Curriculum of the Ph.D. Pre-Registration Course Work in Physical Education

CENTRE FOR STUDIES IN PHYSICAL EDUCATION AND SPORTS
DIBRUGARH UNIVERSITY
DIBRUGARH, ASSAM

Course Structure and allotment of papers for Doctor of Philosophy (Ph.D.) in Physical Education.

Marks: 100(End Semester 60 and In-semester: 40)

Total Marks : 400 Credit 18				
Course	Course Code	Course Title	Total Marks	Credit
Core Course-I	PHDPE 10100	Research Methodology in Physical Education Research	100	4
Core Course-II	PHDPE 10200	Statistics in Physical Education Research	100	4
Optional Course IV (any one)	PHDPE 10300 (a)	Sports and Exercise Physiology	100	4
	PHDPE10300 (b)	Sports and Exercise Psychology	100	4
	PHDPE10300 (c)	Sports and Exercise Biomechanics	100	4
	PHDPE10300 (d)	Fitness and Wellness	100	4
	PHDPE10300 (e)	Yoga	100	4
	Or anyone need based course offered by the course teacher/supervisor			
Compulsory Course V	PHDPE 10400	Assignment	100	4
Compulsory	PHDPE 10500	Research and Publication Ethics (Common Curriculum to be provided by university)	50	2
		Total	400	18

Course Work Curriculum
for
Ph.D. in Physical Education
Core Course: I
PHDPE 10100: Research Methodology in Physical Education Research
Total Credit: 4
Total Marks: 100
Distribution of Marks (Semester End/Practical/Internal): [60/40]
No. of Credit Hours and Module: 60 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	Topic	Contact Hours	Marks
I	**Basics of Research** • Meaning of Research, Classification and Steps of Research • Positivism vs Constructionism debate in research • Approach of Research: Qualitative and Quantitative • Hypothesis: Meaning and Types • Logic of Enquiry: Inductive and Deductive		15
II	**Strategies and Designing Research** • Meaning and purpose of research design, types of research design • Experimental design – Different experimental designs and applicable statistical procedure – Control of experimental factors • Basic principles of experimental designs, Formulation of Research design • Research Tools: Characteristics, Types, Selection of appropriate tool • Construction and Standardization of tools-Reliability, Validity and Norms.		15
III	**Data Collection and Processing & Interpretation** • Population and Sampling: Meaning, Types, Techniques; Determine sample size. • Design research tools: Questionnaire, Observation, case study, survey, interviews, scales and tests etc. • Measurement and scaling technique: flow diagram of hypotheses testing. • Use of instrument software to collect data. • Lab and field safety measures during data collection.		15

IV	**Report Writing and Evaluation** • Preparing Research Proposal • Mechanism of writing Research report/Thesis and method of presentation • Guidelines for writing research abstract • Reference styles (APA, MLA, CHICAGO), Reference management tools (Mendeley, Zotero) • Format of publication in research journals • Plagiarism and application of anti-plagiarism software (e.g. URKUND)		15

- Barrow, H. M. (1979). Practical Approach to Measurement in Health & Physical Education. (3rd ed.). Philadelphia: Lee & Febigeer.
- Best, J. W. & Kahn, J. V. (2006). Research in Education.(10th ed.). New Delhi: PHI
- Clark, D. H. & Clark, H. H. (1979). Research process in Physical Education, recreation & health Englewood Cliffs: prentice Hall.
- Garrett, H.E (2000) Statistics in Psychology and Education, Hyderabad: International BookBureau
- J. P. Verma (2012) Using SPSS: An Interactive Hands - On Approach, Sage South Asia
- J. P. Verma(2015) Repeated Measures Design for Empirical Researchers, Wiley-Blackwell
- Jerry R Thomas & Jack K Nelson (2000) Research Methods in Physical Activities; Illonosis; Human Kinetics;
- Johnson, B. & Christensen, L. (2008). Education Research, Quantitative, Qualitative and Mixed Approaches (3rd ed.). Sage Publication: England.
- Kamlesh, M. L. (1999) Research Methodology in Physical Education and Sports, New Delhi
- Kothari, C.R.(2008). Research Methodology: Methods and Techniques. Second Edition, NewAge International Publishers, New Delhi.
- 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.
- Rothstain A (1985) Research Design and Statistics for Physical Education, Englewood Cliffs:Prentice Hall, Inc
- Sivarama Krishnan. S. (2006) Statistics for Physical Education, Delhi; Friends Publication
- Sprint hall, R. C. (1997). Basic statistical Analysis. (5th ed.). USA: Allyn & Bacon
- Thomas, J. R. & Nelson, J. K. (2001). Research Methods in Physical Education, (4th ed.). USA: Human Kinetics.

Core Course: II
PHDPE 10200: Statistics in Physical Education Research
Total Credit: 4
Total Marks: 100
Distribution of Marks (Semester End/Practical/Internal): [60/40]
No. of Credit Hours and Module: 60 Hours & 04 Modules /Unit

Objectives:

- To understand and apply the statistics in research.
- To organize the samples and sampling techniques relevant to the study.
- To apply the statistics in research thesis for evaluation

I	**Introduction** • Types of Data: Qualitative data. Quantitative data and Assumption about data. • Statistical Decisions in Hypothesis Testing: Type I error and Type II error, Understanding the power of test and One-tailed and Two tailed test. • Descriptive Profile and Normal Distribution o Variance, Skewness, Kurtosis, Percentiles o Applications of Descriptive statistics, interpretation of the result. o Development of Normative Scales: Z-scale, T-Scale, 6 Sigma scale and Hull scale. • Assumption of Parametric Tests. o Common assumption of parametric test o Normality and its testing (with kolmogorov-Smirnov Test)		15
II	**Comparing mean with t-Test**. • One Sample t-Test • Independent two sampled t-Test. • Paired t-Test (Repeated measures) **Analysis of variance and Covariance.** • The theory behind ANOVA, ANOVA assumption and Logic of F-ratio • One way ANOVA • Two way ANOVA • ANCOVA o Post hoc test Procedures. o Independence of the covariate and treatment effect.		15
III	**Non-Parametric Tests of Significance.** • Chi-Square Test: One way and Two way Chi Square Test. • Mann Whitney U-Test. • Wilcoxon T-test (Signed-Ranked test) • Kruskal-Wallis H-test. • Friedman's Test		15

	Non- Parametric measures of Correlation • Goodman's and Kruskal's Gamma • Correlation coefficient of nominal and arrange in a 2x2 table • Biserial correlation • Point biserial correlation • Tetra choric correlation • Lambda		
IV	**Correlations** • Product Moment correlation coefficient • Correlation matrix • Partial correlation * Multiple correlation *Computation of partial correlation and multiple correlation • Interpretation of partial correlation and multiple correlation **Regression Analysis** • Understanding the Regression Equations • Methods of regression analysis • Simple linear regression analysis • Assumption of regression analysis • Computation of regression analysis • Interpretation of findings		15
	Practical: • Using latest version of SPSS for calculating the various statistical techniques involved in parametric and non-parametric aspects. • Using excel for calculation of various statistical techniques involved in parametric and non-parametric aspects.		

References:

- Field, A (2013) Discovering Statistics Using IBM SPSS Statistics. London . SAGE Publication Limited.
- Verma, J. (2011). Statistical Methods for Sports and Physical Education. New Delhi: Tata McGraw-Hill.
- Verma, J. & Salam, A. (2012). Statistics for Psychology, New Delhi: Tata McGraw-Hill.
- Verma, J., & Salam, A(2019). Testing Statistical Assumption in Research. Hoboken, USA: A Wiley.
- Wilcox, R R (2009) Basics statistics Unverstanding Convernational Methods in modern Insight. New York, USA: OXFORD University Press
- Winner, B.J. (1962). Statistical principles in Experimental Design. New York: McGraw Hill
- Garrett Henry, E. (1981) Staistics in Psychology and Education, New York: McGraw

Hill
- Heiman Gary, W. (1992) Basic Statistics for the behavioral Sciences, Boston: Houghton Milfflin Company.
- Levin, Jack & Alan Fox, James (2000) Elementary Statistics in Social Research, London: Allyn & Bacon.
- Verma, J.P. (2014) Statistics for Exercise Science and Health with Microsoft Office Excel, John Wiley, USA

Optional Course
PHDPE 10300 (a): SPORTS AND EXERCISE PHYSIOLOGY
Total Credit: 4
Total Marks: 100
Distribution of Marks (Semester End/Practical/Internal): [60/40]
No. of Credit Hours and Module: 60 Hours & 04 Modules /Unit

Objectives:
- To understand the basic principles of physiology and Sports & Exercise Physiology
- To apply the knowledge in the field of physical education and movement activity.
- To analyze the practical knowledge during the practical situation.

Unit	Topic	Contact Hours	Marks
I	• Physiology of Endurance Performance: • Cardiovascular control during exercise, • Cardiovascular responses to endurance exercise, • Respiratory regulation during exercise, • Cardiovascular and respiratory adaptation to training.		15
	• Physiology of Strength Performance • Generation of muscle force, • Factors influencing force generation, • Strength curve and rate of force development for various muscles • Physiological adaptation in response to resistance training, Delayed Onset Muscle Soreness(DOMS), Onset of Blood Lactate Accumulation (OBLA), Exercise Associated Muscle Cramps and Prevention (EAMC)		15
	Bio-Energetic and Exercise Metabolism • Concept of Fuels to exercise and energy production • Metabolic responses to short-term exercise, Prolonged exercise, Incremental exercise • Metabolic equivalent (MET) • Second wind and EPOC (Excess Post-exercise Oxygen Consumption) • Mechanism of body temperature regulation, Physiological responses to exercise in acclimatization		15
	Biochemical and neuroendcrological adaptations • Biochemical aspect of metabolism before, during and after exercise • Lactate threshold • Blood hormone concentration, Hormonal regulation		15

	of exercise • Ergogenic aids and sports • Introduction to Sports Genetics, Exercise induces signal transduction		

References:

- D. (1979). A Christine, M. D., (1999). *Physiology of Sports and Exercise*.USA: Human Kinetics.
- Conley, M. (2000). *Bioenergetics of Exercise Training*.
- T.R. Baechle, & R.W. Earle, (Eds.), Essentials of Strength Training and Conditioning (pp. 73-90). Champaign, IL: Human Kinetics.
- David, R. M. (2005).*Drugs in Sports,* (4th Ed). Routledge Taylor and Francis Group.
- Gupta, A. P. (2010). *Anatomy and Physiology.* Agra: SumitPrakashan.
- Gupta, M. and Gupta, M. C. (1980). *Body and Anatomical Science.* Delhi: Swaran Printing Press.
- Guyton, A.C. (1996). Textbook of Medical Physiology, 9th edition. Philadelphia: W.B. Saunders.
- Hunter, M. *dictionary for physical educators.* In H. M. Borrow & R. McGee, (Eds.), A Practical approach to measurement in Physical Education (pp. 573-74). Philadelphia: Lea &Febiger.
- Karpovich, P. V. (n.d.). *Physiology of Muscular Activity.* London: W.B. Saunders Co.
- Lamb, G. S. (1982). Essentials of Exercise Physiology. Delhi: Surjeet Publication.
- Moorthy, A. M. (2014). *Anatomy, Physiology and Health Education.*Karaikudi: Madalayam Publications.
- Morehouse, L. E. & Miller, J. (1967). *Physiology of Exercise*. St. Louis: The C.V. Mosby Co.
- Pearce, E. C. (1962). *Anatomy and Physiology for Nurses.* London: Faber & Faber Ltd.
- Sharma, R. D. (1979). *Health and Physical Education,* Gupta Prakashan.
- Singh, S. (1979). *Anatomy and Physiology and Health Education*. Ropar: Jeet Publications.

Optional Course

PHDPE 10300 (b): SPORTS AND EXERCISE PSYCHOLOGY

Total Credit: 4

Total Marks: 100

Distribution of Marks (Semester End/Practical/Internal): [60/40]

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

Objectives:

- To reflect upon motivational psychology as applied to sports activities
- To formulate relevant constructs of exercise psychology
- To understand the influence of psychological factors on involvement and performance in sport, exercise and physical education settings.

Unit	Topic	Contact Hours	Marks
	Basics of Sport & Exercise Psychology • Introduction: Meaning and Definition. Importance of Sport Psychology for Athletes, Coaches and other related to Sports Setting. • Biological foundation of behaviour: Structure and function of neuron, synapse and neurotransmitters		15

	• Nervous System a) Central Nervous system: Structure and function of brain and spinal cord b) Autonomic Nervous System: Structure and function c) 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)		
	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)		15
	Motivation and Performance • Motivation & Goal Setting- Meaning, Definition and Structure of Motivation (Need, Drive)Biological basis of motivation. • Theories of motivation [Abraham Maslow, Need Achievement by McClelland] • Self- Determination model • Techniques for Developing Motivation, Goal Setting – Locke GST • Motivation-Performance Relationship		15
	Emotion and Performance • Meaning and Definition of Emotion, Biological basis of emotion: The Limbic system, Hormonalregulation of behavior • Meaning, Definition of Anxiety, Types of Anxiety • Meaning, Definition and Nature of Arousal and Stress, Theories [Drive theory, Inverted –Utheory & IZOF] • Emotion and Performance Relationship		15

References

- Ball, D. W. & Loy, J. W. (1975).***Sport and social order; Contribution to the sociology of sport.***London: Addison Wesley Publishing Co., Inc.
- Blair, J.& Simpson, R.(1962). ***Educational psychology***, New York:McMillan Co.
- Cratty, B. J.(1968). ***Psychology and physical activity***. Eaglewood Cliffs. Prentice Hall.
- Kamlesh, M.L. (1998). ***Psychology in physical education and sport***. New Delhi:Metropolitan Book Co.
- Loy, J. W., Kenyon, G. S. & McPherson, B. D. (1978). **Sport and social system**. London: Addison Wesley Publishing Company Inc.
- Mathur, S.S., (1962). ***Educational psychology***. Agra.VinodPustakMandir.

- Skinnner, C. E., (1984.). ***Education psychology***. New Delhi: Prentice Hall of India.
- William, F. O.&Meyer, F. N. (1979). ***A handbook of sociology***. New Delhi: Eurasia Publishing House Pvt Ltd.
- P.D. Pathak, 2000 ***Shiksha Manovidnyan***, Agra, Vinod Pustak Mandir
- S. K. Mangal (2005) ***Shiksha Manovidnyan***, Ludhiana, Tandan Publication books markets.

Optional Course

PHDPE 10300 (c): SPORTS AND EXERCISE BIOMECHANICS

Total Credit: 4

Total Marks: 100

Distribution of Marks (Semester End/Practical/Internal): [60/40]

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

Objectives:

- To enable student to understand the science of Biomechanics and kinesiology in relation to human performance
- To enable student to analyze various fundamental movements and understanding the relevance of analysis
- Identify the relationship between kinematic and kinetic as they relate to the human performance
- Able to describe the cause and effect of various mechanics on Sports Performance.

Unit	Topic	Contact Hours	Marks
I	**Fundamentals of Biomechanics** • Definition of Biomechanics & Sports Biomechanics • Importance of Biomechanics for Physical Education Teacher, Coach &Athlete • Goals of Sports Biomechanics – Performance Enhancement, Technique, Equipment,Training, Injury Prevention and Rehabilitation • Trends in Biomechanics		15
II	**Mechanical Concepts** • Force - Meaning, definition, types and its application to sports activities • Lever - Meaning, definition, types and its application to human body. • Newton's Laws of Motion – Meaning, definition and its application to sports activities. • Projectile – Factors influencing projectile trajectory		15
III	**Analysis of Basic movements and Sports Skills** • Mechanical Analysis of Locomotion: Running, Walking, Jumping, • Skill Analysis of Track and Field Events • Skill Analysis of Various Sports Skills • Sports Equipments and Surfaces		15
IV	**Video Analysis of Techniques and Skills** • Video Film Analysis - Cinematography and Videography • Tools of Biomechanical Analysis - Electrography and Dynamography - LED's and Electromagnetic Markers		15

	- Force transducers and Pressure Sensors		

Suggested Readings:

- Bunn, John W. Scientific Principles of Coaching, Second Edition. (Englewood cliffs, New Jersey: Prentice Hall, Inc. 1972)
- Hall, Susan J. Basic Biomechanics, Fourth Edition (Boston etc. : WCB/MC Graw-Hill Companies,2004)
- Hay, James G. The Biomechanics of Sports Techniques, Fourth Edition (Englewood cliffs, NewJersey; Prentice Hall, 1993
- Hay, James G. and Raid J. Gavin, Anatomy, Mechanics and Human motion, Second Edition(Englewood cliffs, New Jersey: Prentice Hall, 1988).
- Kreighbaum, Ellen and Barthels. Biomechanics – A qualitative Approach for studying Human movement. Third edition (New York: MC millan publishing company, 1990)
- Mc. Ginnis, Peter M. Biomechanics of Sport and Exercise, Second Edition (Champaign : Humankinetics publishers, 2005)
- Rai Ramesh, Biomechanics – Mechanical Aspects of human motion (Mohali Punjab :AgrimPublication, 2003)
- Robertson, D. Gordon E. et. al. Research Methods in Biomechanics. (Champaign etc : Humankinetics publishers, 2004)
- Knudson, D. (2007). Fundamentals of Biomechanics. Chico, USA: Springer Publication.
- Scott, M. G. Analysis of Human Motion. Newyork.

Optional Course
PHDPE 10300 (d): FITNESS AND WELLNESS
Total Credit: 4
Total Marks: 100
Distribution of Marks (Semester End/Practical/Internal): [60/40]
No. of Credit Hours and Module: 60 Hours & 04 Modules /Unit

Objectives:

- To understand the modern concept of Health, Fitness and Wellness.
- To understand the concept of holistic health through fitness and wellness
- To orient students toward the approach of positive life style.
- To develop competencies for profile development, exercise guidelines adherence.
- To design different fitness training program for different age group and their application.
- To understand the role of nutrition in health, fitness and wellness.

Unit	Topic	Contact Hours	Marks
I	**Fitness and Wellness** • Concept of Fitness and Wellness and their significant in modern times. • Dimension of Health and fitness. • Physical Fitness – Types of Physical Fitness and Components of Physical Fitness		15
II	**Fitness development** • Concept and principles of Sports training, warm up and		15

	cooling down. • Concept of Training variables :Intensity, Volume, Load, Frequency and density • Means of Fitness Development – Aerobic and Anaerobic Exercises • Exercises and Heart Rate Zones for Various Aerobic Exercise Intensities		
III	**Fitness Assessment** • Standard Measurements (Height, Weight, Heart Rate and Blood Pressure) • Body Composition: (BMI, WHR, Waist Circumference and Body Fat Percentage) • Physical Fitness component assessment test		15
IV	**Nutrition and Exercise** • Basic concept of Nutrition. Classification of Nutrition • Means and method of Calculation of Energy Expenditure and Dietary requirement • Concept of obesity, Principles of Diet Plan, Balanced diet • Exercise and Diet plan for Weight management , weight loss and weight Gain		15

References

- Christine. M. D. (1999). Physiology of sports and evercise.USA: Human Kinetics.
- Conley, M. (2000). Bioenergetics of exercise training. .
- David, R. M. (2005). Drugs in sports, (4th Ed). Routledge Taylor and Francis Group.
- Jeyaprakash, C. S. , Sports Medicine, J.P. Brothers Pub., New l)elhi, 2003.
- Khanna- G.L., (1990). Exercise physiology and sports medicine. Delhi, Lucky Enterprises.
- Methew, D.K. & Fox. E.I. (1971). Physiological basis of physical education athletics.
- Philadelphia: W Saunders Co.
- Pandey, P.K., (1987). Outline of sports medicine, New Delhi: J.P. Brothers Pub.
- Williams, J. G. P. (1962), Sports medicine. London: Edward Arnold Ltd.
- Sinku K. Singh (2018). Sports Injuries and Rehabilitations. *New Delhi: Khel Sahitya Kendra publishers and distributors*
- Ghorpade S. Sonajirao (2018). Sports Medicine, Physiotherapy and Rehabilitation. *New Delhi: Khel Sahitya Kendra publishers and distributors*
- Anju Ambast (2018). Prevention and Treatment of Sports Injuries. *New Delhi: Khel Sahitya Kendra publishers and distributors*
- Hoshiyar Singh (2017). Athletics Care and Rehabilitation (New Syllabus). *New Delhi: Khel Sahitya Kendra publishers and distributors*
- Parveen Kumar (2012). Introduction to Exercise Science. *New Delhi: Khel Sahitya Kendra publishers and distributors*

Optional Course

PHDPE 10300 (e): **YOGA**

Total Credit: 4

Total Marks: 100

Distribution of Marks (Semester End/Practical/Internal): [60/40]

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

Objectives:

- To increase the knowledge of the students about Yoga and holistic development.
- To provide a practical knowledge on different yogic practices.
- To give a glimpse of ancient Yoga Philosophy.
- To impart some knowledge about the healing power of Yoga.

Unit	Topic	Contact Hours	Marks
I	**Introduction of Yoga** • Meaning and Definition of Yoga. • Concept of Yoga. • Misconceptions of Yoga. • Origin and Historical Development of Yoga.		15
II	**Philosophical Perspective of Yoga** • Ashtanga Yoga • Patanjali; The Yoga Sutras • Yoga in Bhagavad Gita ❖ Karma Yoga, ❖ Raja Yoga, ❖ Jnana Yoga ❖ Bhakti Yoga		15
III	**Practical Application of Yoga** • Principles of Yogic Practices. • Meaning of Asana, its classifications and principles. • Meaning of Pranayama, its types and principles. • Meaning of Kriya its types.		15
IV	**Yoga for health** • Role of Yoga in Management of Stress. • Concept of Balanced Diet. • Concept of Yogic Diet • Meaning and Concept of Yoga Therapy.		15

References:

- Indian Philosophy Datta and Chatterjee
- Yoga Darshan DR.S.V. Karandikar
- Ancient Indian Culture: Edited by Mohan Chand, Department of Sanskrit And Literature Ramjas College, University of Delhi
- Patanjali Yoga-Sutra: Dr. P.V. Karambelkar
- Hatha Pradipika Dr. M.L.Gharote
- Ghrenda Samhita Swami Digambarji.
- Yoga for Stress Relief Bharat Thakur.
- Managing Stress H.S. Srinivas
- Food for Health Mool Raj
- Aahar Vidnyam Satyapal