



Hindi Vidya Prachar Samiti's
Ramniranjan Jhunjhunwala College
of Arts, Science & Commerce
(Empowered Autonomous College)
Affiliated to
UNIVERSITY OF MUMBAI

Syllabus for S.Y.B.Sc ZOOLOGY(under NEP)
Vertical under NEP: Vocational Skill Course (VSC)
Title: BASICS IN MEDICAL DIAGNOSTICS
COURSE CODE: RJVSCZOO241

(REVISED in 2024-2025 in alignment with the NEP 2020 facilitating the inter-and multidisciplinary learning and multiple entry and exit of the students)

(CBCS 2024-2025)

PREAMBLE

The National Education Policy 2020 aims at imparting skill-based learning and caters to the multiple entry and exit facility for the students thus empowering them to acquire knowledge at their pace. In the three-year UG program, the student has two exit options. Students also have the option of choosing the Honors program of four years study in a given discipline and later converting it to five-year integrated PG degree program. As an undergraduate student, he/she learns the core subject (Major), subject complementing the core subject (Minor), a course from other discipline (OEC or GEC) Vocational and Skill Enhancement course from the Major (VSEC). The remaining verticals under NEP 2020 are IKS (Indian Knowledge System), AEC (Ability Enhancement Course), VEC (Value Enhancement Course) and with progressive three years of UG, student also completes at different levels OJT (On Job Training), FP (Field Projects), CEP (Community Engagement Program), RP (Research Project) which helps him/her in understanding their roots, application of the knowledge for the benefit of self and the society. Vertical CC (Co-curricular activities and activities related to yoga and human well-being) helps in preparing youth with good character and interpersonal relationships.

The subject of Zoology offers the basic understanding about the vast diversity of the animal kingdom across the globe. It enables the students to strengthen their knowledge in Animal Sciences and in the other allied branches of Zoology. Keeping the interest of learner in mind, the syllabus has been carefully designed. It has a balance of the classical aspects of Zoology which includes topics like taxonomy, ecology, ethology, developmental biology, physiology, fishery science. The syllabus also includes applied subjects like biochemistry, pathology, immunology.

The undergraduate curriculum has been meticulously designed by considering the need for the subject development, industry requirement, research outlook, competitive exams and entrepreneurship skills. Each unit included in the syllabus has clearly defined objectives. It focuses on outcome-based learning. It aims at inculcating the critical thinking, enhancing the analytical ability, developing writing skills of the students. The syllabus includes field trips to ecological habitats, national parks, sanctuaries, natural history museum, reputed research institutes and industries to widen the student's horizon. The students are encouraged to participate in various project-based activities.

Owing to the current needs of the industry and other sectors, the syllabi is designed in a manner that the learner will be able to apply the knowledge and skills acquired in varied fields. The course encourages a sense of responsibility and empathy towards all living beings, promoting sustainable practices in the learner.

PROGRAMME OUTCOMES (PO) OF UNDERGRADUATE DEGREE PROGRAMMES

Program outcome refers to the overall characteristic an individual is supposed to acquire on completion of the three-year degree program in Bachelor of Science. The attributes based on acquisition, accumulation, and processing of knowledge of the subject are transferable beyond the discipline and useful in different domains of life.

Critical Thinking: Concepts, methodology and ability to formulate questions stimulate the inquisitiveness and critical thinking amongst the students.

Scientific Temperament: The nurturing of the young minds to observe and analyse the experiments in the laboratory or a phenomenon occurring around them to obtain a logical scientific explanation for it.

Analytical Thinking: The ability to think analytically can be developed by training and practice. The syllabus offers the student to understand the concept and design projects or experiments based on them.

Domain knowledge: The domain knowledge is the key to the understanding of advances and complex subject matter.

Social Ethics: The students are exposed to different problems caused due to human activity. They learn to conduct themselves without creating a damage to fellow beings.

Animal Ethics: The sensitization towards ethical issues associated with use of animals in the laboratory is highlighted and the solutions to overcome it are introduced.

Problem Solving: The ability to handle a situation is enhanced in the students by problem solving assignments, case studies, projects to make them competent, conscious and creative individual.

Environmental Sustainability: Environment related issues are addressed through workshops, Guest lectures and field studies.

PROGRAMME SPECIFIC OUTCOMES (PSOS)-BSc PROGRAMME IN ZOOLOGY

PSO1	Understands the nature and basic concepts of systematic classification, ecology, biomolecules, animal biotechnology, cell biology and genetics.
PSO2	Analyse and comprehend the concepts of Enzymology, developmental biology, histology and molecular biology. Acquaint with the skills in fishery biology, medical diagnostics and environment management to boost entrepreneurship skills
PSO3	Acquire skills and necessary training for techniques in haematology, immunology, physiology, endocrinology, enzymology, molecular biology, toxicology and field biology. Enhance knowledge on biostatistics, bioinformatics, Wild-life tourism and epidemiology to provide wider job prospects in the realm of Zoology.
PSO4	Perform laboratory procedures as per standard protocols in the areas of animal diversity, genetics, biochemistry, molecular biology, physiology, immunology, developmental biology, environmental biology and ethology.
PSO5	Apply ethical principles and knowledge in understanding of Zoology to one's own life and work. Applications of biological sciences in different areas that contributes towards Nation building.

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S.Y.B.Sc NEP Zoology Vocational Skill Course(VSC) Syllabus Semester -IV

SEMESTER	:	IV
TITLE OF THE SUBJECT/COURSE	:	BASICS IN MEDICAL DIAGNOSTICS
COURSE CODE	:	RJVSCZOO241
CREDITS	:	02
DURATION	:	60 hours

LEARNING OBJECTIVES	
1	To learn the basic principles involved in diagnostic techniques.
2	To make the students aware about different methods used in disease diagnosis.
3	To develop skills in learner to work in pathology laboratory.

COURSE OUTCOMES	AFTER COMPLETING THE COURSE, THE LEARNER WILL BE ABLE TO:	PSO ADDRESSED	BLOOM'S TAXONOMY LEVEL
CO1	Comprehend the key skills in laboratory detection of diseases.	2,3,4,5	BT level 2, 3 Understand and Apply.
CO2	Understand and evaluate the health parameters in humans	2,3,4,5	BT level 2, 5 Understand and evaluate.
CO3	Perform and analyse samples like blood for detection of diseases.	2,3,4,5	BT level 3,4,5 Apply, Analyse and Evaluate
CO4	Work with pathology labs, blood banks or other allied health care sector.	2,3,4,5	BT level 3,4,5 Apply, analyse and evaluate

SEMESTER IV
VOCATIONAL SKILL COURSE : BASICS IN MEDICAL DIAGNOSTICS (PRACTICAL BASED)
PAPER CODE: RJVSCZOO241
Module 1: Introduction to diagnostics, Diagnostic tools- CT, Sonography, MRI, Oxymeter, Introduction to RTPCR, Tools to measure body temperature and pressure. Module 2: BMI and Blood grouping. Module 3: Study of blood report, KFT-Urea detection, Lipid profile- total triglycerides. Module 4: Study & Detection of diabetes

REFERENCES

1. A textbook of medical diagnostics- Dr Rajneesh Prajapat and Dr Manivannan Kasturi.
2. Textbook of medical laboratory technology- Praful B. Godkar.
3. Henry's Clinical Diagnosis and Management by Laboratory Methods- By Richard A. McPherson.
4. Laboratory Medicine The Diagnosis of Disease in Clinical Laboratory- By Michael Laposata M.D. Ph.D.

S.Y.B.Sc Zoology Semester IV

MAJOR BATCH: VSC EVALUATION PATTERN

COURSE CODE: RJVSCZOO241

(Based on the centralized guidelines given by EC under NEP 2020)

Evaluation : Practical Based

Internal Evaluation : 20 MARKS

External- Semester End Evaluation Practical – 30 MARKS

Total marks per course – 50 MARKS

INTERNAL COMPONENT FOR EVALUATION

Q1. Assignment

Study of blood report: self-study: Student should procure a blood report. Analyze all the parameters and write report (comments/conclusions) on any five diagnostic parameters 05M

Q2. **MCQ Test.** Based on module I and IV 15M

EXTERNAL COMPONENT FOR EVALUATION

Q1. Major performing Practical 15M

Urea test and Blood grouping

OR

Lipid estimation

Q2. Problems based on BMI 05M

Q3. Viva based on VSC practical 05M

Q4. Journal 05M

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Class	Course Name	Course Code	Local relevance	Regional relevance	National relevance	International relevance
S.Y B Sc Zoology	Basics in medical diagnostics	RJVSCZO O241	Understanding the working of different diagnostic devices in local regions.	Studies on variation of parameters like blood, KFT etc according to regions.	Distribution pattern of diseases around the country.	Study of advanced global methods in medical diagnosis.

Mapping of the course to Local/ Regional/National/International relevance

Mapping of the course to Employability/ Entrepreneurship/Skill development

Class	Course Name	Course Code	Topic focussing on Employability/ Entrepreneurship/skill development	Employability/Entrepreneurship/Skill development	Specific activity
S Y B Sc Zoology	Basics in medical diagnostics	RJVSCZOO241	Study of diagnostic tools, Study of blood report, Diagnosis of diseases.	Pathology labs, Blood banks and health care sector.	Lifestyle disease diagnosis

Integration of Cross cutting Issues

Class	Course Code	Cross Cutting Issues
S Y B Sc Zoology	RJVSCZOO241	Ethics, Good health and well being UNSDG 3,4,8 NEP2020 Interdisciplinary