



Vidya Vikas Education Trust's
Lords Universal College, Goregaon West, Mumbai-400104
Affiliated to University of Mumbai

Bachelors In Science (Microbiology)

Semester-III

Course Code	Course Name	COs
USMB-301	Microbiology I- Biomolecules and Microbial Taxonomy	<i>Students will be able to</i> <ol style="list-style-type: none">1. This unit will allow students to learn about the basic structure of DNA and bacterial DNA, Students will also get to know about the discovery of the genetic material – DNA & RNA.2. Students would be made aware of the unique chemistry of living systems that results in large part from the remarkable and diverse properties of Biomolecules.3. Studying microbial taxonomy plays a vital role in grouping the organisms. Thus students will be given insight into taxonomy which will help students with identification of organisms and also methods of analysis used in classification.
USMB-302	Microbiology II- Environmental Microbiology	<i>Students will be able to</i> <ol style="list-style-type: none">1. The students should be able to explain Structure and activities of microbial communities.2. Understand Microbial interactions and interactions with macroorganisms3. Explain Population biology of microorganisms.4. Understand Sewage treatment process , (Global) element cycles and biogeochemical processes.
USMB-303	Microbiology III- Introduction to Clinical	<i>Students will be able to</i>



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	Microbiology	<ol style="list-style-type: none">1. The students should be able to explain Terminology of infection and disease.2. Learn Methods for isolation and detection of pathogens.3. Understand Various aspects of safety in Clinical laboratories.
USMBP-3	Microbiology Practicals	<p><i>Students will be able to</i></p> <ol style="list-style-type: none">1. Understanding various aspects of safety in the clinical laboratory.2. Learning methods for the isolation and detection of pathogens.3. Understanding sewage treatment processes, global element cycles, and biogeochemical processes.4. Understanding microbial interactions and interactions with macroorganisms.
USZO301	Zoology I- Fundamentals of Genetics, Chromosomes & Heredity, Nucleic acids	<p><i>Students will be able to</i></p> <ol style="list-style-type: none">1. Understand and apply the principles of inheritance, concept of multiple allele's linkage and crossing over.2. Learners will understand the importance of nucleic acid as a genetic material.3. Learner would comprehend and appreciate the regulation of gene expression.4. Learners would understand the structure and types of chromosome , mechanism of sex determination.5. Learners would be able to correlate the disorders linked to a particular sex chromosome.
USZO302	Zoology II- Study of Nutrition &	<p><i>Students will be able to</i></p>



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	Excretion, Respiration & Circulation, Control & Coordination, Locomotion & Reproduction	<p>1. Learners should understand the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy.</p> <p>2. Learner would be able to correlate the habit and habitat with nutritional, excretory and osmoregulatory structure in different classes of organism.</p> <p>3. Learners would understand increasing complexity of respiratory, and Circulatory physiology in evolutionary hierarchy.</p> <p>4. Learners would understand the process of control and coordination by nervous and endocrine regulation.</p> <p>5. Learners would be amazed by various locomotory structures found in the animal kingdom.</p> <p>6. Learners would be acquainted with various reproductive strategies present in the animals .</p>
USZO303	Zoology III- Ethology, Parasitology & Economic Zoology	<p><i>Students will be able to</i></p> <p>1. Learners would gain insight into different types of animal's behaviours and their role in biological adaptation.</p> <p>2. Learners would be sensitised to be feelings which are instrumental in social behaviour.</p> <p>3. Learners should understand the general epidemiological aspect of parasites that affect humans and take simple preventive measures for the same.</p> <p>4. Learners would be competent in the life cycle of specific parasites, the symptoms of diseases and its treatments.</p> <p>5. Learners would gain knowledge of animals useful to mankind and means to make the most of it.</p>



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		6. Learners would learn the modern technique in animal husbandry and pursue entrepreneurship as a career.
USZOP3	Zoology Practicals	<i>Students will be able to</i> 1. Understanding the increasing complexity of nutritional, excretory, and osmoregulatory physiology in the evolutionary hierarchy. 2. Correlating the habitat and habitat with nutritional, excretory, and osmoregulatory structures in different classes of organisms. 3. Understanding the increasing complexity of respiratory and circulatory physiology in the evolutionary hierarchy. 4. Becoming acquainted with various reproductive strategies present in the animal kingdom
USFC3C1	Foundation Course - III	<i>Students will be able to</i> 1. The learner will be able to define types of human rights violation and their redressal mechanism for minority groups in India such as women, children, SC, ST, etc. 2. The student will be able to describe different types of Environmental Disasters. 3. The learner will be able to recollect the development of science in a different era and would also be in a state to elaborate the role of science in everyday life. 4. The student will be able to describe different types of interpersonal and communication skills.

Semester IV



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Course Code	Course Name	COs
USMB-401	Microbiology I- Metabolism & Basic Analytical	<i>Students will be able to</i> 1.The students should be able to explain Oxidation-reduction reactions. 2. Enzyme kinetics and word problems 3.Understand Various analytical techniques and its principles. 4.Explain Thermodynamics of enzyme catalyzed reactions.
USMB-402	Microbiology II- Applied Microbiology	<i>Students will be able to</i> 1. The students should be able to explain basic concept of Immunology and Epidemiology. 2. Understand Various methods of food preservation, spoilage and microorganisms associated with food and foodborne diseases. 3. Students will be able to explain the Microbiology of milk and milk products and will be able to determine the various quality control methods of milk.
USMB-403	Microbiology III- Fermented Foods, Food Sanitation and Microbial ecology	<i>Students will be able to</i> 1. The students should be able to explain Hygiene and sanitation. 2.Control and prevent food borne microbes 3. Explain Procedures for microbially fermented foods. 4. Understand Preservation methods for different foods.
USMBP-4	Microbiology Practicals	<i>Students will be able to</i>



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		<ol style="list-style-type: none">1. Understanding enzyme kinetics and solving word problems.2. Understanding various analytical techniques and their principles.3. Understanding various methods of food preservation, spoilage, and microorganisms associated with food and foodborne diseases.4. Explaining the microbiology of milk and milk products and determining various quality control methods for milk.
USZO401	Zoology I- Origin and evolution of life, Population genetics and evolution, Scientific Attitude Methodology, Writing and ethics	<p><i>Students will be able to</i></p> <ol style="list-style-type: none">1. Learners would gain insights into the origin of life.2. Learners would analyse and critically view the different theories of evolution.3. Learners would understand the force that causes evolutionary changes in the natural population and mechanism of speciation.4. The learner would develop qualities such as critical thinking, skill of scientific communication and analysis and to understand the ethical aspects of Research.
USZO402	Zoology II- Cell Biology, Endomembrane system & Biomolecules	<p><i>Students will be able to</i></p> <ol style="list-style-type: none">1. Learners would acquire insights into the composition of the transport system adopted by the cell and organelle for its maintenance and composition of the cell.2. Learners would appreciate the intricacy of the endomembrane system.3. Learners would understand the interlinking of the endomembrane system for functioning of the cell.4. Learners would realise the importance of biomolecules and their clinical significance.



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USZO403	Zoology III- Comparative Embryology. Aspects of Human Reproduction, Pollution and Its effect on organism	<i>Students will be able to</i> 1. Learners understand and compare different types of eggs and sperms. 2. Learners would understand human reproductive physiology. 3. Learners would become familiar with advances in ART and related ethical issues. 4. Learners would be sensitised about the adverse effect of pollution and measures to control it.
USZOP4	Zoology Practicals	<i>Students will be able to</i> 1.Acquiring insights into the composition of the transport system adopted by the cell and organelle for its maintenance and composition of the cell. 2. Understanding the interlinking of the endomembrane system for the functioning of the cell. 3. Understanding and comparing different types of eggs and sperms. 4. Becoming familiar with advances in ART and related ethical issues.
USFC4C1	Foundation Course - VI	<i>Students will be able to</i> 1. The student would get an outline of rights reserved for the consumer along with detailed information on the Right to Information and Public Investigation Litigation Act. 2. The learner will be able to state the different approaches of Ecology which would help them to understand Environmental Principles for sustainable development and Environmental pollution control.



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		<p>3. The student will be able to describe the advanced technological inventions and their application in human life.</p> <p>4. The student will be able to recollect about competitive examinations conducted with their pattern and eligibility criteria and knowledge about various soft skills.</p>
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