

B.Sc.Ist SEMESTER
MINOR/VOCATIONAL COURSE
COURSE CODE: ZO (N) 120

MINOR/VOCATIONAL COURSE: MICROBIOLOGY AND IMMUNOLOGY & ANIMAL BIOTECHNOLOGY

COURSE CODE: ZO (N) 120 CREDITS: 3

Unit number	Block and Unit title	Page number
	BLOCK I: MICROBIOLOGY	
1	Diversity of microbes: Kinds of Microbes, Viruses, Archaea, Bacteria, Eukaryotic microorganism and typical structure of bacterium and virus.	1-15
2	Culture of microbes: Sterilization, disinfection, culturing, media preparation, isolation, culturing growth and identification of microorganism.	16-29
	BLOCK II: IMMUNOLOGY	
3.	Overview of immune system: Innate, adaptive (cell mediated and humoral), active and passive immunity (artificial and natural).	30-51
4.	Cells and organs of immune system: Organ of immune system: primary and secondary lymphoid organs and lymphatic system.	52-78
5.	Humoral immunity: Antigen: Antigenicity, Adjuvants and Haptens, Immunoglobulins: types structure and function, complement system (antigen, antibody reactions).	79-106
6.	Cell mediated immunity: Structural organization of MHC complex, Antigen processing and presentation. Functions of T-cells.	107-124
7.	Applications of immunology: Brief introduction to vaccines, immunodiagnosis and immunotherapy	125-157
	BLOCK III: TOXICOLOGY	
8.	Toxin: Kind and source of toxic agents, Synthetic organic compounds, natural occurring toxins, inorganic chemicals. Dose-response relationship. Routes of entry. Environmental movement and fate of toxin. Mode of action: chronic, natural poisons.	158-192
9.	Analytic toxicology: Toxic responses of blood. Organ function tests, teratogenic, reproductive and carcinogenic tests.	193-232

Block IV Biotechnology

10. Recombinant DNA technology: gene cloning- the basic steps, restriction enzymes- ligase, linkers, and adaptors, cDNA transformation, selection of recombinants, hybridization techniques, blotting techniques, southern blotting, northern blotting and western blotting, gene probe – molecular fingerprinting, molecular markers in genome analysis (RFLP, RAPD, and AFLP), Genomic library, Summary.

11. Cloning Vectors: Plasmid biology, cloning vector, yeast, E. coli, PBR33, Summary.

12. Animal biotechnology and its application: Cell organ and whole embryo culture, in vitro fertilization, Dolly Embryo transfer in human, transgenic animal, Human gene therapy, Cryobiology, summary.

MINOR/VOCATIONAL COURSE: LABORATORY COURSE

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B.Sc.I SEMESTER

MINOR/VOCATIONAL COURSE: LABORATORY COURSE

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1.	Immunological Experiment/study	
2.	Microbiology Experiment	
3.	Biotechniques (exercise based on chart / picture or sample instrument)	
4.	Biotechnology Exercise Model/Chart based Study	
5.	Biotechnology Exercise	