



छत्रपति शाहू जी महाराज विश्वविद्यालय, कानपुर

CHHATRAPATI SHAHU JI MAHARAJ UNIVERSITY, KANPUR

(पूर्ववर्ती कानपुर विश्वविद्यालय, कानपुर)

Formerly Kanpur University, Kanpur – 208024

PHYSICAL EDUCATION

SUBJECT SPECIFIC PAPER-I

(Applied Physical Education & Sports Science)

No of Credits	No of Tutorial Hours	No of Units	Maximum Duration
03* (Theory) + 01** (Teaching Practice)	36** Hours (Theory) + 12** Hours (Teaching Practice)	Maximum 06	06 Months

Course Objectives:

1. To understand the Advance Sports Biomechanics, Sports Medicine and Exercise Physiology in Physical Education, its principles and applications.
2. To develop attitudes and skills in designing Advance Sports Biomechanics, Sports Medicine and Exercise Physiology in Physical Education, its principles and applications.
3. To be better prepared to be a good researcher.
4. To enable student to understand of Advance Sports Biomechanics, Sports Medicine and Exercise Physiology in Physical Education, its principles and applications.
5. To Develop students with skills and techniques for carrying out independent research work.

***03 Hours/Week – Theory Papers_ Maximum 36 Contact Hours**

****01 Hour/Week – Teaching Practice Work_ Maximum 12 Contact Hours**

Advance Sports Biomechanics Unit – I

Tutorial Hours – 6

Course Description:

- Concept of different analysis:-
- Mechanical analysis
- Biomechanical analysis
- Kinesiological analysis
- Mechanical Analysis of Fundamental Motor Skills:-
- Walking, Running, Jumping, Throwing and Catching.

Unit – II

Tutorial Hours – 6

- Sports Analytics & Data Science Applications Long term Athlete Development Models.
- Emerging Trends in sports Biomechanics (motion capture, 3D kinematics, AI Based movement Analysis)
- Kinematic & kinetic Analysis of sports movements.
- Application of Biomechanics in Injury prevention & Rehabilitation.
- Designing & Refining Equipment for Peak performance.
 - Biomechanical modeling.
 - Wearable Biomechanical Technology.
 - Surface & footwear Interactions.
- Advance Video graphic and sensor based analysis.

Sports Medicine

R.

Sydney

Robbie

Alvin

Aditya

Arsh

N.S.G.

Unit – III

Tutorial Hours – 6

- Introduction to Athletic Rehabilitation.
- Strapping/Tapping: Definition, Principles Precautions Contraindications.
- Role of Therapeutic Exercises in Rehabilitation of athletic injuries
- Posture and its deformities with their corrective exercises

Unit – IV

Tutorial Hours – 6

- Proprioceptive neuromuscular facilitation: Definition hold, relax, repeated contractions.
- Show reversal technique exercises.
- Isotonic, Isokinetic, isometric stretching.
- Definition types of stretching, Advantages, dangers of stretching, Manual muscle grading.

Exercise Physiology

Unit-V

Tutorial Hours – 6

- Exercise and Systems : Effect of exercise on Respiratory, Hormonal, Cardiovascular
- Exercise and Environment: Effect of exercise on Hot, Cold and High Altitude
- Muscle movement mechanism: Sliding filament theory, Types of muscles, Muscular system and exercise
- Exercise and Aging: Physiological changes, Training adaptation in aged, Guidelines for constructing exercise programme

Unit-VI

Tutorial Hours – 6

- Macro & Micro Structure of the Skeletal Muscle
- Chemical Composition. Sliding Filament theory of Muscular Contraction.
- Types of Muscle fibre, Muscle Tone, Chemistry of Muscular Contraction– Heat Production in the Muscle
- Effect of exercises and training on the muscular system.

Teaching Practice

Credit – 01

Tutorial Hours – 12 Hours

Teaching Practice Work:

- Presentations
- Assignments
- Field Work/Lab Work etc.

Intended Learning Outcomes (ILOs)

Upon successful completion of the course, the scholars will be able to:

1. A variety of motor skills and abilities related to lifetime leisure activities
2. Improved understanding of the importance of maintaining a healthy lifestyle
3. Improved understanding of movement and the human body
4. Identify the research problem in the field of physical Education and sports
5. Know to Summarize the various research literatures.

Suggested Readings

- Amrit Kumar, R, Moses. (1995). Introduction to Exercise Physiology. Madras: Poompugar Pathipagam.
- Beotra Alka, (2000) Drug Education Handbook on Drug Abuse in Sports: Sports Authority of India Delhi.
- Clarke, D.H. (1975). Exercise Physiology. New Jersey: Prentice Hall Inc., Englewood Cliffs.
- David, L Costill. (2004). Physiology of Sports and Exercise.Human Kinetics.
- Fox, E.L., and Mathews, D.K. (1981).The Physiological Basis of Physical Education and Athletics.
- Philadelphia: Sanders College Publishing.
- Guyton, A.C. (1976). Textbook of Medical Physiology. Philadelphia: W.B. Sanders co. Richard, W. Bowers. (1989). Sports Physiology. WMC: Brown Publishers.
- Deshpande S.H.(2002). Manav Kriya Vigyan – Kinesiology (Hindi Edition) Amravati
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- Hoffman S.J. Introduction to Kinesiology. Human Kinesiology Publication In.2005. Steven Roy,& Richard Irvin. (1983). Sports Medicine. New Jersey: Prentice hall.
- Thomas. (2001). Manual of structural Kinesiology, New York: Me Graw Hill.
- Uppal A.K. Lawrence Mamta MP (2004) Kinesiology. Delhi, Friends Publication.
- Williams M (1982) Biomechanics of Human Motion, Philadelphia; Saunders Co
- Christopher M. Norris. (1993). Sports Injuries Diagnosis and Management for Physiotherapists.
- East Kilbride: Thomson Litho Ltd.
- James, A. Gould & George J. Davies.(1985) Physical Therapy. Toronto: C.V. Mosby Company. Morris B. Million (1984) Sports Injuries and Athletic Problem. New Delhi: Surjeet Publication.
- Pandey.(1998). Sports Medicine. New Delhi: Khel Shitya Kendra

R. Sugandh *Bobin* *A. D. D. D.* *Arach* *NSA*



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PHYSICAL EDUCATION

SUBJECT SPECIFIC PAPER-II

(Applied Physical Education & Sports Science)

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3. To be better prepared to be a good researcher.
4. To enable student to understand Advance sports training, Sports Psychology and pedagogy in Physical Education, its principles and applications.
5. To Develop students with skills and techniques for carrying out independent research work.

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****01 Hour/Week – Teaching Practice Work_ Maximum 12 Contact Hours**

ADVANCE SPORTS TRAINING

Unit – I

Tutorial Hours – 6

Course Description:

- Modern Trends and innovations in Sports Training (Wearable Technology, AI driven training, virtual coaching)
- Advance training methods, talent identification & development.
- Resistance training, Agility training, Recovery Techniques.
- Design (Injury presentation, Nutrition Strategies, Psychological preparation)

Unit-II

Tutorial Hours – 6

- Training Plan: Macro Cycle, Meso-Cycle.
- Short Term Plan and Long Term Plans
- Periodization & Training Load Monitoring techniques.
- Preparatory Period, Competition Period and Transition Period.

R.

Sydney

Tech

A. D. S.

A. D. S.

Arup

N.S.

SPORTS PSYCHOLOGY

Unit-III

Tutorial Hours – 6

Course Description:

- Meaning and Definition, Process of Goal Setting in Physical Education and Sports.
- Psychological Tests: Types of Psychological Test:
- Instrument based tests: Pass-along test, Tachistoscope, Reaction timer, Finger dexterity board, Depth perception box and Kinesthesiometer board.
- Questionnaire: Sports Achievement Motivation, Sports Competition Anxiety and Positive Mental Health.

Unit-IV

Tutorial Hours – 6

- Defining competition, determinants of competitive behavior, psychological characteristics of pre- competition, during competition and post competition.
- Selected psycho regulative techniques technique for relaxation and activation.
- Psychological aspects of long term and short term preparation for competition, Psychological care of injuries, sports person, responses to injuries, prevention and coping techniques.

PEDAGOGY IN PHYSICAL EDUCATION AND SPORTS

Unit – V

Tutorial Hours – 6

Course Description:

- Defining pedagogy and its scope in Physical Education.
- Understanding the different types of pedagogy (e.g., social pedagogy, critical pedagogy).
- Examining the role of pedagogy in shaping learning experiences.
- Principles of curriculum design, development, and implementation in physical education.

Unit-VI

Tutorial Hours – 6

- Physical Education Curriculum in Implementation of NEP-2021.
- Technological Integration in Physical Education (E-Learning, Virtual Labs, Gratification) Inclusive Physical Education Strategies for special populations.
- Assessment tools & strategies in Physical Education.
 - a. Teaching Innovative/styles & methods
 - b. Evidence based Curriculum development
- Inclusive Practices in Physical Education Future of Physical Education in the Digital Era.

Teaching Practice

Credit – 01

Tutorial Hours – 12 Hours

Teaching Practice Work:

- Presentations
- Assignments
- Field Work/Lab Work etc.

Intended Learning Outcomes (ILOs)

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- Bunn, J.N. (1998) Scientific Principles of Coaching, New Jersey Engle Wood Cliffs, Prentice Hall Inc.
- Cart, E. Klafs & Daniel, D. Arnheim (1999) Modern Principles of Athletic Training St. Louis C. V. Mosphy Company
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- David R. Mottram (1996) Drugs in Sport, School of Pharmacy, Liverpool: John Moore University Gary, T. Moran

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(1997) – Cross Training for Sports, Canada: Human Kinetics

- Hardayal Singh (1991) Science of Sports Training, New Delhi, DVS Publications Jensen,
- C.R. & Fisher A.G. (2000) Scientific Basic of Athletic Conditioning, Philadelphia
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- Robert N. Singer (2001). Motor Learning and Human Performance. New York: The Macmillan Co. Robert N.
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- Petrie et al. (2009). Pedagogy – a holistic, personal approach to work with children and young people, across services. p. 4. Archived 15 March 2022 at the Wayback Machine

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