Template for Course Plan (Microbiology)

III. Course Description:

The Microbiology course provides students with acomprehensive understanding of microorganisms, their structure, physiology, pathogenesis,and importance in nursing practice. The course covers topics such as bacteria, fungi, viruses, and their interactions with humans, including the principles of infection control, antimicrobial agents, and vaccine development. Through lectures, laboratory sessions, and case studies,students develop the knowledge and skills necessary to apply microbiological concepts in nursing settings.

V. Course Contents:

A. Theoretical Aspect:

Order	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
1	Introduction to Microbiology:	- Scope and Classifications - Historical Milestones in Microbiology -Effect of microorganisms on human life . - Organisms Taxonomy -Differentiate between eukaryote and prokaryote cells	1	2
2	Microbial Structure and Function	- -Bacterial cell structure , - Structure and function of cell component - Cell Wall, Membrane, and Cytoplasmic Components - -Structures and function of external components to the cell wall - -Endospore formation	1	2

3	Bacterial morphology , Nomenclature and classification of Medically Important Bacteria	- Size , Shape and arrangement of bacterial cells. - Bacterial replication. - Gram and acid-fast stains techniques uses. - Atypical bacteria	1	2
4	Bacterial physiology and Metabolism	- - Microbial Nutrition and Cultivation Techniques - - Bacterial Metabolic Pathways: Energy Production and Biosynthesis - - Environmental Factors Affecting Microbial Growth	1	2
5	Microbiological Techniques:	- Identification and Characterization - Culture, Staining, and Biochemical Tests - Molecular Methods for Microbial Identification	1	2
6	Normal flora	-Site of colonization -Type of bacteria & fungi at each site -Benefits of Normal flora - -Opportunistic infection - Factors influence normal flora	1	2
7	**Med term** exam	-	1	2
8	Bacterial Pathogenesis	- pathogenicity and virulence definitions - Host-Pathogen Interactions: Adhesion, Invasion, and Evasion - Virulence Factors and Toxin Production - common bacterial infections .	1	2
9	Antimicrobial Agents:	- Antibiotics definition - Antibiotics classifications - Antibiotics mechanisms of Action and Use .	1	2

		- - Rational Antibiotic Use and Resistance Management		
10	Antimicrobial sensitivity tests	- Dilution and diffusion methods	1	2
11	Principles of Infection Control	- Sterilization and Disinfection Methods - ·Terminology of microbial control - ·Physical methods of microbial control - ·Chemical methods of microbial control	1	2
12	Bacterial genetics	the bacterial genetic components mechanism of DNA transfer among bacteria	1	2
13	Virology: Structure, Replication, Classification and Pathogenicity	Viral definition, Morphology – size - types Viral control by physical and chemical agents. Viral classification methods Common viral diseases	1	2
14	Antiviral Agents	- Viral Replication Strategies and Host Interactions Antiviral Agents types and mechanisms of Action and Use	1	2
15	Fungal biology and Pathogenicity	- Fungal structures. classification, growth Forms and Reproduction - Fungal Infections: Opportunistic and Systemic Mycoses Antifungal Agents Types , mechanisms of Action and Use	1	2
16	Final test		1	2
Number of Weeks /and Units Per Semester			**16**	**32**