UNIVERSITY MEDICAL
& DENTAL COLLEGE

STUDY GUIDE

BLOCK 6

THEORY		
GENERAL ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-A-001	Explain the parts and attachments of the deep cervical fascia and relate them to the spread of neck infections.	Cervical Fascia and Fascial Spaces
CF3-A-002	Describe the fascial spaces of head and neck and explain their relevance to the spread of infections.	
CF3-A-003	Identify and describe the attachments, actions, and nerve supply of the major muscles of the neck (platysma, sternocleidomastoid, infrahyoid, suprahyoid, scalene).	Muscles of the Neck
CF3-A-004	Explain the anatomical basis, differentiate the types, and correlate anatomical changes with the clinical presentation of torticollis.	
CF3-A-005	Identify the boundaries and list the contents of the anterior and posterior triangles of the neck.	Triangles and Surface Anatomy of the neck
CF3-A-006	Trace the origin, course, branches, and distribution of the common and external carotid arteries. interpret its clinical importance.	Blood Vessels of the Neck
CF3-A-007	Describe the origin, course, major branches, and distribution of the subclavian artery.	
CF3-A-008	Explain the formation, tributaries, and drainage areas of veins forming the jugular venous system.	
CF3-A-009	Summarize the venous drainage of the neck region.	
CF3-A-010	Identify the superficial and deep cervical lymph nodes and describe their locations and drainage areas.	Lymphatic Drainage of the Neck
CF3-A-011	Describe the extracranial course, major branches, and functional distribution of the glossopharyngeal, vagus, and accessory nerves.	Nerves of the Neck
CF3-A-012	Describe the location, formation, branches, and distribution of the cervical plexus.	

CF3-A-013	Explain the location, formation, and branches of cervical sympathetic ganglia.	
CF3-A-014	Correlate the anatomical basis of Horner's syndrome with its clinical presentation.	
CF3-A-015	Identify and describe the anatomical features of the hyoid bone.	
CF3-A-	Classify the cervical vertebrae and distinguish their characteristic	
016	features.	Skeletal
		Framework of the Neck
CF3-A-017	Describe the anatomical features of typical and atypical cervical vertebrae.	
CF3-A-	Classify the joints of cervical vertebrae and explain associated ligaments,	
018	movements, muscles, and neurovascular supply.	
CF3-A-	Describe the parts of the larynx, including their extent, anatomical	
019	features, framework, and neurovascular supply.	Larynx:
		Structure and Function
CF3-A-	Identify and describe the attachments, actions, and nerve supply of	
020	intrinsic and extrinsic muscles of the larynx.	
CF3-A-	Describe the location, anatomical features, and vascular supply of thyroid	Thyroid and Parathyroid Glands
021	and parathyroid glands.	
CF3-A-	Describe and identify the histological features of the thyroid gland and	
022	parathyroid gland under light microscope.	
CF3-A-	Explain the embryological development of thyroid gland and relate it to	
023	common congenital anomalies (thyroglossal cyst, fistula).	
CF3-A-024	Describe the muscles of back of neck and suboccipital triangle.	Back of neck
CF3-A-025	Explain the clinical relevance of the neck Anatomy in relation to head and	Neck dissection for
	neck cancers. (Integration with OMFS)	head and
		neck cancers
CF3-A-026	Explain the cause and clinical features of Horner's syndrome. (Integration with OMFS)	Horner's syndrome

GENERAL PATHOLOGY & MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-Pa-001	Explain the basic principles and sequence of events involved in wound healing, including hemostasis, inflammation, proliferation, and remodeling.	Principles and Phases of Wound Healing
	Describe and differentiate the phases of wound healing, emphasizing the cellular and molecular events in each stage.	
	Analyze the local and systemic factors that influence healing at each phase.	
CF3-Pa-002	Explain the roles of different cell types (neutrophils, macrophages, fibroblasts, endothelial cells, epithelial cells) and correlate their functions with growth factors involved in periodontal tissue repair and regeneration.	Cellular and Molecular Basis of Repair
	Describe the major phases of the cell cycle and relate them to tissue growth and repair.	
	Classify and discuss the characteristics of labile, stable, and permanent cells in relation to tissue regeneration.	
CF3-Pa-003	Describe and compare the different types of tissue healing—primary, secondary, and tertiary intention—based on mechanism, tissue response, and clinical presentation.	Types and Complications of Healing
	Enumerate and explain the sequential steps involved in scar formation.	
	Identify and explain common complications such as infection, wound dehiscence, hypertrophic scar, and keloid formation.	

	Describe and illustrate the stages of wound healing in an extracted tooth socket, highlighting cellular and tissue-level changes.	
CF3-Pa-004	Define neoplasia and discuss the nomenclature of neoplasms	Nomenclature of neoplasia
CF3-Pa-005	Describe the characteristics of benign and malignant tumors.	Characteristics of tumors
	Differentiate between benign and malignant tumors.	
CF3-Pa-006	Describe the molecular basis of cancer, including an introduction, essential features of malignant transformation, and the role of oncogenes (with emphasis on RAS).	Mechanism & Carcinogenesis of Neoplasia
CF3-Pa-007	Describe the molecular basis of cancer, focusing on tumor suppressor genes, with emphasis on RB and p53.	
CF3-Pa-008	Describe carcinogenesis, including the multistep pathway and radiation-induced carcinogenesis.	
CF3-Pa-009	Describe carcinogenesis, including chemical and microbial carcinogenesis.	
CF3-Pa-010	Describe Tumor metastasis	Invasion of tumors
CF3-Pa-011	Outline the clinical aspects of neoplasia, focusing on grading and staging of cancer.	Clinical aspects of neoplasia

CF3-Pa-012	Describe and interpret the laboratory investigations used in cancer diagnosis.	
CF3-Pa-013	Define microbial teratogens, Define TORCH infections and identify the impact of maternal infections (TORCH complex) on embryonic development and their dental implications.	Microbial Teratogens
CF3-Pa-014	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Staphylococci.	Staphylococci
CF3-Pa-015	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Mucormycosis	Mucormycosis
CF3-Pa-016	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Streptococci	Streptococci
CF3-Pa-017	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Actinomyces	Actinomyces
CF3-Pa-018	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Porphyromonas	Porphyromonas
CF3-Pa-019	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Fusobacterium	Fusobacterium
CF3-Pa-020	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Candida	Candida
CF3-Pa-021	Classify the hemorrhagic viruses with clinical presentation.	Dengue & Congo virus

CF3-Pa-022	Discuss clinical relevance of hemorhagic virus infections for dentistry.	
CF3-Pa-023	Discuss the viral characteristics, diagnosis and tumors caused by following oncogenic viruses: • HCV • HBV • HPV	Oncogenic Viruses
	• EBV • HHV8	
CF3-Pa-024	Discuss the role of H. pylori in causing MALT.	MALT
ORAL PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-OP-001	Enumerate the spaces involved with spread of acute inflammation from periapical area of tooth to the floor of mouth and onwards.	Spread of infection in the neck from oral cavity
CF3-OP-002	Describe the signs and symptoms of infections according to the spaces involved.	
CF3-OP-003	Give the general principles of management of Ludwig's angina.	
CF3-OP-004	Give the sequence of events of periapical acute and chronic inflammation and spread of infection into adjacent bone and soft tissue.	Periapical acute and chronic inflammation
CF3-OP-005	Enumerate and describe the types of osteomyelitis (types of bone inflammation).	Osteomyelitis
CF3-OP-006	Give the radiographic and microscopic features of osteomyelitis.	
PHARMACOLOGY & THERAPEUTICS		

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
CF3-Ph-001	Classify cell wall synthesis inhibitors.	Cell Wall Inhibitors
CF3-Ph-002	Discuss the mechanism of action of beta lactam antibiotics (Penicillin G, V, Oxacillin, Nafcillin, Ampicillin, Amoxicillin, Piperacillin	
CF3-Ph-003	Outline the mechanism of resistance to beta lactam antibiotics	
CF3-Ph-004	Write the clinical uses of beta lactam antibiotics.	
CF3-Ph-005	Identify the antibacterial spectrum.	
CF3-Ph-006	Identify important antibiotics for dental procedures.	
CF3-Ph-007	Enlist the major adverse effects of penicillin	
CF3-Ph-008	Discuss the mechanism of action and clinical significance of Beta Lactamase Inhibitors (Clavulanic acid, Sulbactam, Tazobactam, Avibactam, Vaborbactam	
CF3-Ph-009	Classify cephalosporin generations Describe their antibacterial spectrum and clinical uses	
CF3-Ph-010	List the major adverse effects of cephalosporin	
CF3-Ph-011	Describe important features of the carbapenems and monobactam	
CF3-Ph-012	Describe antibacterial spectrum, mechanism of action, resistance, clinical uses and toxicity of vancomycin	
CF3-Ph-013	Explain briefly the major steps of protein synthesis.	
CF3-Ph-014	Classify protein synthesis inhibitors	

CF3-Ph-015	Classify tetracyclines and discuss mechanism of action, resistance, antibacterial spectrum, clinical uses, adverse effects of tetracyclines.
CF3-Ph-016	Classify Macrolide/ Ketolide.
CF3-Ph-017	Describe the mechanism of action and pharmacokinetics, antimicrobial spectrum, mechanism of resistance, clinical uses, adverse effects of Erythromycin, Clarithromycin, Azithromycin, Fidaxomycin.
CF3-Ph-018	Discuss the main characteristics of Clindamycin including mechanism of action, pharmacokinetics, clinical uses and adverse effects.
CF3-Ph-019	Describe the antibacterial spectra, therapeutic uses and side effects of Ketolides
CF3-Ph-020	Discuss the main characteristics of Clindamycin including mechanism of action, pharmacokinetics, clinical uses and adverse effects.
CF3-Ph-021	Describe the mechanism of action of Aminoglycosides (amikacin, gentamycin, streptomycin, tobramycin, neomycin, kanamycin). Describe the mechanism of resistance of Aminoglycosides. Discuss the clinical uses of Aminoglycosides. Describe the adverse effects and toxicities of Aminoglycosides
CF3-Ph-022	Describe the mechanism of action of DNA Gyrase Inhibitors (Ciprofloxacin, Levofloxacin, Ofloxacin, Getifloxacin and others) Describe the mechanism of resistance of DNA Gyrase Inhibitors. Discuss the clinical uses of DNA Gyrase Inhibitors. Describe the adverse effects and toxicities of DNA Gyrase Inhibitors.
CF3-Ph-023	Discuss the mechanism of action, clinical uses and side effects and clinical spectrum of Niroimidazoles. Discuss their anaerobic spectrum.
CF3-Ph-024	Briefly discuss the polyenes antifungal drugs dor oral candidiasis. Name Azole group of antifungal drugs. Briefly discuss their mechanism of action, and use in oral candidiasis. Enumerate their side effects.
CF3-Ph-025	Classify anticancer drugs according to cell cycle. Enumerate side effects of anticancer drugs.

COMMUNITY & PREVENTIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-CD-001	Explain the epidemiological distribution of oral cancer with respect of age, gender, site and geographic variation	Epidemiology of Oral Cancer
CF3-CD-002	Describe the etiology, risk factors and C/P of oral cancer	
CF3-CD-003	Discuss diagnosis, treatment and prevention of oral cancer	
CF3-CD-004	Discuss the role of a dentist in diagnosis and control of oral cancer	

PRACTICALS / LAB WORK

ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-A-027	Identify the course and key functions of the laryngeal nerves on anatomical models/ preserved specimens.	Laryngeal Nerve
	Describe how damage to laryngeal nerve leads to common clinical signs.	
CF3-A-028	Identify and illustrate the histological features of thyroid under light microscope.	Thyroid
CF3-A-029	Identify and illustrate the histological features of parathyroid glands under light microscope.	Parathyroid

GENERAL PATHOLOGY & MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-Pa-025	Study the characteristics of Benign (Epithelial & Connective tissue) tumors: Squamous Papilloma, Lipoma, Leiomyoma,	Benign Tumors

CF3-Pa-026	Study the characteristics of Malignant (Epithelial and connective tissue) tumors: Squamous cell carcinoma, Leiomyosarcoma (Pictorial).	Malignant tumors
CF3-Pa-027	Perform and interpret the catalase test, and coagulase test.	Laboratory tests
CF3-Pa-028	Demonstrate appropriate Sterilization and disinfection methods for dental instruments.	Sterilization and disinfection
CF3-Pa-029	Perform Gram staining on bacterial smears to identify gram-positive, gram-negative bacteria and candida under the microscope.	Microscopic identification
CF3-Pa-030	Demonstration the use of anerobic jar and explain its applications in the cultivation of dental microbes.	Anerobic cultures
CF3-Pa-031	Demonstrate collection of oral and throat specimens for microbiological examination in dental practice.	Sample collection
CF3-Pa-032	Identify culture media used in microbiology laboratory for identification of pathogens.	Culture media
ORAL PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-OP-007	Identify, Draw and label periapical granulomas, periapical cysts and suppurative osteomyelitis.	Acute and chronic infections
THEORY		
HISTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-A-001	Identify the cells of respiratory epithelium and describe their functions.	Microscopic Structure of Respiratory and Olfactory Epithelium
	Identify the cells of olfactory epithelium and explain their functions.	
	Describe and identify the histological features of the trachea under microscope.	

Res-A-002	Describe the anatomical features and neurovascular supply of the trachea.	Trachea
	Explain the anatomical basis and possible complications of tracheostomy.	
PHYSIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-P-001	Describe the functional divisions of the respiratory system.	Introduction and Functional Anatomy
	Differentiate between respiratory and non-respiratory functions of the respiratory system.	
	Identify the layers of the respiratory membrane.	
Res-P-002	Discuss the mechanics of ventilation.	Mechanics of Breathing
	Identify the muscles of inspiration and expiration in quiet and strenuous breathing.	
	Define interalveolar, intrapleural, and transpulmonary pressures and state their normal values during inspiration and expiration.	
	Define and explain lung compliance and discuss factors affecting it.	
	List the components of surfactant and explain its role in reducing alveolar surface tension.	
	Discuss the significance of surfactant in premature infants	
	Define and describe normal lung volumes and capacities with their normal values.	Pulmonary
	Define and explain the types and functions of respiratory dead spaces, including the normal value of anatomical dead space.	
	Define alveolar ventilation and minute respiratory volume.	

Res-P-003	State the normal respiratory rate.	Volumes, Capacities, and Ventilation
	Draw and interpret a spirogram showing respiratory excursions during normal, maximal inspiration, and maximal expiration.	
	Define forced vital capacity (FVC), forced expiratory volume in one second (FEV_1), and FEV_1/FVC ratio, and compare these values in normal and COPD patients	
Res-P-004	Describe the factors affecting gas diffusion through the respiratory membrane.	Gas Exchange and Diffusion
	Define diffusing capacity for a gas.	
	Define partial pressure of a gas and state normal values of oxygen (O_2) and carbon dioxide (CO_2) in arterial and venous blood, as well as their partial pressures in atmospheric and alveolar air	
Res-P-005	Explain the different forms of oxygen transport in the blood.	Transport of Gases
	Describe the mechanisms of carbon dioxide transport in the blood	
	Describe the structure and functions of hemoglobin, oxygen transport, oxygen dissociation curve, and factors that shift it.	Hemoglobin and Oxygen Transport
Res-P-006	Identify and describe the components of the respiratory centers and explain their functions.	Neural and Chemical Control of Respiration
	Discuss the inspiratory ramp signal and the Hering–Breuer inflation reflex.	
	Explain the chemical control of respiration.	
	State the normal arterial and venous partial pressures of O_2 and CO_2, and pH values.	
	Locate central and peripheral chemoreceptors and explain their roles in the regulation of respiration.	
	Explain the effect of exercise on respiration.	
	Define and classify different types and causes of cyanosis.	

Res-P-007	Define and differentiate types of hypoxia and explain their effects on the body.	Applied Physiology
	Explain the mechanism and effects of carbon monoxide poisoning.	
	Define and differentiate sleep apnea, Cheyne–Stokes breathing, dyspnea, tachypnea, hypercapnia, asphyxia, and respiratory failure.	

BIOCHEMISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-B-001	Describe the major chemical components of the human body and explain their relative proportions.	Chemical Composition of the Human Body
Res-B-002	Explain the importance of water in the human body.	Water and Its Biological Importance
Res-B-003	Define intracellular and extracellular fluids and describe their functions.	Body Fluids
Res-B-004	Describe the ionization of water and define the ion product constant (Kw).	Ionization of Water
Res-B-005	Differentiate between strong and weak acids with suitable examples.	Acids and Bases
Res-B-006	Explain the concepts of pH, pH scale, Ka, and pKa.	pH and Acid–Base Concepts
Res-B-007	State the normal pH of various body fluids.	pH of Body Fluids
Res-B-008	Identify the sources of volatile (CO_2) and fixed acids in the human body.	Sources of Acids
Res-B-009	Describe methods used for approximate and accurate determination of pH.	Determination of pH
Res-B-010	Explain the effects of pH on the structure and function of biological macromolecules such as enzymes, nitrogenous bases, and plasma proteins.	Effect of pH on Biomolecules

Res-B-011	Interpret the titration curve of a weak acid with reference to buffering capacity.	Titration Curve and Buffering Capacity
Res-B-012	Write the Henderson–Hasselbalch equation and describe its applications in physiology.	Henderson-Hasselbach Equation
Res-B-013	Calculate the pH of arterial blood using the Henderson–Hasselbalch equation.	pH Calculation
Res-B-014	Define alkali reserve and explain its physiological significance.	Alkali Reserve
Res-B-015	Define buffers and identify their components.	Buffer Systems
	Describe the factors determining buffering capacity.	
	Explain the mechanism of action of a buffer system.	
	List the principal buffers in various body fluids.	
	Explain the mechanisms of the bicarbonate and phosphate buffer systems.	
Res-B-016	Explain the respiratory mechanismsinvolved in hydrogen ion homeostasis.	pH Regulation Mechanisms
Res-B-017	Identify the first, second, and third lines of defense against changes in hydrogen ion concentration.	Defense Mechanisms in pH Regulation
Res-B-018	Classify acid–base disorders and describe their causesand compensatory mechanisms in: metabolic acidosis, respiratory acidosis, metabolic alkalosis, and respiratory alkalosis.	Acid–Base Imbalance

Res-B-019	Define metabolism and explain the concept of the metabolic map.	Introduction to Metabolism
Res-B-020	Compare anabolic and catabolic pathways.	Anabolism vs Catabolism
Res-B-021	Differentiate between biochemical cycles and pathways and between reversible and irreversible reactions, using suitable examples.	Biochemical Pathways and Reactions
Res-B-022	Define glycolysis and describe its reactions, regulation, significance, and energy yield under aerobic and anaerobic conditions.	Glycolysis
Res-B-023	Apply the knowledge of glycolysis to interpret clinical features of pyruvate kinase deficiency.	Clinical Correlation – Pyruvate Kinase Deficiency
Res-B-024	Identify the causes of lactic acidosis.	Lactic Acidosis
Res-B-025	Describe the conversion of pyruvate into lactate, acetyl-CoA, oxaloacetate, alanine, and ethanol.	Pyruvate Metabolism
Res-B-026	Elaborate the reaction catalyzed by the pyruvate dehydrogenase complex, highlighting the roles of E1, E2, and E3 components.	Pyruvate Dehydrogenase Complex
Res-B-027	Describe the reactions, regulation, and significance of the citric acid cycle, and calculate its total ATP yield.	Citric Acid Cycle
Res-B-028	Apply the knowledge of glycogen metabolism to interpret the biochemical basis of glycogen storage diseases (Type Ia, Ib, II, III, V, and VI).	Glycogen Storage Diseases
Res-B-029	Describe the oxidative and non-oxidative phases of the pentose phosphate pathway and identify the major product of each phase.	Pentose Phosphate Pathway

Res-B-030	Identify the reactions of the pentose phosphate pathway that yield NADPH and explain its major cellular uses.	NADPH and Cellular Function
Res-B-031	Explain the biochemical basis of hemolysis in glucose-6-phosphate dehydrogenase (G6PD) deficiency.	G6PD Deficiency
Res-B-032	Compare the pentose phosphate pathway with glycolysis in terms of function and products.	Comparison: PPP vs Glycolysis
Res-B-033	Identify the effects of ETC inhibitors and uncouplers on electron transport and ATP synthesis, and discuss their implications for cellular energy production.	ETC: Inhibitors, Uncouplers, and Energy Production
PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-Ph-001	Classify drugs used in the management of cough as antitussives, expectorants, and mucolytics.	Cough and Its Management
	Classify and describe mechanism of action for drugs used in the management of cough as antitussives, expectorants, and mucolytics.	
Res-Ph-002	Describe the pharmacological strategies for the treatment of asthma.	Asthma
	Enumerate the drugs used for prophylaxis of asthma.	
	Classify the drugs used in the treatment of asthma.	
	Explain the mechanism of action, clinical uses, and side effects of β_2-adrenergic agonists used in asthma.	
	Describe the salient features and adverse effects of methylxanthines.	
	Explain the pharmacological effects of antimuscarinic drugs, mast cell stabilizers, and leukotriene inhibitors in asthma management.	

	Elaborate on the anti-inflammatory effects of corticosteroids in asthma.	
	Explain the pharmacological management of an acute asthma attack.	
Res-Ph-003	Recall the histamine receptor subtypes and describe their mechanisms of action.	Antihistamines
	Explain the pharmacological effects and potential indications of histamine.	
	Enumerate the different types of histamine antagonists.	
	Classify antihistamines.	
	Discuss the pharmacology of H_1 antihistamines with emphasis on clinical uses, adverse reactions, and drug interactions.	
	Differentiate between first- and second-generation H_1 antihistamines.	
Res-Ph-004	Describe the different types of tuberculosis.	Antitubercular Drugs
	Enumerate the first-line and second-line antitubercular drugs.	
	Explain the mechanism of action, clinical uses, and adverse effects of isoniazid and rifampicin.	
	Explain the mechanism of action, clinical uses, and adverse effects of ethambutol and pyrazinamide.	
	Enumerate the drugs and doses used for tuberculosis prophylaxis.	
	Describe the standard treatment regimen for new tuberculosis patients.	
	Enumerate the drugs used for resistant, MDR, and XDR tuberculosis.	
GENERAL PATHOLOGY & MICROBIOLOGY		

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
Res-Pa-001	Define upper respiratory tract Infections and lower respiratory tract Infections. Enlist various Respiratory tract Infections causing agents	Respiratory tract Infections
Res-Pa-002	Explain the oral health implications of upper respiratory tract infections.	Oral Implications of URTIs
Res-Pa-003	Classify pneumonias into viral, bacterial, and hospital-acquired types.	Pneumonia
	Explain the pathological features of pneumonias caused by human coronavirus.	
	Describe the oral health considerations in pneumonias caused by human coronavirus.	
Res-Pa-004	Describe the basic epidemiology and transmission of common bacterial respiratory tract pathogens. Explain the key virulence factors and general pathogenesis of *Streptococcus pyogenes*, *Streptococcus pneumoniae*, and *Haemophilus influenzae*.	Common Bacterial Respiratory Tract Infections
	Outline the clinical significance of Streptococcus pyogenes, including immune-mediated complications. Describe the basic principles of laboratory diagnosis of common bacterial respiratory infections. Discuss general preventive measures, including vaccination and infection control practices.	
Res-Pa-005	Differentiate between typical and atypical bacterial respiratory pathogens. Describe the epidemiology and modes of transmission of atypical respiratory bacteria. Explain the basic pathogenic mechanisms of Mycoplasma pneumoniae, Legionella pneumophila, and Klebsiella pneumoniae. Outline the general laboratory approaches used for identification of atypical respiratory pathogens. Discuss preventive strategies, including environmental and hospital-based infection control measures.	Atypical and Opportunistic Bacterial Respiratory Infections

Res-Pa-006	Describe the epidemiology and clinical importance of Pseudomonas aeruginosa as an opportunistic pathogen. Explain the major virulence factors and basic pathogenesis of Pseudomonas aeruginosa. Outline the general principles of laboratory diagnosis of Pseudomonas infections. Discuss the importance of infection control and prevention of hospital-acquired infections.	Hospital-Acquired and Opportunistic Infections
Res-Pa-007	Describe the epidemiology and transmission of Mycobacterium tuberculosis. Explain the basic pathogenesis of tuberculosis. Outline the concept of drug-resistant tuberculosis, including MDR-TB and XDR-TB. Describe the general principles of laboratory diagnosis of tuberculosis. Discuss preventive measures, including public health strategies and infection control.	Tuberculosis and Chronic Respiratory Infections
Res-Pa-008	Describe the epidemiology and modes of transmission of common viral respiratory infections. Explain the basic pathogenesis of Influenza virus and SARS-CoV-2.	Viral Respiratory Infections of Public Health Importance
	Outline the general laboratory methods used for diagnosis of viral respiratory infections. Discuss preventive strategies, including vaccination and standard infection control precautions.	
Res-Pa-009	Describe the epidemiology and transmission of measles and mumps viruses. Explain the basic pathogenesis of measles and mumps infections. Identify common oral and salivary gland manifestations associated with these viral diseases.	Viral Diseases with Oral and Salivary Gland Involvement

	Outline general laboratory diagnostic approaches for these viral infections. Discuss preventive measures, including immunization	
Res-Pa-010	Describe general oral health considerations in patients with respiratory infections.	Dental Management in Respiratory Diseases
Res-Pa-011	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of of Corynebacterium diphtheriae	Corynebacteri um diphtheriae
Res-Pa-012	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of of Influenza Virus	Influenza Virus
Res-Pa-013	Discuss the importance of seasonal flu vaccines.	Vaccines
Res-Pa-014	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of chlamydia pneumoniae	Chlamydia pneumoniae

Res-Pa-015	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of chlamydia psittaci	Chlamydia psittaci
Res-Pa-016	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of Q.fever	Q.fever bacillus anthrax Aspergillus.
	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of bacillus anthrax	
	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of Aspergillus.	
Res-Pa-017	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of dermatophytes	dermatophytes
Res-Pa-018	Discuss the microbiological characteristics, disease spectrum and brief diagnosis of histoplasma	histoplasma

Res-Pa-019	Discuss the microbiological characteristics, disease spectrum and brief diagnosis of Coccidioides, Blastomyces Paracoccidioides.	Coccidioides, Blastomyces Paracoccidioides.
PRACTICALS / LAB WORK		
PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-Ph-005	Demonstrate the routes of administration for anesthetic agents and pre-anesthetic medications.	General and Local Anesthetics: Routes of Administration and Pre-anesthetic Medications
Res-Ph-006	Write an appropriate prescription for the management of asthma and status asthmaticus.	Drugs Used in Bronchial Asthma
Res-Ph-007	Write an appropriate prescription for the treatment of hay fever and allergic rhinitis.	Antihistamines and Antiallergic Drugs
Res-Ph-008	Write an appropriate prescription for the management of chronic cough.	Antitussives and Expectorants
Res-Ph-009	Write an appropriate prescription for the treatment of tuberculosis.	Antitubercular Drugs
HISTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-A-003	Identify and illustrate the histological features of the trachea under light microscope	Trachea
GENERAL PATHOLOGY & MICROBIOLOGY		

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
Res-Pa-020	Perform Ziehl-Neelsen staining to identify acid-fast bacilli, and accurately interpret the microscopic findings for the diagnosis of *Mycobacterium tuberculosis*.	Ziehl-Neelsen staining and acid-fast bacilli (AFB)

Res-Pa-021	Perform and interpret the oxidase test to identify oxidase-positive organisms, specifically *Pseudomonas aeruginosa*, in a clinical microbiology setting.	Oxidase test and identification of *Pseudomona* *s aeruginosa*

THEORY		
ORAL BIOLOGY AND TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-OB-001	Analyze the functional behavior of dental hard and soft tissues in relation to restorative and prosthodontic procedures.	Functional Biology of Dental Hard and Soft Tissues
DMPD3-OB-002	Discuss the potential of oral stem cells and regenerative therapies in supporting dental tissue repair and rehabilitation.	Oral Stem Cells and Regenerative Dentistry
PRE-CLINICAL PROSTHODONTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
	Define articulation	
	Comprehend the purpose of articulation	Articulators:

DMPD3-PD-001	Define articulator and enlist its various types	Types and uses
	Comprehend uses of plane line and semi adjustable articulator in tooth setup.	
OPERATIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-OD-001	Describe the principles of Class II cavity preparation, including indications, outline form, resistance and retention features, Principles and Steps of Class 2 instrumentation, and the rationale for each step in relation to tooth morphology and caries progression.	Principles and Steps of Class II Cavity Preparation
DMPD3-OD-002	Enlist steps of applying liners & bases in a prepared class II cavity.	Application of Liners and Bases in Cavity Preparation
DMPD3-OD-003	Enlist the features that indicate an occlusal high spot.	Identification of Occlusal High Spots
DMPD3-OD-004	Enlist the complications that may arise due to unadjusted occlusal high spots in restorations.	Complications of Unadjusted Occlusal High Spots in Restorations
DMPD3-OD-005	Define a matrix system and explain its role in Class II restorations.	Matrix system
	Enlist the components of a matrix system (matrix band, retainer, wedge).	
	Identify the types of matrix systems used in operative dentistry: • Tofflemire (Universal matrix) • Ivory matrix • Sectional matrix system (introductory level) • Automatrix system	

DMPD3-OD-006	Explain the functions of wedges in Class II restorations.	Wedges
	Discuss the consequences of improper matrix or wedge placement, such as: • Open proximal contacts • Gingival overhangs • Poor contour and marginal leakage	
DMPD3-OD-007	Describe the principles of class I compound cavity preparation for amalgam, indications, outline form, resistance and retention features.	Class I compound restoration with amalgam
DMPD3-OD-008	Describe the indications and case selection for Class II composite restorations.	Class II Composite Restorations
	Explain conservative cavity design principles for posterior adhesive restorations.	
	Describe principles of proximal box preparation and gingival margin management for class II cavity.	

SCIENCE OF DENTAL MATERIALS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-DM-001	Describe the structure and classification of polymers relevant to dental applications.	Dental Polymers
	Explain the composition, properties, and uses of polymers used in dentistry.	
	Differentiate between the various types of polymerization reactions, explaining their chemistry and mechanisms.	

DMPD3-DM-002	Discuss the steps and factors influencing the polymerization reaction and its impact on material performance.	Polymerization
	Classify denture base materials and explain the essential requirements for ideal denture base materials.	
	Explain the composition, manipulation and processing of acrylic denture base polymers and relate their properties to clinical performance.	
	Enumerate and demonstrate stepwise procedures for manipulation, processing, finishing and maintenance of acrylic denture.	
	Identify and describe alternative denture base materials with their advantages and limitations.	
	Define and differentiate self-cured, light-cued and heat-cured polymethyl methacrylate based on composition, polymerization and clinical application.	
	Identify and describe the physical stages of PMMA polymerization during cold cure processing.	
	Compare acrylic and porcelain teeth in terms of composition, bonding, esthetics and wear-resistance.	
	Justify the selection of artificial teeth based on occlusal requirements, esthetics and patient needs.	
DMPD3-DM-003	Identify and describe wrought alloys used in prosthodontic applications.	Wrought alloys
	Correlate the mechanical properties of stainless steel with its prosthodontic uses.	
	Define annealing and describe its importance in modifying the properties of alloys after work hardening.	
DMPD3-DM-004	Classify the type of waxes used in dentistry according to their use as pattern, processing and impression waxes.	Waxes

	Explain ideal properties of dental waxes.	and Separating

	Discuss the components, properties and applications of dental waxes.	media
	Explain the ideal requirements for inlay wax.	
	Identify and classify the various separating media used in dental laboratory procedures.	
	Explain the purpose and mechanism of separating media in preventing material adhesion during processing.	
	Describe the composition, manipulation and clinical relevance of commonly used separating media.	
DMPD3-DM-005	Define investment materials and classify them based on composition and application.	Investment Materials
	Describe the components of gypsum-bonded, phosphate-bonded, and silica-bonded investment materials.	
	Explain the functions of investment materials in the dental casting process.	
	Define setting and thermal expansion in investment materials	
	Describe the desirable properties of dental investment materials.	
	Describe and sequence the steps in the dental casting procedure from pattern fabrication to finishing.	
	Identify different types and causes of porosity in dental castings.	
	Analyze the causes of common casting defects and suggest preventive measures.	
	Describe the design, types, and functions of sprue formers in dental casting.	
	Explain Principles of cutting, grinding, finishing and polishing.	

DMPD3-DM-006	Identify significance of finishing and polishing procedures.	Finishing and polishing

	Compare two body and three body wear.	
	Define abrasion, erosion and air abrasion technology	
	Enlist hazards of abrasive procedures	
	Enumerate different types of abrasives and their uses in dentistry	

PRACTICALS / LAB WORK		
PRE-CLINICAL PROSTHODONTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-PD-002	Construct occlusal rims on trial denture upper and lower base plates with appropriate dimensions and contours.	Fabrication of Occlusal Rims
DMPD3-PD-003	Mount upper and lower base plates with occlusal rims on semi-adjustable articulators.	Articulation of Base Plates with Occlusal Rims
DMPD3-PD-004	Arrange upper anterior teeth on the occlusal rim alignment as per the given 5 planes (Faciolingual, Mesiodistal, Occlusal plane, Ridge relation and Rotational curve)	Setup of Upper Anterior Teeth
DMPD3-PD-005	Arrange lower anterior teeth ensuring correct overbite and overjet as per the given 5 planes (Faciolingual, Mesiodistal, Occlusal plane, Ridge relation and Rotational curve)	Setup of Lower Anterior Teeth
DMPD3-PD-006	Arrange upper posterior teeth correctly on occlusal rims following alignment in all planes and anatomical guidelines.	Setup of Upper Posterior Teeth

DMPD3-PD-007	Arrange lower posterior teeth correctly on occlusal rims following alignment in all planes to create ideal occlusion, in maximum intercuspation.	Setup of Lower Posterior Teeth
DMPD3-PD-008	Perform wax finishing, carving, and festooning.	Wax-Up, Carving, and Festooning
DMPD3-PD-009	Demonstrate correct flasking and dewaxing procedures for processing complete dentures.	Flasking and Dewaxing of Complete Dentures
DMPD3-PD-010	Perform packing and curing of complete dentures using appropriate resin materials and curing cycles	Packing and Curing of Complete Dentures
	Perform denture finishing & polishing.	
OPERATIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-OD-009	Prepare Class II cavity on typodont for an amalgam restoration. (Maxillary and Mandibular molar)	Class II Cavity Preparation for
		Amalgam Restoration
DMPD3-OD-010	Place a matrix band correctly and stabilize it using a wedge to achieve proper gingival adaptation.	Matrix Band Placement
DMPD3-OD-011	Demonstrate correct wedge insertion technique (direction, size, and position) on a typodont.	Wedge insertion technique
DMPD3-OD-012	Apply liners & bases in a prepared cavity.	Application of Liners and Bases
DMPD3-OD-013	Restore a prepared Class II cavity on a typodont with dental amalgam, following standardized techniques of trituration, condensation, carving, and finishing.	Amalgam Restoration Technique in class II

DMPD3-OD-014	Assess the completed restoration for gingival overhangs, marginal adaptation, and proximal contact after removal of the matrix and wedge.	Assessment of completed restoration
DMPD3-OD-015	Prepare Class I compound cavity on typodont for amalgam (maxillary & mandibular molars).	Class I compound restoration with amalgam
DMPD3-OD-016	Perform quadrant isolation for posterior composite restorations using rubber dam on typodont. Prepare conservative Class II cavity on typodont for composite restoration. Select and place appropriate matrix systems and wedges for proximal restorations.	Cavity preparation for class II composite restoration
DMPD3-OD-017	Demonstrate adhesive protocol, including: • Etching strategy (total-etch/self-etch) • Primer and bonding application • Solvent evaporation and light curing Place composite using appropriate incremental techniques to minimize shrinkage stress and establish proper contour and contact.	Adhesion and composite restoration
DMPD3-OD-018	Finish and polish restorations while maintaining marginal integrity and anatomy. Evaluate and adjust occlusion to ensure proper functional contacts.	Finishing and Polishing

SCIENCE OF DENTAL MATERIALS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-DM-007	Differentiate between study casts, working casts, and refractory casts based on purpose and fabrication. Identify and classify the different types of dental waxes used in dentistry based on their usage	Waxes

	Demonstrate the correct manipulation techniques for inlay and base plate waxes, applying them appropriately in laboratory procedures.	
DMPD3-DM-008	Demonstrate the mixing of polymer PMMA and monomer MMA to a doughy consistency exhibiting five stages sandy, stringy, doughy, rubbery and stiff for denture base fabrication.	Denture base materials