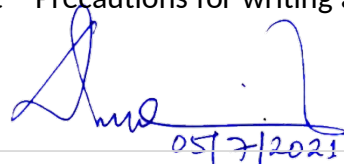
Unit 2: Conceptualizing and Designing Research

- a. Meaning and purpose of research design and experimental design – Different experimental designs and applicable statistical procedure – Control of experimental factors
- b. Basic principles of experimental designs, Formulation of Research design
- c. Research Tools: Characteristics, Types, Selection of appropriate tool
- d. Construction and Standardization of tools-Reliability, Validity and Norms.
- e. Sampling: Meaning, Types, Techniques

Unit 3: Data Collection and Processing & Interpretation

- a. Data: Meaning, Types, and Source
- b. Data Collection: Approaches, Methods, Tools, and Techniques
- c. Research Report and proposal: Quality Proposal; Salient features of Proposal
- d. Meaning and Technique of interpretation – Precautions in interpretation –
- e. Basic guidelines of Research Report; Significance of report writing – Different steps in writing a report – Layout of a Research report.
- f. Types of report – Mechanics of writing a research report – Precautions for writing a research report – Conclusion.

Unit 4: Data Analysis and Computer Application Skills

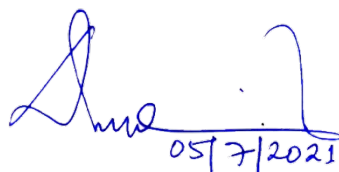


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- a. Statistical Methods of Quantitative Data Analysis
- b. Descriptive and Inferential Statistics
- c. Use of Computer Applications in Research
- d. Quantitative and Qualitative Computer Software for Data Analysis: SPSS, Excel Data Sheet, SAS,R

Suggested Readings:

1. Barrow, H. M. (1979). Practical Approach to Measurement in Health & Physical Education. (3rd ed.). Philadelphia: Lee & Febigeer
2. Best, J. W. & Kahn, J. V. (2006). Research in Education.(10th ed.). New Delhi: PHI
3. Clark, D. H. & Clark, H. H. (1979). Research process in Physical Education, recreation & health Englewood Cliffs: prentice Hall.
4. Johnson, B. & Christensen, L. (2008). Education Research, Quantitative, Qualitative and Mixed Approaches (3rd ed.). Sage Publication: England.
5. Miller, David. K. (2002). Measurement by the Physical Educator, New York: McGraw Hill companies. John & Nelson (1998) Practical Measurements for Evaluation in Physical Education, Delhi: Surjit Publication.
6. Sprint hall, R. C. (1997). Basic statistical Analysis. (5th ed.). USA: Allyn & Bacon
7. Thomas, J. R. & Nelson, J. K. (2001). Research Methods in Physical Education, (4th ed.). USA: uman Kinetics.
8. Jerry R Thomas & Jack K Nelson (2000) Research Methods in Physical Activities; Illonosis; Human Kinetics;
9. Kamlesh, M. L. (1999) Reserach Methodology in Physical Education and Sports, New Delhi
10. Rothstain A (1985) Research Design and Statistics for Physical Education, Englewood Cliffs: Prentice Hall, Inc
11. Sivarama krishnan. S. (2006) Statistics for Physical Education, Delhi; Friends Publication
12. Garrett, H.E (2000) Statistics in Psychology and Education, Hyderabad: International Book Bureau
13. J. P. Verma(2012) Using SPSS: An Interactive Hands - On Approach, Sage South Asia
14. J. P. Verma(2015) Repeated Measures Design for Empirical Researchers, Wiley-Blackwell
15. Kothari, C.R.(2008). Research Methodology: Methods and Techniques. Second Edition, New Age International Publishers, New Delhi.



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CORE PAPER
PAPER – II
PHE 702: Research and Publication Ethics

Credit: 02

Total Marks: 50

Distribution of Marks (Semester End/Practical/Internal): [20/20/10]

No. of Credit Hours and Module: 30 Hours & 02 Modules

Objectives:

1. To develop an understanding with regard to Research and Publication Ethics;
2. To inculcate knowledge and skills in publication mechanisms and ethical conducts.

Unit 1: Theory

RPE 01: Philosophy and Ethics (3 hrs.)

- a. Introduction to Philosophy: Definition, Nature and Cope, Concept, Branches
- b. Ethics: Definition, Moral Philosophy, Nature of Moral Judgments and Reactions

RPE 02: Scientific Conduct (5 hrs.)

- a. Ethics with respect to science and research
- b. Intellectual honesty and research integrity
- c. Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP)
- d. Redundant Publications: Duplicate and Overlapping Publications, Salami Slicing
- e. Selective Reporting and Misrepresentation of Data

RPE 03: Publication Ethics (7 hrs.)

- a. Publication Ethics: Definition, Introduction and Importance
- b. Best Practices/ Standards Setting Initiatives and Guidelines: COPE, WAME, etc.
- c. Conflicts of Interest
- d. Publication Misconduct: Definition, Concept, Problems that lead to unethical behaviour and vice versa, types
- e. Violation of publication ethics, authorship and contributionship
- f. Identification of publication misconduct, complaints and appeals
- g. Predatory publishers and journals

Unit 2: Practice

RPE 04: Open Access Publishing (4 hrs.)

- a. Open Access Publications and Initiatives
- b. SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies
- c. Software Tool to identify predatory publications developed by SPPU

d. Journal finder/ journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc.

RPE 05: Publication Misconduct (4 hrs.)

a. Group Discussions (2 hrs.)

1. Subject Specific Ethical Issues, FFP, Authorship
2. Conflicts of Interest
3. Complaints and Appeals: Examples and Fraud from India and Abroad

b. Software Tools (2 hrs.)

Use of Plagiarism software like Turnitin, Urkund and Other Open Source Software Tools

RPE 06: Databases and Research Metrics (7 hrs.)

a. Databases (4 hrs.)

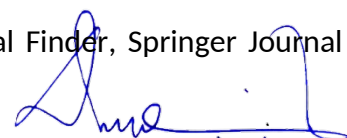
1. Indexing Databases
2. Citation Databases: Web of Science, Scopus, etc.

b. Research Metrics (3 hrs.)

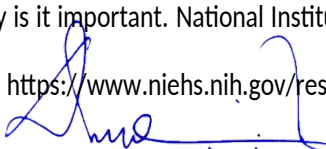
1. Impact Factor of Journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score
2. Metrics: h-index, g index, i 10 index, altmetrics

Suggested Readings:

- Beall, J. (2012). Predatory publishers are corrupting open access. *Nature*, 489 (7415), 179-179. <https://doi.org/10.1038/489179a>
- Bird, A. (2006). *Philosophy of Science*. Routledge.
- Indian National Science Academy (INSA), Ethics in Since Education, Research and Governance (2019), ISBN:978-81-939482-1-7. http://www.insaindia.res.in/pdf/Ethics_Books.pdf
- MacIntyre, Alasdair (1967) *A Short History of Ethics*. London.
- National Academy of Sciences, National Academy of Engineering and Institute of Medicine. (2009). *On Being a Scientist: A Guide to Responsible Conduct in Research: Third Edition*. National Academies Press.
- P. Chaddah, (2018) *Ethics in Competitive Research: Do not get scooped; do not get plagiarized*, ISBN: 978-9387480865
- Resnik, D.B. (2011). What is ethics in research & why is it important. National Institute of Environmental Health Sciences, 1-10. Retrieved from <https://www.niehs.nih.gov/research/resources/bioethics/whatis/index.cfm>


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Jt. Registrar (Acad. & Conf.)
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ELECTIVE PAPER: A (Open)
PHE 703: Fitness and Health Management

Credit: 02

Total Marks: 50

Distribution of Marks (Semester End/Practical/Internal): [20/20/10]

No. of Credit Hours and Module: 30 Hours & 02 Modules

Unit 1: Concept of Fitness and Wellness

- Definition, and Objectives of Fitness and Wellness
- Fitness – Types of Fitness and Components of Fitness
- Physical Activity and Health Benefits

Unit 2: Fitness Management


- Concept and Principles of Fitness Management
- Means of Fitness Development – Aerobic and Anaerobic Exercises
- Exercises and Heart Rate Zones for Various Aerobic Exercise Intensities

Unit 3: Fitness Assessment

- Standard Measurements (Height, Weight, Heart Rate and Blood Pressure)
- Body Composition: (BMI, WHR, Waist Circumference and Body Fat Percentage)
- Cardio respiratory Endurance Tests (Field Tests, Treadmill Tests and Step Tests)
- Strength and Flexibility Test

Unit 4: Hypo Kinetic Diseases: Prevention and Management

- Obesity
- Hypertension
- Diabetes Mellitus
- Coronary Diseases
- Arthritis


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**ELECTIVE PAPERS: B
PAPER- I**

PHE 704: Applied Sports Physiology and Environmental Exercise Physiology

Credit: 04

Total Marks: 100

Distribution of Marks (Semester End/Practical/Internal): [75/00/25]

No. of Credit Hours and Module: 60 Hours & 04 Modules/Unit

Unit 1

- Physiology of Endurance Performance:
- Cardiovascular control during exercise,
- Cardiovascular responses to endurance exercise,
- Respiratory regulation during exercise,
- Cardiovascular and respiratory adaptation to training.

Unit 2

- Physiology of Strength Performance: Types of muscle fibers,
- Generation of muscle force,
- Factors influencing force generation,
- Strength curve and rate of force development for various muscles
- Resistance training, Periodization of resistance training development for various muscles.
- Measuring muscular performance, Muscle size, Muscle hyper- trophy and hyperplasia,
- Physiological adaptation in response to resistance training, Delayed Onset Muscle Soreness (DOMS).

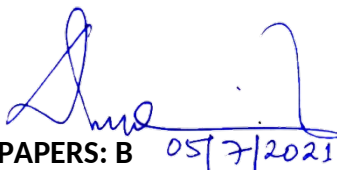
Unit 3

- Environment and Exercise Thermoregulation,
- Exercise in cold - physiological responses to exercise in cold,
- Health risks during exercise in cold, and effect of cold on human performance.
- Physiological changes in desert, heat illness, heat stroke
- Exercise in hot environment- physiological responses to exercise in heat
- Health risks during exercise in heat

Unit 4

- Exercise in high temperature and humidity; Human Adaptation

- Hypobaric and Hyperbaric Condition Physiological changes in Hypobaric and Hyperbaric Condition,
- Safety and management.
- Exercise underwater; Pressure, O₂, CO₂, Temperature and Relative humidity,
- The travelling athlete altitude- Altitude training
- Effect of altitude on sports performance
- Adaptation to altitude detraining.
- Atmospheric requirements of Man in space



ELECTIVE PAPERS: B

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PAPER-II

PHE 705: Sports and Exercise Psychology

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(राजगढ़)
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Credit: 04

Total Marks: 100

Distribution of Marks (Semester End/Practical/Internal): [75/00/25]

No. of Credit Hours and Module: 60 Hours & 04 Modules/Unit

Unit 1: Basics of Sport & Exercise Psychology

- Introduction: Meaning and Definition. Importance of Sport Psychology for Athletes, Coaches and other related to Sports Setting. Historical Development need and scope of sports psychology. Ethical standards for Psychologists. Two hats: Sports and Psychology.
- Biological foundation of behaviour: Structure and function of neuron, synapse and neurotransmitters
- Nervous System
 - Central Nervous system: Structure and function of brain and spinal cord
 - Autonomic Nervous System: Structure and function
 - Peripheral Nervous System: Structure and function
- Muscular and Glandular system: Types and functions
- Genetics and Behaviour: Chromosomal anomalies; Nature-nurture controversy (Twin studies and adoption studies)

Unit 2: Personality and Performance

- Personality and Performance (Meaning, Definition and Structure of personality)
- Genetic and Environmental Determinants of Personality and measurement.
- Personality theories [Psychoanalysis, Humanistic, Trait Theories and models] Constitutional theories (Sheldon, Trait) and Social Learning (Bandura)
- personality and Performance in Sports (Ice Berg Profile by Morgan)

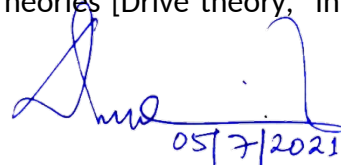
Unit 3: Motivation and Performance

- Motivation & Goal Setting- Meaning, Definition and Structure of Motivation [Need, Drive, Biological basis of motivation. Motivation Types
- Theories of motivation [Abraham Maslow, Need Achievement by McClelland] Self-Determination model
- Techniques for Developing Motivation, Goal Setting –Locke GST

- Motivation-Performance Relationship

Unit 4: Emotion and Performance

- Meaning and Definition of Emotion, Biological basis of emotion: The Limbic system, Hormonal regulation of behavior
- Meaning, Definition of Anxiety, Types of Anxiety
- Meaning, Definition and Nature of Arousal and Stress, Theories [Drive theory, Inverted -U theory & IZOF]
- Emotion and Performance Relationship



ELECTIVE PAPERS: B PAPER- III

PHE 706: Sports and Applied Biomechanics

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Credit: 04

Total Marks: 100

Distribution of Marks (Semester End/Practical/Internal): [75/00/25]

No. of Credit Hours and Module: 60 Hours & 04 Modules/Unit

Objectives:

1. Identify the relationship between kinematic and kinetic as they relate to the human performance
2. Able to describe the cause and effect of various mechanics on Sports Performance Able to apply the knowledge of Fluid Mechanics

Unit 1: Fundamentals of Biomechanics

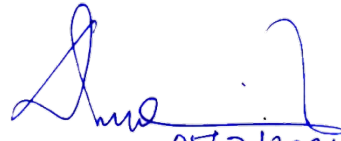
- 1.1 Definition of Biomechanics & Sports Biomechanics
- 1.2 Importance of Biomechanics for Physical Education Teacher, Coach & Athlete
- 1.3 Goals of Sports Biomechanics – Performance Enhancement, Technique, Equipment, Training, Injury Prevention and Rehabilitation
- 1.4 Basic Concepts: Forms of Motion
 - 1.5.1 Linear Motion
 - 1.5.2 Angular Motion
 - 1.5.3 General Motion

Unit 2: Linear and Angular Kinematics

- 2.1 Linear Kinematic
Quantities: Distance and Displacement, Speed and velocity, Acceleration, Vectors and scalars
- 2.2 Angular Kinematics
 - 2.2.1 Angular Distance and Displacement
 - 2.2.2 Angular Speed and Velocity
 - 2.2.3 Units in angular kinematics
 - 2.2.4 Angular Acceleration

Unit 3: Linear & Angular Kinetics

- 3.1 Inertia
- 3.2 Mass
- 3.3 Force (Internal and External)
- 3.4 Momentum
- 3.5 Friction and its types
- 3.5 Pressure



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3.2 Angular Kinetics of Human Movement:

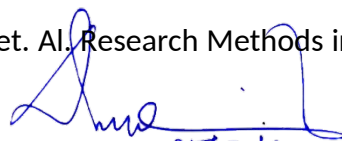
- 3.2.1 Eccentric force
- 3.2.2 Couple
- 3.2.3 Moment of force
- 3.2.4 Center of gravity and its uses
- 3.2.5 Moment of Inertia.

Unit 4: Fluid Mechanics & Mechanical Analysis

- 4.1 Flotation
- 4.2 Relative Motion
- 4.3 Fluid Resistance: Air & Water
- 4.4 Drag & Lift
- 4.5 Mechanical Analysis of Locomotion: Running, Walking, Jumping,
- 4.6 Mechanical Analysis in every day task: Pulling, Throwing, Kicking

Suggested Readings:

1. Bunn, John W. Scientific Principles of Coaching, Second Edition. (Englewood cliffs, New Jersey : Prentice Hall, Inc. 1972)
2. Hall, Susan J. Basic Biomechanics, Fourth Edition (Boston etc. : WCB/MC Graw-Hill Companies, 2004)
3. Hay, James G. The Biomechanics of Sports Techniques, Fourth Edition (Englewood cliffs, New Jersey; Prentice Hall, 1993)
4. Hay, James G. and Raid J. Gavin, Anatomy, Mechanics and Human motion, Second Edition (Englewood cliffs, New Jersey: Prentice Hall, 1988).
5. Kreighbaum, Ellen and Barthels. Biomechanics – A qualitative Approach for studying Human movement. Third edition (New York : MC millan publishing company, 1990)
6. Mc. Ginnis, Peter M. Biomechanics of Sport and Exercise, Second Edition (Champaign : Human kinetics publishers, 2005)
7. Rai Ramesh, Biomechanics – Mechanical Aspects of human motion (Mohali Punjab :Agrim Publication, 2003)
8. Robertson, D. Gordon E. et. Al. Research Methods in Biomechanics. (Champaign etc : Human kinetics publishers, 2004)



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