

BSc SPORTS SCIENCE

Course Descriptors – Semesters I to VI

Draft for Board of Studies Review

Programme Structure Overview

SEMESTER I (Total: 22 credits)

Code	Course Title	Credits
BSS-101	Human Anatomy - I (Theory)	2
BSS-102	Human Anatomy - I (Practical)	1
BSS-103	Human Physiology - I (Theory)	2
BSS-104	Human Physiology - I (Practical)	1
BSS-105	Introduction to Exercise and Sports Sciences	2
BSS-106	Communication Skills - I	2
BSS-107	Foreign Language - I	2
BSS-108	Test, Measurement, Evaluation and Physical Training	2
BSS-109	Mind Management and Human Values - I	1
BSS-110	Transdisciplinary Project-Centric Learning - I	2
BSS-111	FAB 5 (AI Ethics and Governance / AI Python Programming / Prompt Engineering / Stats using AI / Entrepreneurship with AI)	5

SEMESTER II (Total: 22 credits)

Code	Course Title	Credits
BSS-201	Human Anatomy - II (Theory)	2
BSS-202	Human Anatomy - II (Practical)	2
BSS-203	Human Physiology - II (Theory)	2
BSS-204	Human Physiology - II (Practical)	2
BSS-205	Sports Performance Testing in Ball Games	2
BSS-206	Communication Skills - II	2
BSS-207	Foreign Language - II	1
BSS-208	Mind Management and Human Values - II	1
BSS-209	Transdisciplinary Project-Centric Learning - II	2
BSS-210	Summer Internship	6

SEMESTER III (Total: 22 credits)

Code	Course Title	Credits
BSS-301	Basics of Kinesiology and Biomechanics (Theory and Practical)	4
BSS-302	Biochemistry and Ergogenics	2
BSS-303	Motor Control, Learning and Skill Acquisition	2
BSS-304	Basics of Exercise Physiology	2
BSS-305	Sports Performance Testing in Racket Games	2
BSS-306	AI Tools for Data Analysis	2

Code	Course Title	Credits
BSS-307	Sports Data Analytics	2
BSS-308	Sports Performance Analysis	2
BSS-309	Transdisciplinary Project-Centric Learning - III	2
BSS-310	CMAAPS - Industry	2

SEMESTER IV (Total: 22 credits)

Code	Course Title	Credits
BSS-401	Sports Anthropometry	2
BSS-402	Sports Training	2
BSS-403	Talent Identification and Long-Term Athlete Development	2
BSS-404	E-Sports - I	2
BSS-405	Sports Performance Testing in Combative Games	2
BSS-406	Kinesiology and Biomechanics	2
BSS-407	Transdisciplinary Project-Centric Learning - IV	2
BSS-408	Artificial Intelligence in Sports	2
BSS-409	Summer Internship	6

SEMESTER V (Total: 15 credits)

Code	Course Title	Credits
BSS-501	E-Sports - II	2
BSS-502	Sports Digital Marketing	2
BSS-503	Photo and Video Analysis	2
BSS-504	Strength and Conditioning - I (Theory)	2
BSS-505	Strength and Conditioning - I (Practical)	1
BSS-506	Sports Psychology and Sociology	2
BSS-507	Transdisciplinary Project-Centric Learning - V	2
BSS-508	CAPSTONE	2

SEMESTER VI (Total: 19 credits)

Code	Course Title	Credits
BSS-601	Sports Massage Techniques	2
BSS-602	Adaptive Sports Technology	2
BSS-603	Sports Injuries and Rehabilitation	2
BSS-604	Strength and Conditioning - II (Theory)	2
BSS-605	Strength and Conditioning - II (Practical)	2
BSS-606	Sports Nutrition	3
BSS-607	Transdisciplinary Project-Centric Learning - VI	2
dBSS-608	AI Product Design	4

SEMESTER I

BSS-101 - Human Anatomy - I (Theory)

Semester	SEMESTER I
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Note: Paired with Practical below; Theory 40% / Practical 60% weightage of combined course marks.

Course Objective

To introduce the basic structure of the human body with emphasis on anatomical knowledge relevant to movement, posture, exercise, and sport performance.

Learning Outcomes

- Explain introduction to anatomy and its relevance to human anatomy
- Describe skeletal system and its relevance to human anatomy
- Apply muscular system and its relevance to human anatomy.
- Analyse nervous system overview and its relevance to human anatomy.

Unit-wise Syllabus

Unit I: Introduction to Anatomy

- Meaning, scope, and importance of anatomy in sports science
- Anatomical position, body planes, body cavities, and directional terms
- Overview of major body systems

Unit II: Skeletal System

- Functions of the skeletal system
- Classification of bones
- Axial and appendicular skeleton
- Major bones and their sporting relevance
- Joints and joint classification

Unit III: Muscular System

- Structure and function of skeletal muscles
- Types of muscles
- Major muscles of the body
- Origins, insertions, and actions of key muscles used in sport

Unit IV: Nervous System Overview

- Basic structure of the nervous system
- Central and peripheral nervous system
- Role of nerves in movement and coordination

Unit V: Posture and Movement

- Postural alignment
- Basic anatomical basis of movement
- Relevance of anatomy in exercise and sports performance

Sports Science Focus

Muscle-joint relationships in movement, posture correction, and movement efficiency.

Suggested Readings

- Tortora, G.J. & Derrickson, B. Principles of Anatomy and Physiology. Wiley.
- Marieb, E.N. & Hoehn, K. Human Anatomy & Physiology. Pearson.
- McMinn, R.M.H. Last's Anatomy: Regional and Applied. Elsevier.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-102 – Human Anatomy - I (Practical)

Semester	SEMESTER I
Credits	1
Lecture Hours	0
Practical / Field Hours	15

Note: Paired with Theory above.

Course Objective

To develop practical understanding of human body structures using models, charts, and observation.

Learning Outcomes

- Explain human anatomy - i (practical) and its relevance to human anatomy
- Apply the concepts of human anatomy - in practical sports science context

Unit-wise Syllabus

Practical / Field Work

- Identification of bones on skeleton models
- Identification of major muscles on charts/models
- Demonstration of body planes and anatomical positions
- Observation of major joints and movements
- Surface anatomy landmarks
- Simple functional anatomy exercises related to sport movements

Sports Science Focus

Understanding how anatomical structures support throwing, running, jumping, lifting, and striking actions.

Suggested Readings

- Tortora, G.J. & Derrickson, B. Principles of Anatomy and Physiology. Wiley.
- Marieb, E.N. & Hoehn, K. Human Anatomy & Physiology. Pearson.
- McMinn, R.M.H. Last's Anatomy: Regional and Applied. Elsevier.

Assessment Pattern

Continuous Internal Assessment: 60% (practical file/record, viva-voce, in-lab performance); End-Semester Practical Examination: 40%.

BSS-103 – Human Physiology - I (Theory)

Semester	SEMESTER I
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Note: Paired with Practical below; Theory 40% / Practical 60% weightage of combined course marks.

Course Objective

To provide foundational knowledge of normal body function with emphasis on exercise and sports participation.

Learning Outcomes

- Explain introduction to physiology and its relevance to human physiology
- Describe cell and tissue physiology and its relevance to human physiology
- Apply blood and circulation basics and its relevance to human physiology
- Analyse respiratory system and its relevance to human physiology

Unit-wise Syllabus

Unit I: Introduction to Physiology

- Meaning and scope
- Homeostasis and body regulation
- Importance of physiology in sports science

Unit II: Cell and Tissue Physiology

- Cell structure and basic function
- Types of tissues
- Cellular adaptation to physical activity

Unit III: Blood and Circulation Basics

- Composition and functions of blood
- Basic heart structure
- Blood circulation and oxygen transport

Unit IV: Respiratory System

- Structure and function of the respiratory system
- Breathing mechanism
- Gas exchange and oxygen delivery

Unit V: Physiology of Exercise Introduction

- Acute response of body to exercise
- Basic idea of adaptation to training

Sports Science Focus

How the body maintains performance during physical activity.

Suggested Readings

- Guyton, A.C. & Hall, J.E. Textbook of Medical Physiology. Elsevier.
- McArdle, W.D., Katch, F.I. & Katch, V.L. Exercise Physiology: Nutrition, Energy, and Human Performance. Wolters Kluwer.
- Wilmore, J.H. & Costill, D.L. Physiology of Sport and Exercise. Human Kinetics.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-104 - Human Physiology - I (Practical)

Semester	SEMESTER I
Credits	1
Lecture Hours	0
Practical / Field Hours	15

Note: Paired with Theory above.

Course Objective

To develop foundational knowledge and applied skill in human physiology

Learning Outcomes

- Explain human physiology - i (practical) and its relevance to human physiology
- Apply the concepts of human physiology - in practical sports science contexts.

Unit-wise Syllabus

Practical / Field Work

- Measurement of pulse rate
- Measurement of respiratory rate
- Resting heart rate observation
- Basic blood pressure awareness
- Recording changes before and after light exercise
- Simple fitness-related physiological observations

Suggested Readings

- Guyton, A.C. & Hall, J.E. Textbook of Medical Physiology. Elsevier.
- McArdle, W.D., Katch, F.I. & Katch, V.L. Exercise Physiology: Nutrition, Energy, and Human Performance. Wolters Kluwer.
- Wilmore, J.H. & Costill, D.L. Physiology of Sport and Exercise. Human Kinetics.

Assessment Pattern

Continuous Internal Assessment: 60% (practical file/record, viva-voce, in-lab performance); End-Semester Practical Examination: 40%.

BSS-105 - Introduction to Exercise and Sports Sciences

Semester	SEMESTER I
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To introduce the broad field of exercise and sports sciences and its career and application areas.

Learning Outcomes

- Explain meaning and scope and its relevance to introduction to exercise and sports sciences.
- Describe role of exercise in human life and its relevance to introduction to exercise and sports sciences.

- Apply areas of sports science and its relevance to introduction to exercise and sports sciences.

Unit-wise Syllabus

Unit I: Meaning and Scope

- Definition of exercise science and sports science
- Relationship among physiology, biomechanics, psychology, nutrition, and training

Unit II: Role of Exercise in Human Life

- Physical fitness and health
- Performance enhancement
- Recreation and wellbeing

Unit III: Areas of Sports Science

- Exercise physiology
- Sports biomechanics
- Sports psychology
- Strength and conditioning
- Sports nutrition
- Performance analysis

Unit IV: Careers and Applications

- Sports coach, analyst, trainer, rehabilitation assistant, fitness expert, educator

Unit V: Ethics and Professionalism

- Athlete welfare
- Safe practice
- Professional conduct

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-106 – Communication Skills – I

Semester	SEMESTER I
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Note: SKILL DEVELOPMENT course.

Course Objective

To build foundational verbal, written and interpersonal communication skills required in academic and professional sports-science settings.

Learning Outcomes

- Explain foundations of communication and its relevance to communication skills
- Describe written communication and its relevance to communication skills
- Apply spoken communication and its relevance to communication skills
- Analyse communication in sports settings and its relevance to communication skills

Unit-wise Syllabus

Unit I: Foundations of Communication

- Process, types and barriers to communication
- Verbal vs non-verbal communication
- Listening skills

Unit II: Written Communication

- Formal and informal writing
- Email and report writing basics
- Note-making and summarising

Unit III: Spoken Communication

- Public speaking basics
- Group discussion skills
- Interview readiness

Unit IV: Communication in Sports Settings

- Coach-athlete communication
- Communicating with the media, public and stakeholders

Unit V: Digital and Professional Communication

- Email etiquette
- Professional presentations
- Resume and cover letter basics

Sports Science Focus

Communicating effectively with athletes, coaches, support staff and the public.

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment only, based on assignments, presentations, participation and skill demonstration (100%).

BSS-107 – Foreign Language – I

Semester	SEMESTER I
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Note: SKILL DEVELOPMENT course; language offered as per institutional choice.

Course Objective

To introduce basic proficiency in a foreign language of the institute's choice, enabling elementary conversational and reading ability.

Learning Outcomes

- Explain alphabet, pronunciation and greetings and its relevance to foreign language
- Describe basic grammar and its relevance to foreign language
- Apply everyday vocabulary and its relevance to foreign language

- Analyse conversational practice and its relevance to foreign language

Unit-wise Syllabus

Unit I: Alphabet, Pronunciation and Greetings

- Script/phonetics
- Basic greetings and introductions

Unit II: Basic Grammar

- Sentence structure
- Common tenses
- Numbers and time

Unit III: Everyday Vocabulary

- Common nouns and verbs related to daily life and sport

Unit IV: Conversational Practice

- Simple dialogues
- Situational conversations (travel, sport events)

Unit V: Reading and Listening

- Short passages
- Audio-visual comprehension exercises

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment only, based on assignments, presentations, participation and skill demonstration (100%).

BSS-108 – Test, Measurement, Evaluation and Physical Training

Semester	SEMESTER I
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To introduce basics of fitness testing, measurement principles, evaluation, and structured physical training.

Learning Outcomes

- Explain concepts and importance and its relevance to test, measurement, evaluation and physical training.
- Describe introduction to sports technologies and its relevance to test, measurement, evaluation and physical training.
- Apply physical fitness components and its relevance to test, measurement, evaluation and physical training.
- Analyse physical training principles and its relevance to test, measurement, evaluation and physical training.

Unit-wise Syllabus

Unit I: Concepts and Importance

- Meaning of test, measurement, evaluation
- Role in sports and physical education

Unit II: Introduction to Sports Technologies

- Wearables
- Timing devices
- --> ``
- Video tools

Unit III: Physical Fitness Components

- Strength, endurance, speed, flexibility, agility, coordination, balance

Unit IV: Physical Training Principles

- Overload, progression, specificity, reversibility, individuality
- Warm-up, conditioning, cool-down

Unit V: Evaluation and Records

- Interpreting test results
- Fitness profiles and progress monitoring
- Fitness records
- Performance reports
- Data entry and graph creation

Suggested Readings

- Bompa, T.O. & Buzzichelli, C. Periodization: Theory and Methodology of Training. Human Kinetics.
- Baechle, T.R. & Earle, R.W. (NSCA) Essentials of Strength Training and Conditioning. Human Kinetics.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-109 – Mind Management and Human Values - I

Semester	SEMESTER I
Credits	1
Lecture Hours	0
Practical / Field Hours	15

Course Objective

To help students develop self-awareness, emotional balance, ethical conduct, and discipline.

Learning Outcomes

- Explain mind and behaviour and its relevance to mind management and human values
- Describe human values and its relevance to mind management and human values
- Apply goal setting and its relevance to mind management and human values
- Analyse stress and time management and its relevance to mind management and human values

Unit-wise Syllabus

Unit I: Mind and Behaviour

- Thoughts, habits, emotions
- Self-control and attention

Unit II: Human Values

- Integrity, responsibility, respect, empathy, discipline

Unit III: Goal Setting

- Personal and academic goals

- Motivation and consistency

Unit IV: Stress and Time Management

- Handling study and training pressure
- Time planning

Unit V: Values in Sports

- Fair play
- Team spirit
- Respect for rules and opponents

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment only, based on assignments, presentations, participation and skill demonstration (100%).

BSS-110 – Transdisciplinary Project-Centric Learning - I

Semester	SEMESTER I
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Course Objective

To develop learning through project work connecting sports science with real-world problems.

Learning Outcomes

- Explain transdisciplinary project-centric learning and its relevance to transdisciplinary project-centric learning
- Apply the concepts of transdisciplinary project-centric learning in practical sports science contexts.

Unit-wise Syllabus

Suggested Readings

- Schmidt, R.A. & Lee, T.D. Motor Learning and Performance. Human Kinetics.
- Magill, R.A. & Anderson, D. Motor Learning and Control: Concepts and Applications. McGraw-Hill.

Assessment Pattern

Evaluation through progress reviews, project report/dissertation, and viva-voce examination before an internal-external panel.

SEMESTER II

BSS-201 - Human Anatomy - II (Theory)

Semester	SEMESTER II
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Note: Paired with Practical below; Theory 30% / Practical 70% weightage of combined course marks.

Course Objective

To study advanced anatomical structures relevant to movement and sport.

Learning Outcomes

- Explain cardiovascular anatomy and its relevance to human anatomy
- Describe respiratory anatomy and its relevance to human anatomy
- Apply digestive and excretory systems and its relevance to human anatomy
- Analyse endocrine system and its relevance to human anatomy

Unit-wise Syllabus

Unit I: Cardiovascular Anatomy

- Heart structure
- Blood vessels
- Circulation relevant to exercise

Unit II: Respiratory Anatomy

- Lungs, airways, diaphragm
- Structure-function relationship

Unit III: Digestive and Excretory Systems

- Basic structure and function
- Relevance to energy availability and recovery

Unit IV: Endocrine System

- Major glands
- Hormonal role in growth, metabolism, and training adaptation

Unit V: Surface Anatomy and Movement

- Functional regions of the body
- Anatomical basis of sport-specific actions

Suggested Readings

- Tortora, G.J. & Derrickson, B. Principles of Anatomy and Physiology. Wiley.
- Marieb, E.N. & Hoehn, K. Human Anatomy & Physiology. Pearson.
- McMinn, R.M.H. Last's Anatomy: Regional and Applied. Elsevier.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-202 – Human Anatomy - II (Practical)

Semester	SEMESTER II
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Note: Paired with Theory above.

Course Objective

To develop foundational knowledge and applied skill in human anatomy

Learning Outcomes

- Explain human anatomy - ii (practical) and its relevance to human anatomy
- Apply the concepts of human anatomy - ii in practical sports science contexts.

Unit-wise Syllabus

Practical / Field Work

- Identification of major internal organs through models/ charts
- Surface landmarks and muscle mapping
- Joint movements and ROM observation
- Anatomical demonstration of sport postures and actions
- Basic case-based anatomical interpretation

Suggested Readings

- Tortora, G.J. & Derrickson, B. Principles of Anatomy and Physiology. Wiley.
- Marieb, E.N. & Hoehn, K. Human Anatomy & Physiology. Pearson.
- McMinn, R.M.H. Last's Anatomy: Regional and Applied. Elsevier.

Assessment Pattern

Continuous Internal Assessment: 60% (practical file/record, viva-voce, in-lab performance); End-Semester Practical Examination: 40%.

BSS-203 – Human Physiology - II (Theory)

Semester	SEMESTER II
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Note: Paired with Practical below; Theory 30% / Practical 70% weightage of combined course marks.

Course Objective

To understand body systems in relation to exercise, adaptation, and performance.

Learning Outcomes

- Explain cardiovascular physiology and its relevance to human physiology
- Describe respiratory physiology and its relevance to human physiology
- Apply muscle physiology and its relevance to human physiology
- Analyse nervous control and its relevance to human physiology

Unit-wise Syllabus

Unit I: Cardiovascular Physiology

- Cardiac cycle
- Heart rate, stroke volume, cardiac output
- Exercise response

Unit II: Respiratory Physiology

- Ventilation
- Oxygen uptake
- Breathing during exercise

Unit III: Muscle Physiology

- Muscle contraction
- Energy systems overview
- Fatigue

Unit IV: Nervous Control

- Motor units
- Coordination
- Reflexes and reaction

Unit V: Exercise Adaptation

- Acute and chronic adaptations to training
- Effects of regular exercise

Suggested Readings

- Guyton, A.C. & Hall, J.E. Textbook of Medical Physiology. Elsevier.
- McArdle, W.D., Katch, F.I. & Katch, V.L. Exercise Physiology: Nutrition, Energy, and Human Performance. Wolters Kluwer.
- Wilmore, J.H. & Costill, D.L. Physiology of Sport and Exercise. Human Kinetics.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-204 – Human Physiology - II (Practical)

Semester	SEMESTER II
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Note: Paired with Theory above.

Course Objective

To develop foundational knowledge and applied skill in human physiology

Learning Outcomes

- Explain human physiology - ii (practical) and its relevance to human physiology
- Apply the concepts of human physiology - ii in practical sports science contexts.

Unit-wise Syllabus

Practical / Field Work

- Pulse and heart rate recovery
- Blood pressure recording
- Breath-hold and respiratory observation
- Reaction time testing
- Fatigue and recovery experiments
- Exercise response charting

Suggested Readings

- Guyton, A.C. & Hall, J.E. Textbook of Medical Physiology. Elsevier.
- McArdle, W.D., Katch, F.I. & Katch, V.L. Exercise Physiology: Nutrition, Energy, and Human Performance. Wolters Kluwer.
- Wilmore, J.H. & Costill, D.L. Physiology of Sport and Exercise. Human Kinetics.

Assessment Pattern

Continuous Internal Assessment: 60% (practical file/record, viva-voce, in-lab performance); End-Semester Practical Examination: 40%.

BSS-205 – Sports Performance Testing in Ball Games

Semester	SEMESTER II
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Course Objective

To introduce performance testing methods specific to ball games.

Learning Outcomes

- Explain performance components and its relevance to sports performance testing in ball games.
- Describe test selection and its relevance to sports performance testing in ball games.
- Apply basketball testing and its relevance to sports performance testing in ball games.
- Analyse handball and volleyball testing and its relevance to sports performance testing in ball games.

Unit-wise Syllabus

Unit I: Performance Components

- Speed, agility, coordination, endurance, power, reaction

Unit II: Test Selection

- Valid and sport-specific test battery design

Unit III: Basketball Testing

- Vertical jump
- Dribbling speed
- Passing accuracy
- Agility tests

Unit IV: Handball and Volleyball Testing

- Throwing accuracy
- Jumping ability
- Reaction time
- Movement efficiency

Unit V: Recording and Interpretation

- Norms
- Comparative analysis
- Profiling athletes

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment: 60% (practical file/record, viva-voce, in-lab performance); End-Semester Practical Examination: 40%.

BSS-206 – Communication Skills – II

Semester	SEMESTER II
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Note: SKILL DEVELOPMENT course; continuation of Communication Skills – I.

Course Objective

To build on foundational communication skills with emphasis on professional, persuasive and sport-specific communication.

Learning Outcomes

- Explain advanced verbal communication and its relevance to communication skills
- Describe advanced written communication and its relevance to communication skills
- Apply group and team communication and its relevance to communication skills
- Analyse media and public communication and its relevance to communication skills

Unit-wise Syllabus

Unit I: Advanced Verbal Communication

- Persuasive speaking
- Presentation techniques

Unit II: Advanced Written Communication

- Report and proposal writing
- Academic writing basics

Unit III: Group and Team Communication

- Meetings, negotiation and teamwork communication

Unit IV: Media and Public Communication

- Interacting with press and media in sport

Unit V: Cross-Cultural Communication

- Communicating in diverse and international sport settings

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment only, based on assignments, presentations, participation and skill demonstration (100%).

BSS-207 - Foreign Language - II

Semester	SEMESTER II
Credits	1
Lecture Hours	0
Practical / Field Hours	15

Note: SKILL DEVELOPMENT course; continuation of Foreign Language – I.

Course Objective

To build on elementary language skills toward functional conversational competence.

Learning Outcomes

- Explain grammar continuation and its relevance to foreign language
- Describe extended vocabulary and its relevance to foreign language
- Apply conversational fluency and its relevance to foreign language
- Analyse reading comprehension and its relevance to foreign language

Unit-wise Syllabus

Unit I: Grammar Continuation

- Additional tenses and sentence patterns

Unit II: Extended Vocabulary

- Sport, travel and everyday vocabulary

Unit III: Conversational Fluency

- Extended dialogues and role play

Unit IV: Reading Comprehension

- Short articles and instructions

Unit V: Applied Communication

- Language use in sport/travel contexts

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment only, based on assignments, presentations, participation and skill demonstration (100%).

BSS-208 – Mind Management and Human Values - II

Semester	SEMESTER II
Credits	1
Lecture Hours	0
Practical / Field Hours	15

Course Objective

To strengthen resilience, ethical thinking, and interpersonal competence.

Learning Outcomes

- Explain self-leadership and its relevance to mind management and human values
- Describe emotional intelligence and its relevance to mind management and human values
- Apply team behaviour and its relevance to mind management and human values
- Analyse ethics and sportsmanship and its relevance to mind management and human values

Unit-wise Syllabus

Unit I: Self-Leadership

- Habits, discipline, responsibility

Unit II: Emotional Intelligence

- Self-awareness
- Managing stress and setbacks

Unit III: Team Behaviour

- Cooperation, communication, conflict resolution

Unit IV: Ethics and Sportsmanship

- Fair play, respect, inclusiveness

Unit V: Human Values in Personal Life

- Decision-making and character building

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment only, based on assignments, presentations, participation and skill demonstration (100%).

BSS-209 – Transdisciplinary Project-Centric Learning – II

Semester	SEMESTER II
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Note: EXPERIENTIAL LEARNING course; builds on Transdisciplinary Project-Centric Learning – I.

Course Objective

To extend transdisciplinary, project-based learning by applying knowledge from multiple disciplines to a defined sport-related problem.

Learning Outcomes

- Explain problem identification and its relevance to transdisciplinary project-centric learning
- Describe literature and context review and its relevance to transdisciplinary project-centric learning
- Apply project planning and its relevance to transdisciplinary project-centric learning
- Analyse execution and data/content collection and its relevance to transdisciplinary project-centric learning

Unit-wise Syllabus

Unit I: Problem Identification

- Selecting a transdisciplinary problem linked to sport/health/technology

Unit II: Literature and Context Review

- Gathering background information across disciplines

Unit III: Project Planning

- Setting objectives, timelines and resources

Unit IV: Execution and Data/Content Collection

- Field or desk-based data collection

Unit V: Presentation and Reflection

- Structured presentation and peer/faculty feedback

Sports Science Focus

Team-based, faculty-mentored project applying knowledge across sports science sub-disciplines.

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Evaluation through progress reviews, project report/dissertation, and viva-voce examination before an internal-external panel.

BSS-210 – Summer Internship

Semester	SEMESTER II
Credits	6
Lecture Hours	0
Practical / Field Hours	90

Note: EXPERIENTIAL LEARNING course; duration and host organisation as approved by the department.

Course Objective

To provide first-hand exposure to real-world sports, fitness or wellness environments and apply classroom learning in a supervised setting.

Learning Outcomes

- Explain orientation and placement and its relevance to summer internship.
- Describe supervised practical exposure and its relevance to summer internship.
- Apply skill application and its relevance to summer internship.
- Analyse reflective documentation and its relevance to summer internship.

Unit-wise Syllabus

Component I: Orientation and Placement

- Induction at host organisation
- Understanding organisational structure and role

Component II: Supervised Practical Exposure

- Assisting in ongoing sport/fitness/health-related activities

Component III: Skill Application

- Applying classroom knowledge (anatomy, physiology, testing) under supervision

Component IV: Reflective Documentation

- Maintaining a daily/weekly logbook

Component V: Reporting

- Preparing a structured internship report and presentation

Sports Science Focus

Exposure to sports academies, fitness centres, clinics, schools or sports organisations.

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Evaluation based on organisation/mentor feedback, logbook/attendance, internship report, and viva-voce/presentation on return.

SEMESTER III

BSS-301 – Basics of Kinesiology and Biomechanics (Theory and Practical)

Semester	SEMESTER III
Credits	4
Lecture Hours	30
Practical / Field Hours	30

Note: Combined Theory + Practical course.

Course Objective

To study human movement mechanics and apply it to sport technique and injury prevention.

Learning Outcomes

- Explain basics of kinesiology and biomechanics (theory and practical) and its relevance to basics of kinesiology and biomechanics.
- Apply the concepts of basics of kinesiology and biomechanics in practical sports science contexts.

Unit-wise Syllabus

Theory Units

- Introduction to kinesiology and biomechanics
- Planes, axes, and movements
- Levers and force systems
- Joint actions in sports
- Centre of gravity, balance, stability

Practical / Field Work

- Analysis of walking, running, jumping, throwing
- Observation of technique using simple tools/video
- Joint angle and movement identification
- Force and motion demonstration experiments

Suggested Readings

- Hall, S.J. Basic Biomechanics. McGraw-Hill.
- Hamill, J. & Knutzen, K.M. Biomechanical Basis of Human Movement. Wolters Kluwer.
- Bartlett, R. Introduction to Sports Biomechanics. Routledge.

Assessment Pattern

Continuous Internal Assessment: 40% of theory + practical record; Theory weightage 40%, Practical weightage 60% of total course marks; End-Semester Theory and Practical Examination as applicable.

BSS-302 – Biochemistry and Ergogenics

Semester	SEMESTER III
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To introduce biochemical foundations of energy production and performance enhancement methods.

Learning Outcomes

- Explain basic biochemistry and its relevance to biochemistry and ergogenics
- Describe energy metabolism and its relevance to biochemistry and ergogenics
- Apply exercise biochemistry and its relevance to biochemistry and ergogenics
- Analyse ergogenic aids and its relevance to biochemistry and ergogenics

Unit-wise Syllabus

Unit I: Basic Biochemistry

- Carbohydrates, fats, proteins
- Water and electrolytes

Unit II: Energy Metabolism

- ATP and energy systems
- Substrate use in exercise

Unit III: Exercise Biochemistry

- Metabolic changes during activity
- Lactate and fatigue

Unit IV: Ergogenic Aids

- Nutritional, mechanical, psychological, and physiological ergogenics
- Legal and ethical considerations

Unit V: Doping Awareness

- Concept of banned substances
- Athlete responsibility and fair play

Suggested Readings

- Maughan, R.J. & Gleeson, M. The Biochemical Basis of Sports Performance. Oxford University Press.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-303 – Motor Control, Learning and Skill Acquisition

Semester	SEMESTER III
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To understand how movement is controlled and how sport skills are learned and refined.

Learning Outcomes

- Explain motor control and its relevance to motor control, learning and skill acquisition.
- Describe motor learning and its relevance to motor control, learning and skill acquisition.
- Apply skill acquisition and its relevance to motor control, learning and skill acquisition.
- Analyse learning environment and its relevance to motor control, learning and skill acquisition.

Unit-wise Syllabus

Unit I: Motor Control

- Nervous system and movement control
- Feedback and feedforward

Unit II: Motor Learning

- Stages of learning
- Practice and repetition

Unit III: Skill Acquisition

- Closed and open skills
- Gross and fine skills

Unit IV: Learning Environment

- Motivation, feedback, demonstration, correction

Unit V: Application in Sports

- Developing technique in games and athletics

Suggested Readings

- Schmidt, R.A. & Lee, T.D. Motor Learning and Performance. Human Kinetics.
- Magill, R.A. & Anderson, D. Motor Learning and Control: Concepts and Applications. McGraw-Hill.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-304 – Basics of Exercise Physiology

Semester	SEMESTER III
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To understand physiological responses and adaptations to exercise.

Learning Outcomes

- Explain exercise and the body and its relevance to basics of exercise physiology.
- Describe cardiovascular and respiratory responses and its relevance to basics of exercise physiology.
- Apply muscular response and its relevance to basics of exercise physiology.
- Analyse energy systems and its relevance to basics of exercise physiology.

Unit-wise Syllabus

Unit I: Exercise and the Body

- Acute responses to exercise

Unit II: Cardiovascular and Respiratory Responses

- Heart rate, ventilation, oxygen delivery

Unit III: Muscular Response

- Strength, endurance, fatigue

Unit IV: Energy Systems

- Aerobic and anaerobic energy production

Unit V: Training Adaptation

- Effects of regular exercise on body systems

Suggested Readings

- Guyton, A.C. & Hall, J.E. Textbook of Medical Physiology. Elsevier.
- McArdle, W.D., Katch, F.I. & Katch, V.L. Exercise Physiology: Nutrition, Energy, and Human Performance. Wolters Kluwer.
- Wilmore, J.H. & Costill, D.L. Physiology of Sport and Exercise. Human Kinetics.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-305 – Sports Performance Testing in Racket Games

Semester	SEMESTER III
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Course Objective

To develop foundational knowledge and applied skill in sports performance testing in racket games.

Learning Outcomes

- Explain performance demands and its relevance to sports performance testing in racket games.
- Describe badminton testing and its relevance to sports performance testing in racket games.
- Apply tennis testing and its relevance to sports performance testing in racket games.
- Analyse testing protocols and its relevance to sports performance testing in racket games.

Unit-wise Syllabus

Unit I: Performance Demands

- Agility, speed, reaction, coordination, endurance

Unit II: Badminton Testing

- Footwork agility
- Reaction time
- Smash power
- Stroke accuracy

Unit III: Tennis Testing

- Serve accuracy
- Court movement speed
- Endurance and shot consistency

Unit IV: Testing Protocols

- Test administration and safety

Unit V: Data Interpretation

- Profiling and training recommendations

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment: 60% (practical file/record, viva-voce, in-lab performance); End-Semester Practical Examination: 40%.

BSS-306 – AI Tools for Data Analysis

Semester	SEMESTER III
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Note: Specialization 2 – Sports Performance Enhancement (AI & Data Analytics).

Course Objective

To introduce students to AI-based tools for organising, analysing and interpreting sports and fitness data.

Learning Outcomes

- Explain introduction to ai tools and its relevance to ai tools for data analysis.
- Describe data preparation with ai assistance and its relevance to ai tools for data analysis.
- Apply AI-assisted analysis and its relevance to ai tools for data analysis.
- Analyse visualization tools and its relevance to ai tools for data analysis.

Unit-wise Syllabus

Unit I: Introduction to AI Tools

- Overview of AI-based analysis tools relevant to sport

Unit II: Data Preparation with AI Assistance

- Cleaning and structuring datasets using AI tools

Unit III: AI-Assisted Analysis

- Automated descriptive analysis and pattern detection

Unit IV: Visualization Tools

- AI-assisted dashboards and visual reporting

Unit V: Applications in Sports Science

- Using AI tools for training load, testing and performance data

Practical / Field Work

- Hands-on use of AI-based spreadsheet/analytics tools on sample sports datasets
- Building a simple AI-assisted report

Sports Science Focus

Specialization 2 – Sports Performance Enhancement (Using AI and Data Analytics).

Suggested Readings

- Alamar, B. Sports Analytics: A Guide for Coaches, Managers, and Other Decision Makers. Columbia University Press.
- Baumer, B.S., Matthews, G.J. & Zimbalist, A. Introduction to Sports Analytics and Data Science.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-307 – Sports Data Analytics

Semester	SEMESTER III
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To introduce the use of data for performance monitoring and decision-making in sports.

Learning Outcomes

- Explain introduction to sports data and its relevance to sports data analytics.
- Describe data collection and its relevance to sports data analytics.
- Apply data cleaning and organization and its relevance to sports data analytics.
- Analyse data visualization and its relevance to sports data analytics.

Unit-wise Syllabus

Unit I: Introduction to Sports Data

- Data sources and types

Unit II: Data Collection

- Match data, training data, biometric data

Unit III: Data Cleaning and Organization

- Basic data preparation

Unit IV: Data Visualization

- Dashboards, charts, trend lines

Practical / Field Work

- Training load, player comparison, injury trend analysis

Suggested Readings

- Alamar, B. Sports Analytics: A Guide for Coaches, Managers, and Other Decision Makers. Columbia University Press.
- Baumer, B.S., Matthews, G.J. & Zimbalist, A. Introduction to Sports Analytics and Data Science.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-308 – Sports Performance Analysis

Semester	SEMESTER III
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To train students in observing, recording, and analyzing sport performance.

Learning Outcomes

- Explain meaning and scope and its relevance to sports performance analysis

- Describe observation methods and its relevance to sports performance analysis
- Apply key performance indicators and its relevance to sports performance analysis
- Analyse feedback systems and its relevance to sports performance analysis

Unit-wise Syllabus

Unit I: Meaning and Scope

- Performance analysis in modern sport

Unit II: Observation Methods

- Notational analysis, video analysis

Unit III: Key Performance Indicators

- Sport-specific metrics

Unit IV: Feedback Systems

- Report generation and athlete feedback

Unit V: Applications

- Individual and team performance improvement

Suggested Readings

- Hughes, M. & Franks, I.M. The Essentials of Performance Analysis. Routledge.
- O'Donoghue, P. Research Methods for Sports Performance Analysis. Routledge.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-309 – Transdisciplinary Project-Centric Learning – III

Semester	SEMESTER III
Credits	2
Lecture Hours	0
Practical/ Field Hours	30

Note: EXPERIENTIAL LEARNING course.

Course Objective

To advance transdisciplinary project work, integrating deeper technical inputs from sports science sub-disciplines into a live problem.

Learning Outcomes

- Explain advanced problem framing and its relevance to transdisciplinary project-centric learning
- Describe methodology design and its relevance to transdisciplinary project-centric learning
- Apply implementation and its relevance to transdisciplinary project-centric learning
- Analyse analysis and interpretation and its relevance to transdisciplinary project-centric learning

Unit-wise Syllabus

Unit I: Advanced Problem Framing

- Refining project scope using semester-III learning

Unit II: Methodology Design

- Choosing appropriate data/observation methods

Unit III: Implementation

- Carrying out fieldwork/ data collection/prototype work

Unit IV: Analysis and Interpretation

- Basic analysis of collected data/content

Unit V: Presentation and Documentation

- Structured report and presentation to a faculty panel

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Evaluation through progress reviews, project report/ dissertation, and viva-voce examination before an internal-external panel.

BSS-310 - CMAPS - Industry

Semester	SEMESTER III
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Note: Industry-linked mentorship and employability module.

Course Objective

To connect students with industry practice through a structured Career Mapping and Industry Preparedness (CMAPS) module, building employability and industry orientation.

Learning Outcomes

- Explain industry landscape and its relevance to CMAPS - Industry.
- Describe career mapping and its relevance to CMAPS - Industry.
- Apply industry interaction and its relevance to CMAPS - Industry.
- Analyse employability skills and its relevance to CMAPS - Industry.

Unit-wise Syllabus

Unit I: Industry Landscape

- Overview of the sports, fitness and wellness industry

Unit II: Career Mapping

- Self-assessment, career pathways in sports science

Unit III: Industry Interaction

- Guest lectures, industry visits, mentor sessions

Unit IV: Employability Skills

- Resume building, interview skills, workplace readiness

Unit V: Reflection and Planning

- Individual career action plan

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment only, based on assignments, presentations, participation and skill demonstration (100%).

SEMESTER IV

BSS-401 – Sports Anthropometry

Semester	SEMESTER IV
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To measure and interpret body dimensions relevant to sports participation and performance.

Learning Outcomes

- Explain anthropometry basics and its relevance to sports anthropometry.
- Describe measurements and its relevance to sports anthropometry.
- Apply body composition and its relevance to sports anthropometry.
- Analyse sports application and its relevance to sports anthropometry.

Unit-wise Syllabus

Unit I: Anthropometry Basics

- Meaning and importance

Unit II: Measurements

- Height, weight, limb lengths, girths, skinfolds

Unit III: Body Composition

- Lean mass and fat mass concepts

Unit IV: Sports Application

- Somatotype and sport suitability

Unit V: Recording and Interpretation

- Profile building and comparisons

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-402 – Sports Training

Semester	SEMESTER IV
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Note: Specialization 1 – Sports Coaching.

Course Objective

To develop understanding of structured training methods for sports performance.

Learning Outcomes

- Explain principles of training and its relevance to sports training.
- Describe training methods and its relevance to sports training.
- Apply planning and its relevance to sports training.
- Analyse periodization and its relevance to sports training.

Unit-wise Syllabus

Unit I: Principles of Training

- Overload, specificity, progression, individuality

Unit II: Training Methods

- Endurance, speed, strength, flexibility, skill training

Unit III: Planning

- Warm-up, main session, recovery

Unit IV: Periodization

- Training cycles and season planning

Unit V: Monitoring

- Training load and recovery

Suggested Readings

- Bompa, T.O. & Buzzichelli, C. Periodization: Theory and Methodology of Training. Human Kinetics.
- Baechle, T.R. & Earle, R.W. (NSCA) Essentials of Strength Training and Conditioning. Human Kinetics.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-403 – Talent Identification and Long-Term Athlete Development

Semester	SEMESTER IV
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Note: Specialization 1 – Sports Coaching.

Course Objective

To understand how talent is identified and developed over time in sport.

Learning Outcomes

- Explain concept of talent and its relevance to talent identification and long-term athlete development.
- Describe talent identification and its relevance to talent identification and long-term athlete development.
- Apply Itad model and its relevance to talent identification and long-term athlete development.
- Analyse growth and maturation and its relevance to talent identification and long-term athlete development.

Unit-wise Syllabus

Unit I: Concept of Talent

- Potential, performance, promise

Unit II: Talent Identification

- Physical, technical, psychological indicators

Unit III: LTAD (Long Term Athlete Development) Model

- Stages of athlete development

Unit IV: Growth and Maturation

- Developmental differences and training implications

Unit V: Applications

- School, academy, and club systems

Suggested Readings

- Bompa, T.O. & Buzzichelli, C. Periodization: Theory and Methodology of Training. Human Kinetics.
- Baechle, T.R. & Earle, R.W. (NSCA) Essentials of Strength Training and Conditioning. Human Kinetics.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-404 – E-Sports - I

Semester	SEMESTER IV
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Note: Specialization 4 – E-Sports.

Course Objective

To introduce the ecosystem, structure, and performance demands of e-sports.

Learning Outcomes

- Explain introduction to e-sports and its relevance to e-sports
- Describe game types and platforms and its relevance to e-sports
- Apply e-sports performance factors and its relevance to e-sports
- Analyse training and teamwork and its relevance to e-sports

Unit-wise Syllabus

Unit I: Introduction to E-Sports

- Definition, growth, and scope

Unit II: Game Types and Platforms

- Genres, devices, competition formats

Unit III: E-Sports Performance Factors

- Reaction, cognition, decision-making, endurance

Unit IV: Training and Teamwork

- Practice routines, communication, strategy

Unit V: Ethics and Wellbeing

- Screen time, posture, eye strain, responsible gaming

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-405 – Sports Performance Testing in Combative Games

Semester	SEMESTER IV
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Course Objective

To develop foundational knowledge and applied skill in sports performance testing in combative games.

Learning Outcomes

- Explain demands of combative sports and its relevance to sports performance testing in combative games.
- Describe wrestling tests and its relevance to sports performance testing in combative games.
- Apply judo tests and its relevance to sports performance testing in combative games.
- Analyse test protocols and its relevance to sports performance testing in combative games.

Unit-wise Syllabus

Unit I: Demands of Combative Sports

- Strength, power, grip, agility, balance, reaction

Unit II: Wrestling Tests

- Grip strength
- Anaerobic power
- Balance and agility

Unit III: Judo Tests

- Explosive strength
- Reaction and movement control
- Specific fitness assessment

Unit IV: Test Protocols

- Standardization and safety

Unit V: Performance Profiling

- Interpreting results for training

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment: 60% (practical file/record, viva-voce, in-lab performance); End-Semester Practical Examination: 40%.

BSS-406 – Kinesiology and Biomechanics

Semester	SEMESTER IV
Credits	2
Lecture Hours	30

Note: Intermediate-level course; distinct from 'Basics' (Sem III) and 'Advanced' (Sem VII) courses.

Course Objective

To build an intermediate, applied understanding of kinesiology and biomechanics beyond the Semester III foundation, with focus on sport technique analysis.

Learning Outcomes

- Explain review and extension of basic concepts and its relevance to kinesiology and biomechanics.
- Describe musculoskeletal mechanics and its relevance to kinesiology and biomechanics.
- Apply locomotion mechanics and its relevance to kinesiology and biomechanics.
- Analyse applied sport technique and its relevance to kinesiology and biomechanics.

Unit-wise Syllabus

Unit I: Review and Extension of Basic Concepts

- Recap of planes, axes, levers

Unit II: Musculoskeletal Mechanics

- Muscle action in multi-joint movement

Unit III: Locomotion Mechanics

- Gait, running and jumping mechanics

Unit IV: Applied Sport Technique

- Mechanical analysis of throwing, striking and kicking actions

Unit V: Introduction to Movement Assessment Tools

- Basic video and observational assessment methods

Sports Science Focus

Bridges Basics of Kinesiology and Biomechanics (Semester III) with the Advanced course offered in Semester VII.

Suggested Readings

- Hall, S.J. Basic Biomechanics. McGraw-Hill.
- Hamill, J. & Knutzen, K.M. Biomechanical Basis of Human Movement. Wolters Kluwer.
- Bartlett, R. Introduction to Sports Biomechanics. Routledge.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-407 - Transdisciplinary Project-Centric Learning - IV

Semester	SEMESTER IV
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Course Objective

To develop foundational knowledge and applied skill in transdisciplinary project-centric learning

Learning Outcomes

- Explain transdisciplinary project-centric learning and its relevance to transdisciplinary project-centric learning

- Apply the concepts of transdisciplinary project-centric learning in practical sports science contexts.

Unit-wise Syllabus

Suggested Readings

- Schmidt, R.A. & Lee, T.D. Motor Learning and Performance. Human Kinetics.
- Magill, R.A. & Anderson, D. Motor Learning and Control: Concepts and Applications. McGraw-Hill.

Assessment Pattern

Evaluation through progress reviews, project report/ dissertation, and viva-voce examination before an internal-external panel.

BSS-408 – Artificial Intelligence in Sports

Semester	SEMESTER IV
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To introduce AI tools and applications in sports performance, analysis, and management.

Learning Outcomes

- Explain ai basics and its relevance to artificial intelligence in sports.
- Describe ai in performance analysis and its relevance to artificial intelligence in sports.
- Apply ai in training and coaching and its relevance to artificial intelligence in sports.
- Analyse ai in sports business and its relevance to artificial intelligence in sports.

Unit-wise Syllabus

Unit I: AI Basics

- Concepts, types, and relevance

Unit II: AI in Performance Analysis

- Pattern recognition, prediction, tracking

Unit III: AI in Training and Coaching

- Personalized training insights

Unit IV: AI in Sports Business

- Fan engagement, content, operations

Unit V: Ethics and Limitations

- Data privacy, bias, human oversight

Suggested Readings

- Alamar, B. Sports Analytics: A Guide for Coaches, Managers, and Other Decision Makers. Columbia University Press.
- Baumer, B.S., Matthews, G.J. & Zimbalist, A. Introduction to Sports Analytics and Data Science.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-409 – Summer Internship

Semester	SEMESTER IV
Credits	6
Lecture Hours	0
Practical / Field Hours	90

Note: EXPERIENTIAL LEARNING course; second Summer Internship of the programme.

Course Objective

To deepen practical, supervised exposure to sports/fitness organisations, building on the Semester II internship with more advanced responsibilities.

Learning Outcomes

- Explain placement and role definition and its relevance to summer internship.
- Describe applied practice and its relevance to summer internship.
- Apply data/observation recording and its relevance to summer internship.
- Analyse reflective practice and its relevance to summer internship.

Unit-wise Syllabus

Component I: Placement and Role Definition

- Advanced placement in a sport/fitness/health organisation

Component II: Applied Practice

- Assisting in testing, training or rehabilitation programmes

Component III: Data/Observation Recording

- Structured recording of sessions and outcomes

Component IV: Reflective Practice

- Ongoing logbook and mentor feedback

Component V: Reporting and Presentation

- Comprehensive internship report and viva

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Evaluation based on organisation/mentor feedback, logbook/attendance, internship report, and viva-voce/presentation on return.

SEMESTER V

BSS-501 - E-Sports - II

Semester	SEMESTER V
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Note: Specialization 4 – E-Sports.

Course Objective

To study advanced aspects of e-sports performance and management.

Learning Outcomes

- Explain advanced game strategy and its relevance to e-sports
- Describe performance psychology and its relevance to e-sports
- Apply physical health in e-sports and its relevance to e-sports
- Analyse team and event management and its relevance to e-sports

Unit-wise Syllabus

Unit I: Advanced Game Strategy

- Analysis and tactics

Unit II: Performance Psychology

- Focus, stress, decision speed

Unit III: Physical Health in E-Sports

- Ergonomics, posture, injury prevention

Unit IV: Team and Event Management

- Tournament planning, communication

Unit V: Career and Industry

- Coaching, content creation, event operations

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-502 – Sports Digital Marketing

Semester	SEMESTER V
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To introduce digital promotion, branding, and audience engagement in sports.

Learning Outcomes

- Explain fundamentals and its relevance to sports digital marketing.
- Describe content creation and its relevance to sports digital marketing.
- Apply campaigns and its relevance to sports digital marketing.
- Analyse analytics and its relevance to sports digital marketing.

Unit-wise Syllabus

Unit I: Fundamentals

- Branding and digital presence

Unit II: Content Creation

- Social media posts, videos, storytelling

Unit III: Campaigns

- Audience targeting and engagement

Unit IV: Analytics

- Reach, impressions, engagement, conversion

Unit V: Sports Applications

- Clubs, athletes, academies, events

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-503 – Photo and Video Analysis

Semester	SEMESTER V
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Course Objective

To use visual analysis tools for technique correction and performance review.

Learning Outcomes

- Explain basics of visual analysis and its relevance to photo and video analysis.
- Describe photo analysis and its relevance to photo and video analysis.
- Apply video analysis and its relevance to photo and video analysis.
- Analyse software and tools and its relevance to photo and video analysis.

Unit-wise Syllabus

Unit I: Basics of Visual Analysis

- Observation, frame-by-frame review

Unit II: Photo Analysis

- Posture, position, alignment

Unit III: Video Analysis

- Technique, timing, movement phases

Unit IV: Software and Tools

- Basic editing and annotation

Unit V: Applications

- Coaching feedback and performance improvement

Suggested Readings

- Hughes, M. & Franks, I.M. The Essentials of Performance Analysis. Routledge.
- O'Donoghue, P. Research Methods for Sports Performance Analysis. Routledge.

Assessment Pattern

Continuous Internal Assessment: 60% (practical file/record, viva-voce, in-lab performance); End-Semester Practical Examination: 40%.

BSS-504 – Strength and Conditioning - I (Theory)

Semester	SEMESTER V
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Note: Specialization 3 – Fitness and Exercise Science; paired with Practical below; Theory 40% / Practical 60% weightage.

Course Objective

To introduce foundational concepts of strength and conditioning in sport.

Learning Outcomes

- Explain introduction and its relevance to strength and conditioning
- Describe strength training principles and its relevance to strength and conditioning
- Apply conditioning and its relevance to strength and conditioning
- Analyse program design and its relevance to strength and conditioning

Unit-wise Syllabus

Unit I: Introduction

- Role of S&C in athlete development

Unit II: Strength Training Principles

- Types of strength, loading concepts

Unit III: Conditioning

- Fitness development for sport

Unit IV: Program Design

- Warm-up, exercises, progression

Unit V: Safety and Supervision

- Technique, spotting, recovery

Suggested Readings

- Bompa, T.O. & Buzzichelli, C. Periodization: Theory and Methodology of Training. Human Kinetics.
- Baechle, T.R. & Earle, R.W. (NSCA) Essentials of Strength Training and Conditioning. Human Kinetics.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-505 – Strength and Conditioning - I (Practical)

Semester	SEMESTER V
Credits	1
Lecture Hours	0
Practical / Field Hours	15

Note: Specialization 3 – Fitness and Exercise Science; paired with Theory above.

Course Objective

To develop foundational knowledge and applied skill in strength and conditioning

Learning Outcomes

- Explain strength and conditioning - i (practical) and its relevance to strength and conditioning
- Apply the concepts of strength and conditioning - i in practical sports science contexts.

Unit-wise Syllabus

Practical / Field Work

- Warm-up routines
- Bodyweight training
- Resistance exercises
- Core training
- Flexibility drills
- Basic conditioning circuits

Suggested Readings

- Bompa, T.O. & Buzzichelli, C. Periodization: Theory and Methodology of Training. Human Kinetics.
- Baechle, T.R. & Earle, R.W. (NSCA) Essentials of Strength Training and Conditioning. Human Kinetics.

Assessment Pattern

Continuous Internal Assessment: 60% (practical file/record, viva-voce, in-lab performance); End-Semester Practical Examination: 40%.

BSS-506 – Sports Psychology and Sociology

Semester	SEMESTER V
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To understand mental and social dimensions of sport participation and performance.

Learning Outcomes

- Explain sports psychology basics and its relevance to sports psychology and sociology.
- Describe psychological skills and its relevance to sports psychology and sociology.
- Apply team psychology and its relevance to sports psychology and sociology.
- Analyse sports sociology and its relevance to sports psychology and sociology.

Unit-wise Syllabus

Unit I: Sports Psychology Basics

- Motivation, confidence, anxiety, concentration

Unit II: Psychological Skills

- Goal setting, imagery, self-talk, relaxation

Unit III: Team Psychology

- Group dynamics, leadership, communication

Unit IV: Sports Sociology

- Sport and society, culture, gender, inclusion

Unit V: Social Issues in Sport

- Violence, discrimination, media influence, ethics

Suggested Readings

- Weinberg, R.S. & Gould, D. Foundations of Sport and Exercise Psychology. Human Kinetics.
- Cox, R.H. Sport Psychology: Concepts and Applications. McGraw-Hill.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-507 – Transdisciplinary Project-Centric Learning – V

Semester	SEMESTER V
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Note: EXPERIENTIAL LEARNING course.

Course Objective

To pursue a more independent transdisciplinary project that synthesises specialization-track knowledge acquired so far.

Learning Outcomes

- Explain specialization-linked problem selection and its relevance to transdisciplinary project-centric learning
- Describe advanced methodology and its relevance to transdisciplinary project-centric learning
- Apply execution and its relevance to transdisciplinary project-centric learning
- Analyse critical analysis and its relevance to transdisciplinary project-centric learning

Unit-wise Syllabus

Unit I: Specialization-Linked Problem Selection

- Choosing a problem aligned with the student's specialization pathway

Unit II: Advanced Methodology

- Selecting suitable data/technical methods

Unit III: Execution

- Independent/team-based implementation with faculty mentorship

Unit IV: Critical Analysis

- Interpreting findings against existing practice

Unit V: Dissemination

- Formal presentation/report to a review panel

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Evaluation through progress reviews, project report/dissertation, and viva-voce examination before an internal-external panel.

BSS-508 – CAPSTONE

Semester	SEMESTER V
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Note: Culminating applied assignment for the specialization pathway chosen in Semesters III–V.

Course Objective

To integrate learning from the first two years into a focused capstone assignment demonstrating applied competence in the student's chosen specialization.

Learning Outcomes

- Explain capstone planning and its relevance to capstone.
- Describe application of core knowledge and its relevance to capstone.
- Apply implementation and its relevance to capstone.
- Analyse evaluation and feedback and its relevance to capstone.

Unit-wise Syllabus

Unit I: Capstone Planning

- Defining scope, objectives and specialization linkage

Unit II: Application of Core Knowledge

- Drawing on anatomy, physiology, biomechanics, training and analytics as relevant

Unit III: Implementation

- Executing the capstone task/case study/mini-project

Unit IV: Evaluation and Feedback

- Peer and faculty review

Unit V: Final Presentation

- Formal presentation of the capstone outcome

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Evaluation through progress reviews, project report/dissertation, and viva-voce examination before an internal-external panel.

SEMESTER VI

BSS-601 – Sports Massage Techniques

Semester	SEMESTER VI
Credits	2
Lecture Hours	15
Practical / Field Hours	15

Course Objective

To introduce the principles and basic practice of sports massage for recovery, relaxation and injury-risk reduction.

Learning Outcomes

- Explain introduction to sports massage and its relevance to sports massage techniques.
- Describe massage techniques and its relevance to sports massage techniques.
- Apply pre- and post-event massage and its relevance to sports massage techniques.
- Analyse massage for specific muscle groups and its relevance to sports massage techniques.

Unit-wise Syllabus

Unit I: Introduction to Sports Massage

- History, benefits, contraindications

Unit II: Massage Techniques

- Effleurage, petrissage, friction, tapotement

Unit III: Pre- and Post-Event Massage

- Application timing and technique selection

Unit IV: Massage for Specific Muscle Groups

- Lower limb, upper limb, back

Unit V: Safety and Hygiene

- Precautions, draping, professional conduct

Practical / Field Work

- Demonstration and supervised practice of basic massage strokes
- Pre-/post-session massage practicum on peers under supervision

Suggested Readings

- Prentice, W.E. Principles of Athletic Training: A Guide to Evidence-Based Clinical Practice. McGraw-Hill.
- Brukner, P. & Khan, K. Clinical Sports Medicine. McGraw-Hill.

Assessment Pattern

Continuous Internal Assessment: 60% (practical file/record, viva-voce, in-lab performance); End-Semester Practical Examination: 40%.

BSS-602 – Adaptive Sports Technology

Semester	SEMESTER VI
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To understand technology that supports athletes with disabilities and adaptive sport participation.

Learning Outcomes

- Explain introduction to adaptive sports and its relevance to adaptive sports technology.
- Describe adaptive equipment and its relevance to adaptive sports technology.
- Apply performance considerations and its relevance to adaptive sports technology.
- Analyse technology and innovation and its relevance to adaptive sports technology.

Unit-wise Syllabus

Unit I: Introduction to Adaptive Sports

- Inclusion and participation

Unit II: Adaptive Equipment

- Wheelchairs, prosthetics, assistive devices

Unit III: Performance Considerations

- Safety, fit, function, classification basics

Unit IV: Technology and Innovation

- Design improvements and accessibility

Practical / Field Work

- Inclusive sport settings and training support

Suggested Readings

- Departmental study material and curated readings provided by course faculty.
- Relevant open-access resources and case studies identified for each unit.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-603 – Sports Injuries and Rehabilitation

Semester	SEMESTER VI
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Note: Specialization 3 – Fitness and Exercise Science.

Course Objective

To provide sports-oriented understanding of common injuries, prevention, and basic rehabilitation principles.

Learning Outcomes

- Explain injury concepts and its relevance to sports injuries and rehabilitation.
- Describe common sports injuries and its relevance to sports injuries and rehabilitation.
- Apply injury prevention and its relevance to sports injuries and rehabilitation.
- Analyse rehabilitation principles and its relevance to sports injuries and rehabilitation.

Unit-wise Syllabus

Unit I: Injury Concepts

- Causes, types, and mechanisms

Unit II: Common Sports Injuries

- Sprain, strain, dislocation, overuse injuries

Unit III: Injury Prevention

- Warm-up, technique, load management, equipment

Unit IV: Rehabilitation Principles

- Recovery stages, mobility, strengthening, return to play

Unit V: First Response and Referral

- Immediate care and team coordination

Suggested Readings

- Prentice, W.E. Principles of Athletic Training: A Guide to Evidence-Based Clinical Practice. McGraw-Hill.
- Brukner, P. & Khan, K. Clinical Sports Medicine. McGraw-Hill.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-604 – Strength and Conditioning - II (Theory)

Semester	SEMESTER VI
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Note: Specialization 3 – Fitness and Exercise Science; paired with Practical below; Theory 30% / Practical 70% weightage.

Course Objective

To study advanced S&C methods and athlete-specific programming.

Learning Outcomes

- Explain advanced training concepts and its relevance to strength and conditioning
- Describe speed and power development and its relevance to strength and conditioning
- Apply sport-specific programming and its relevance to strength and conditioning
- Analyse monitoring and recovery and its relevance to strength and conditioning

Unit-wise Syllabus

Unit I: Advanced Training Concepts

- Periodization, overload management

Unit II: Speed and Power Development

- Plyometrics, sprint training, explosive work

Unit III: Sport-Specific Programming

- Team sport and individual sport needs

Unit IV: Monitoring and Recovery

- Training load, fatigue, sleep, recovery methods

Unit V: Performance Optimization

- Peak performance planning

Suggested Readings

- Bompa, T.O. & Buzzichelli, C. Periodization: Theory and Methodology of Training. Human Kinetics.

- Baechle, T.R. & Earle, R.W. (NSCA) Essentials of Strength Training and Conditioning. Human Kinetics.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-605 – Strength and Conditioning - II (Practical)

Semester	SEMESTER VI
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Note: Specialization 3 – Fitness and Exercise Science; paired with Theory above.

Course Objective

To develop foundational knowledge and applied skill in strength and conditioning

Learning Outcomes

- Explain strength and conditioning (practical) and its relevance to strength and conditioning
- Apply the concepts of strength and conditioning in practical sports science contexts.

Unit-wise Syllabus

Practical / Field Work

- Resistance training progression
- Plyometric drills
- Speed and agility sessions
- Core stability programming
- Load monitoring logs
- Recovery routines

Suggested Readings

- Bompa, T.O. & Buzzichelli, C. Periodization: Theory and Methodology of Training. Human Kinetics.
- Baechle, T.R. & Earle, R.W. (NSCA) Essentials of Strength Training and Conditioning. Human Kinetics.

Assessment Pattern

Continuous Internal Assessment: 60% (practical file/record, viva-voce, in-lab performance); End-Semester Practical Examination: 40%.

BSS-606 – Sports Nutrition

Semester	SEMESTER VI
Credits	2
Lecture Hours	30
Practical / Field Hours	0

Course Objective

To understand how nutrition supports training, recovery, and performance.

Learning Outcomes

- Explain nutrition basics and its relevance to sports nutrition.
- Describe energy needs in sport and its relevance to sports nutrition.
- Apply hydration and its relevance to sports nutrition.
- Analyse nutrition across sports and its relevance to sports nutrition.

Unit-wise Syllabus

Unit I: Nutrition Basics

- Macro and micronutrients

Unit II: Energy Needs in Sport

- Fueling before, during, after exercise

Unit III: Hydration

- Fluid balance and performance

Unit IV: Nutrition Across Sports

- Endurance, power, team, weight-category sports

Unit V: Supplements and Safety

- Common supplements, myths, ethical concerns

Suggested Readings

- Williams, M.H. Nutrition for Health, Fitness, and Sport. McGraw-Hill.
- Burke, L. & Deakin, V. Clinical Sports Nutrition. McGraw-Hill.

Assessment Pattern

Continuous Internal Assessment (CIA): 40% (assignments, tests, presentations); End-Semester Examination: 60%.

BSS-607 – Transdisciplinary Project-Centric Learning - VI

Semester	SEMESTER VI
Credits	2
Lecture Hours	0
Practical / Field Hours	30

Course Objective

To develop foundational knowledge and applied skill in transdisciplinary project-centric learning

Learning Outcomes

- Explain transdisciplinary project-centric learning and its relevance to transdisciplinary project-centric learning - vi.
- Apply the concepts of transdisciplinary project-centric learning in practical sports science contexts.

Unit-wise Syllabus

Suggested Readings

- Schmidt, R.A. & Lee, T.D. Motor Learning and Performance. Human Kinetics.
- Magill, R.A. & Anderson, D. Motor Learning and Control: Concepts and Applications. McGraw-Hill.

Assessment Pattern

Evaluation through progress reviews, project report/dissertation, and viva-voce examination before an internal-external panel.

BSS-608 – AI Product Design

Semester	SEMESTER VI
Credits	4
Lecture Hours	0
Practical / Field Hours	60

Course Objective

To enable students to design AI-enabled products/prototypes addressing needs in sport, fitness or wellness, integrating design thinking with AI capabilities.

Learning Outcomes

- Explain design thinking foundations and its relevance to ai product design.
- Describe ai capabilities for product design and its relevance to ai product design.
- Apply prototyping and its relevance to ai product design.
- Analyse testing and iteration and its relevance to ai product design.

Unit-wise Syllabus

Unit I: Design Thinking Foundations

- Empathy, problem definition, ideation for sport/fitness contexts

Unit II: AI Capabilities for Product Design

- Overview of AI features usable in product concepts (sensors, data, prediction)

Unit III: Prototyping

- Low-fidelity and digital prototyping of an AI-enabled sport/fitness product

Unit IV: Testing and Iteration

- User feedback, usability and iteration

Unit V: Pitch and Presentation

- Presenting the AI product concept to a panel

Practical / Field Work

- Team-based design sprint culminating in a working prototype/mock-up
- Structured pitch presentation

Sports Science Focus

Building on FAB 5 (Sem I) and AI-related electives in Semesters III-IV.

Suggested Readings

- Alamar, B. Sports Analytics: A Guide for Coaches, Managers, and Other Decision Makers. Columbia University Press.
- Baumer, B.S., Matthews, G.J. & Zimbalist, A. Introduction to Sports Analytics and Data Science.

Assessment Pattern

Evaluation through progress reviews, project report/dissertation, and viva-voce examination before an internal-external panel.
