



SILVER OAK UNIVERSITY

Silver Oak College of Nursing

Bachelor of Science (Nursing)

Course Name: Applied Microbiology and

Infection control including safety

Course Code: 1060323201

Semester: 3rd

Prerequisite:

A strong foundation in basic sciences such as biology, chemistry, and microbiology. Understanding concepts related to microbial structure, function, and classification is important. Additionally, having knowledge of immunology, epidemiology, and public health can be beneficial for studying infection control. It's also helpful to have good laboratory skills, critical thinking abilities, and a strong attention to detail. Having a passion for understanding how microorganisms interact with the environment and cause disease is also important

Course Objective:

1. To enable students to acquire understanding of fundamentals of Microbiology, compare and contrast different microbes and comprehend the means of transmission and control of spread by various microorganisms.
2. To provide opportunities for practicing infection control measures in hospital and community settings.
3. To focus on identifying patient safety indicators, preventing and managing hospital acquired infections.

Teaching Scheme:

Teaching Scheme				
L	T	P	Contact Hours	Credit
2	2	0	4	3

Content:

SECTION- A APPLIED MICROBIOLOGY

Unit No.	Contents	Teaching Hours	Weightage %
1	Introduction: Importance and relevance to nursing Historical perspective Concepts and terminology Principles of microbiology	3	15
2	General characteristics of Microbes: Structure and classification of Microbes Morphological types Size and form of bacteria Motility Colonization	10	50

	Growth and nutrition of microbes Temperature Moisture Blood and body fluids Laboratory methods for Identification of Microorganisms Types of Staining - simple, differential (Gram's, AFB), special – capsular staining (negative), spore,LPCB, KOH mount. Culture and media preparation – solid and liquid. Types of media – semi synthetic, synthetic, enriched,		
3	Pathogenic organisms Micro-organisms - Cocci — gram positive and gram negative; Bacilli— gram positive and gram negative Viruses Fungi -Superficial and Deep mycoses Parasites Rodents & vectors ,Characteristics, Source, portal of entry, transmission of infection, Identification of disease producing micro-organisms	4	20
4	Immunity Immunity-Types, classification Antigen and antibody reaction Hypersensitivity reactions Serological tests Immunoglobulin's – structure, types & properties Vaccines -types & Classification, storage and handling, cold chain, Immunization for various diseases Immunization Schedule	3	15

Course Outcome:

Sr. No.	CO statement	Unit No
CO-1	Explain concepts and principles of microbiology and its importance in nursing	1
CO-2	Describe structure, classification, morphology and growth of bacteria	2
CO-3	Describe the different disease producing organism	3
CO-4	Explain the concept of immunity, hyper sensitivity and immunization	4

Teaching & Learning Methodology: -

1. Lecture cum discussion
2. Power point presentation
3. Demonstration
4. Supervise clinical practice

CO-PO-PSO Matrix

Co. No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO-1	2	3	3	-	-	2	2	3	3	3	2	2
CO-2	3	2	3	-	-	2	2	3	3	3	2	3
CO-3	2	2	2	-	-	2	2	2	2	2	1	1
CO-4	1	1	1	-	-	1	1	2	1	1	1	1

SECTION- B INFECTION CONTROL & SAFETY

Unit No.	Contents	Teaching Hours	Weightage %
1	HAI (Hospital Acquired Infection) Hospital acquired infection Bundle approach Prevention of Urinary Tract Infection (UTI) Prevention of Surgical Site Infection (SSI) Prevention of Ventilator Associated events (VAE) Prevention of Central Line Associated Blood Stream Infection (CLABSI) Surveillance of HAI – Infection control team & Infection control committee	2	10
2	Isolation Precautions and use of Personal Protective Equipment (PPE) Types of isolation system, standard precaution and transmission-based precautions (Direct Contact, Droplet, Indirect) Epidemiology & Infection prevention – CDC guidelines Effective use of PPE	3	15
3	Hand Hygiene Types of Hand hygiene. Hand washing and use of alcohol hand rub Moments of Hand Hygiene WHO hand hygiene promotion	1	5
4	Disinfection and sterilization Definitions Types of disinfection and sterilization Environment cleaning Equipment Cleaning Guides on use of disinfectants Spaulding's principle	1	5

5	Specimen Collection (Review) Principle of specimen collection Types of specimens Collection techniques and special considerations Appropriate containers Transportation of the sample Staff precautions in handling specimens	1	5
6	BMW (Bio Medical Waste Management) Laundry management process and infection control and prevention Waste management process and infection prevention Staff precautions Laundry management Country ordinance and BMW National guidelines 2017: Segregation of wastes, Color coded waste containers, waste collection & storage, Packaging & labeling, Transportation	2	10
7	Antibiotic stewardship Importance of Antibiotic Stewardship Anti Microbial Resistance Prevention of MRSA, MDRO in healthcare setting	2	10
8	Patient Safety Indicators Care of Vulnerable patients Prevention of Iatrogenic injury Care of lines, drains and tubing's Restrain policy and care – Physical and Chemical Blood & blood transfusion policy Prevention of IV Complication Prevention of Fall Prevention of DVT Shifting and transporting of patients Surgical safety Care coordination event related to medication reconciliation and administration Prevention of communication errors Prevention of HAI Documentation Incidents and adverse Events Capturing of incidents RCA CAPA Report writing	3	15
9	IPSG (International Patient safety Goals) Identify patient correctly Improve effective communication Improve safety of High Alert medication Ensure safe surgery Reduce the risk of health care associated infection Reduce the risk of patient harm resulting from falls	1	5

	Reduce the harm associated with clinical alarm system		
10	Safety protocol 5S Radiation safety Laser safety Fire safety Types and classification of fire Fire alarms Firefighting equipment HAZMAT safety Types of spill Spillage management MSDS Environmental safety Risk assessment Aspect impact analysis Maintenance of Temp and Humidity (Department wise) Audits Emergency Codes Role of Nurse in times of disaster	2	10
11	Employee Safety Indicators Vaccination NSI prevention Fall prevention Radiation safety Annual health check Healthcare Worker Immunization Program and management of occupational exposure Occupational health ordinance Vaccination program for healthcare staff Needle stick injuries and prevention Post exposure prophylaxis	2	10

Course Outcome:

Sr. No.	CO statement	Unit No
CO-1	Develop knowledge, skill of Hospital -acquired infections and various disinfection, sterilization methods and technique, and their effective practices in specimen collection	1,2,3,4,5
CO-2	Explain the principles and guidelines of Bio Medical waste management	6
CO-3	Apply principles of Antibiotic stewardship in performing the nurse's role	7
CO-4	Demonstrate knowledge of various safety indicators, protocols, principles and guidelines and adhere to them in the patient care settings and perform the role of the nurse in the patient safety audit report	8,9,10,11

Teaching & Learning Methodology: -

1. Lecture cum discussion
2. Power point presentation
3. Demonstration and Re-demonstration
4. Experimental learning through visit

Books Recommended

1. Anju Dhir; “Textbook of Applied Microbiology including Infection Control and Safety”; CBS Publishers
2. Pooja Gupta; “Applied Microbiology & Infection Control including safety”; VHS Publication
3. C P Baveja; “Applied Microbiology including Infection Control and Safety”; Arya Publishing Company
4. I. Kannan; “Applied Microbiology and Infection Control Practices for Nurses”; Elsevier Publication
5. I Clement; “Textbook Of Applied Microbiology And Infection Control” (Including Safety); Jaypee Publication

List of Open-Source Software/learning website

1. <https://nurseinfo.in/product/applied-microbiology-for-nurses-including-infection-control-safety-new-inc-syllabus/>
2. https://books.google.com/books/about/Applied_Microbiology_and_Infection_Contr.html?id=SFLEEAAAQBAJ
3. https://books.google.com/books/about/Applied_Microbiology_and_Infection_contr.html?id=gvvEEAAAQBAJ

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CO-2	2	2	3	1	-	2	2	3	3	3	2	3
CO-3	1	2	1	1	-	1	2	1	2	1	2	2
CO-4	2	2	1	1	-	2	2	1	2	1	1	1