



**FIRST-YEAR OF BACHELOR OF SCIENCE
PHYSICS OPEN ELECTIVE COURSE
REVISED SYLLABUS ACCORDING TO CBCS
NEP2020**

**COURSE TITLE: SPORTS SCIENCE
SEMESTER-I
W.E.F. 2023-2024**

**RECOMMENDED BY THE BOARD OF STUDIES IN PHYSICS
AND
APPROVED BY THE ACADEMIC COUNCIL**

Devrukh Shikshan Prasarak Mandal's

Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and
Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh.
Tal.Sanameshwar, Dist. Ratnagiri-415804, Maharashtra, India

Academic Council Item No: **03 dated 8 July 2023**

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangmeshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Bachelor of Science
Name of the Department	:	Physics
Name of the Class	:	First Year
Semester	:	First
No. of Credits	:	02
Title of the Course	:	Sports Science
Course Code	:	PHOE101
Name of the Vertical in adherence to NEP 2020	:	Generic/ Open Elective Courses (OE) (For Basket)
Eligibility for Admission	:	Any 12 th Pass seeking Admission to Degree Programme in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	UG
Pattern of Marks Distribution for SEE and CIA	:	60:40
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2023-2024
Ordinances /Regulations (if any)	:	

Syllabus for First Year of Bachelor of Science in Physics

(With effect from the academic year 2023-2024)

SEMESTER-I

Course Title: Sports Science

No. of Credits - 02

Type of Vertical: Open Elective Courses

COURSE CODE: PHOE101

Learning Outcomes Based on BLOOM's Taxonomy:

After completing the course, the learner will be able to...

Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CLO-01	Remember	Describe the relation between sports and science
CLO-02	Understand	Understand importance of physics in sports
CLO-03	Apply	Apply laws of physics in various sports activities
CLO-04	Analyze	Explain the components of diet
CLO-05	Evaluate	Evaluate the correct exercises for desired training goals
CLO-06	Create	Create a balanced diet plan for a desired goal

Syllabus for First Year of Bachelor of Science in Physics

(With effect from the academic year 2023-2024)

SEMESTER-I

Course Title: Sports Science

No. of Credits - 02

Type of Vertical: Open Elective Courses

COURSE CODE: PHOE101

COURSE CONTENT			
Module	Content	Credits	No. of Lectures
1	<p>Measurement: Physical quantities, Standards and Units, International system of Units, Standards of time, length and mass, Precision and significant figures</p> <p>Newton's laws of motion: Newton's first law. Force, mass. Newton's second law. Newton's third law, Mass and weight, geared bicycle, Applications of Newton's laws.</p> <p>Projectile motion: Shooting a falling target, Physics behind Shooting, Javelin throw and Discus throw.</p> <p>Conservation laws: Conservation of linear momentum, collisions – elastic and inelastic. Angular momentum. (Physics behind Carrom, Billiards, Racing)</p>	01	15
2	<p>Centre of mass: Physics behind Cycling, Rock climbing, Skating</p> <p>Gravitation: Origin, Newton's law of gravitation, Archimedes's principle, Buoyancy & Physics behind swimming</p> <p>Food and Nutrition: Macro and micronutrients, Concept of balanced diet, calorie content in food & requirements, Blood pressure. Problems due to the deficiency of macro or micro nutrients, BMI, Weight management, hazards of junk food</p> <p>Energy: Different forms of Energy</p> <p>Physical exercises: Types of exercises, Calisthenics, Importance of warm-up, cooling down and stretching, heart rate zones, High Intensity Interval Training (HIIT), yoga & meditation</p>	01	15
	Total	02	30

Suggested Activities

1. Identify the methods of measurement of time, length and mass from ancient time and build models for them. (Reference : History of measurement - Wikipedia https://en.wikipedia.org/wiki/History_of_measurement)
2. Identify Physics principles behind various Sports activities.
<https://www.real-world-physics-problems.com/physics-of-sports.html>
3. List the difficulties experienced in Gymnastics, Cycling and Weight lifting.
4. List the difficulties experienced in swimming.
5. Learn breathing exercises.
6. Write an essay on Physical health v/s Mental health or conduct a debate on Physical health v/s Mental health.

Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce and Vid. Dadasaheb Pitre Science College, Devrukh (An Autonomous College Affiliated with University of Mumbai)

Text Books

1. Yakov Perelman. Physics for Entertainment. Createspace Independent Pub, 2010.
2. Yakov Perelman. Physics Everywhere. Prodinova Publishers, 2014.
3. Yakov Perelman. Mechanics for Entertainment. Prodinova Publishers, 2014.
4. Vassilios McInnes Spathopoulos. An Introduction to the Physics of Sports. Createspace Independent Publishing Platform, 2013.
5. Walter Lewin. For the Love of Physics. Taxmann Publications Pvt. Ltd., 2012.
6. Swaminathan M. Handbook of Food and Nutrition. Bangalore Press. 2012.
7. Srilakshmi B. Food Science. New Age International Pub. 2015.

Internet Resources for Reference: Internet resources

<https://www.topendsports.com/biomechanics/physics.htm>

<https://www.real-world-physics-problems.com/physics-of-sports.html>

<https://www.healthline.com/>

<https://www.mayoclinic.org/>

<https://www.who.int/news-room/>

Access to the Course

The course is available for all the students admitted for Bachelor of Arts and Commerce faculties.

Methods of Assessment

The assessment pattern would be 60:40, 60% for Semester End Examination (SEE) and 40% for Continuous Internal Assessment (CIA). The structure of the SEE and CIA would be as recommended by the Board of Studies and approved by the Board of Examination and the Academic Council of the college.