

| 1 | Name of Syllabus | C. C. IN SPORTS BIOMECHANICS (404135) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|--|---|-------|-------|------------|------------|--|--|--------------------------|------------|-----------------|-------|-------|------------|------------|--------|-----------|-------------------------|------|-------|-----|----|---------|----------|--------------------------|-------|-------|-----|----|---|----------|-------------------------|------|-------|-----|----|---|----------|--------------------------|-------|-------|-----|----|--|--|-------|--|--|-----|-----|
| 2 | Max.Nos of Student | 25 Students | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Duration | 6 Month | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Type | Part Time | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Nos Of Days / Week | 6 Days | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Nos Of Hours /Days | 4 Hrs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Space Required | Play ground + Class Room = 200 Sq feet | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Entry Qualification | S.S.C. + Any course in Sport Group of MSBVE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Objective Of Syllabus/ introduction | To provide systematic training SPORTS BIOMECHANICS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Employment Opportunity | Can run training institute or can work in supervisory/ teaching activities of the sport | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Teacher’s Qualification | Diploma / Certificate holder in concern Subject. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Training System | <table><tr><th colspan="7">Training System Per Week</th></tr><tr><td>Theory</td><td>Practical</td><td colspan="5">Total</td></tr><tr><td>6 Hours</td><td>18 Hours</td><td colspan="5">24 Hours</td></tr></table> | | | | | | | Training System Per Week | | | | | | | Theory | Practical | Total | | | | | 6 Hours | 18 Hours | 24 Hours | | | | | | | | | | | | | | | | | | | | | | | | | |
| Training System Per Week | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Theory | Practical | Total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 Hours | 18 Hours | 24 Hours | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | Exam. System | <table><tr><th>Sr. No</th><th>Paper Code</th><th>Name of Subject</th><th>TH/PR</th><th>Hours</th><th>Max. Marks</th><th>Min. Marks</th></tr><tr><td>1</td><td>40413511</td><td>SPORTS BIOMECHANICS – I</td><td>TH I</td><td>3 hrs</td><td>100</td><td>35</td></tr><tr><td>2</td><td>40413512</td><td>SPORTS BIOMECHANICS – II</td><td>TH II</td><td>3 hrs</td><td>100</td><td>35</td></tr><tr><td>3</td><td>40413521</td><td>SPORTS BIOMECHANICS - I</td><td>PR-I</td><td>3 hrs</td><td>100</td><td>50</td></tr><tr><td>4</td><td>40413522</td><td>SPORTS BIOMECHANICS - II</td><td>PR-II</td><td>3 hrs</td><td>100</td><td>50</td></tr><tr><td></td><td></td><td>Total</td><td></td><td></td><td>400</td><td>170</td></tr></table> | | | | | | | Sr. No | Paper Code | Name of Subject | TH/PR | Hours | Max. Marks | Min. Marks | 1 | 40413511 | SPORTS BIOMECHANICS – I | TH I | 3 hrs | 100 | 35 | 2 | 40413512 | SPORTS BIOMECHANICS – II | TH II | 3 hrs | 100 | 35 | 3 | 40413521 | SPORTS BIOMECHANICS - I | PR-I | 3 hrs | 100 | 50 | 4 | 40413522 | SPORTS BIOMECHANICS - II | PR-II | 3 hrs | 100 | 50 | | | Total | | | 400 | 170 |
| Sr. No | Paper Code | Name of Subject | TH/PR | Hours | Max. Marks | Min. Marks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 40413511 | SPORTS BIOMECHANICS – I | TH I | 3 hrs | 100 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 40413512 | SPORTS BIOMECHANICS – II | TH II | 3 hrs | 100 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 40413521 | SPORTS BIOMECHANICS - I | PR-I | 3 hrs | 100 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 40413522 | SPORTS BIOMECHANICS - II | PR-II | 3 hrs | 100 | 50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Total | | | 400 | 170 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

SPORTS BIOMECHANICS - I
THEORY – I AND PRACTICAL - I

1. NATURE AND SCOPE OF BIOMECHANICS IN PHYSICAL EDUCATION

2. HUMAN MOTION:

Linear Motion, Angular motion and General Motion

3. LINEAR KINEMATICS

Distance and Displacement, speed and Velocity Acceleration, Vectors and Scalars, Projectile motion

4. ANGULAR KINEMATICS

Angular Distance and Displacement, Angular Speed and Velocity, Angular Acceleration, Angular motion vectors

5. LINEAR KINETICS :

Inertia, Mass, Force Momentum, Newton's Laws of motion, Newton's Law of Gravitation, Weight, Friction, Impulse, Impact, Pressure, work, Power Energy.

6. ANGULAR KINETICS

Eccentric Force, Couple. Moment, Equilibrium, Center of Gravity, Stability, Moment of Inertia, Angular momentum, Newton's law of Angular Motion Transfer of Angular Momentum.

7. FLUID MECHANICS

Flotation, Relative motion, Fluid resistance.

SPORTS BIOMECHANICS - II
THEORY – II AND PRACTICAL - II

1. Description of Human Movement – Planes, Axes
2. Classification of Force System
Linear force system, parallel Force System, Concurrent force system, General Force system, composition and resolution of force.
3. Methods of investigation
Photo instrumentation – Camera, Films, Exposure Meters, Calibration of Camera Speed, Filming Fundamentals, Films, Analysis, Fundamentals of films analysis.
4. Other methods of investigation – Goniometry Accelerometers, Dynamometry, Electro-myography.
5. Location of Centre of Gravity- Mannikin Method, Segmentation methods Reaction board methods.
6. Methods of analysis of sports skills
Qualitative Method
Quantitative Method
Basic Steps: - Development of Model, Observation of performance, identification of faults, Evaluation of fault, Instruction to performer, Qualitative analysis of Running, Diving Serving, Tennis.

Reference Books

- Bunn. John W. Scientific Principles of Coaching (Englewood Cliffs, N.J. Prentice Hall Inc. 1972).
- Dysen Geoffrey, H.G. (The Mechanics of Athletics (London : University of Lond Press ltd. 1968)
- Hay, James G. The Biomechanics of sports Techniques (Englewood Cliffs, N.J. : Prentice Hall, 1985).
- Hay James G. Reid J.G. The Anatomical and Mechanical Bases Human Motion. (Englewood Cliffs, N.J. : Prentice Hall, 1982)
- Hay James G. and Reid J.G. Avin Anatomy Mechanics and Human Motion (Englewood Cliffs, N.J. : Prentice Hall, 1988)
- Milles Harison and Nelson Richard C. Biomechans of sports – A Research approach. (Philadelphia : Lea and Febiger 1976)
- Simanion Charless, Fundamental of Sports Biomechanics (Philadelphia: Le and Febiger (1976.)
- Willams and Lissner, Biomechanics of Human Motion, (London W.B. Saunders Company, 1977.
