

Department of Orthodontics, SPDC

PHD syllabus with Theme

Theme	Status curriculum prepared in 5 themes and BOS approval	Syllabus
Theme 1	Anatomy Physiology Biochemistry Physical anthropology Pathology Pharmacology	<p><b>APPLIED ANATOMY OF HEAD AND NECK :</b></p> <ol style="list-style-type: none"> <li>a. <b>Prenatal Growth</b> Of Craniofacial Structures - Embryology</li> <li>b. <b>Postnatal Growth of Head:</b> Bones Of Skull, The Maxilla And Mandible, Development Of Chin, The Hyoid Bone, General Growth Of Craniofacial Structure.</li> <li>c. <b>TMJ</b> Anatomy</li> <li>d. <b>Bone:</b> Origin, Composition, Structure, Schedule of Ossification, Mechanical Properties, Normal Radiographic Anatomy Of Facial Bone, Normal Radiographic Landmarks.</li> <li>e. <b>Assessment Of Growth And Development:</b> Growth Prediction, Growth Spurts, Concept Of Normality And Growth Increments, Differential Growth, Gradient Of Growth, Methods of Gathering Growth Data. Theories of Growth and Recent Advances, Factors Affecting Physical Growth.</li> <li>f. Muscles of Mastication and Facial Expression.</li> <li>g. Development of Dentition and Occlusion.</li> <li>h. Assessment Of Skeletal Age</li> <li>i. Anatomy Of Pharynx</li> </ol> <p><b>APPLIED GENETICS:</b></p> <ol style="list-style-type: none"> <li>a. Cell Structure, DNA, RNA, Protein Synthesis, Cell Division.</li> <li>b. Principles Of Orofacial Genetics</li> <li>c. Genetics In Malocclusion</li> <li>d. Molecular Basis Of Genetics</li> <li>e. Studies Related To Malocclusion</li> <li>f. Recent Advances In Genetics Related To Malocclusion</li> <li>g. Genetic Counseling</li> <li>h. Bioethics And Relationship To Orthodontic Management Of Patients.</li> <li>i. Autoimmune Disorders Involving Oral Cavity Chromosomal Abnormalities</li> </ol> <p><b>APPLIED PHYSIOLOGY:</b></p> <ol style="list-style-type: none"> <li>a. Mastication, Deglutition</li> <li>b. <b>Endocrinology And Its Disorders:</b> (Growth Hormone, Thyroid Hormone, Parathyroid Hormone, ACTH) Pituitary Gland</li> </ol>

		<p>Hormones, Thyroid Gland Hormones, Parathyroid Gland Hormones</p> <p>c. <b>Calcium and Its Metabolism: Vitamin D</b>, Nutrition- Metabolism And Their Disorders: Proteins, Carbohydrates, Fats, Vitamins And Minerals.</p> <p>d. Muscle Physiology</p> <p>e. Bone Dysplasia, Osteogenesis Imperfect, Osteoporosis</p> <p>f. <b>Craniofacial Biology</b>: Cell Adhesion Molecules And Mechanism Of Adhesion</p> <p>g. <b>Blood Composition &amp; Bleeding Disorders</b>, Causes, Clinical Manifestations, Diagnosis, Applied Implication In Orthodontics: Hemophilia, Thrombocytopenia, Purpura, Etc</p> <p>h. Various Types Of <b>Shock</b> &amp; Its Management And Other Emergencies In Orthodontics</p> <p>i. Physiology Of Pain Mechanism Of Speech</p> <p><b>APPLIED BIOCHEMISTRY &amp; NUTRITION</b></p> <p>a. Carbohydrate, Proteins, Lipids, And Their Metabolism, Enzymes, Vitamins And Minerals Applied Nutrition – Basic Principles Of Diet &amp; Balanced Diet</p> <p><b>PATHOLOGY &amp; MICROBIOLOGY:</b></p> <p>a. Inflammation , Repair, Degeneration, Necrosis.</p> <p>b. <b>Bleeding Disorders</b> - Circulatory Disturbances, Ischemia, Hyperemia, Edema , Thrombosis Embolism , Infarction And Hypersensitivity Reaction. Blood Dyscrasia, Anaemia</p> <p>c. Developmental Disturbances Of Oral And Para-Oral Structures</p> <p>d. Physical And Chemical Injuries To Oral Cavity</p> <p>e. Common Oral Flora – <b>Bacterial</b> (Staph, Strepto, E. Coli), <b>Viral</b> (Viral Hepatitis, HIV Infections, Herpes, HPV And AIDS), <b>Fungal</b> Infections (Candidiasis, Aspergilus)</p> <p>f. Immunology- Antigen And Antibody Reaction, Allergy, Hypersensitivity &amp; Immunity.</p> <p>g. Hospital Waste Management, Infection Control Procedures, Sterilization And Disinfection.</p> <p>h. Regressive Changes Of Teeth, Pulp,</p> <p>i. Periapical Pathology, Pulp Reaction To Dental Caries And Dental Procedures. Oral Manifestation Of Systemic Diseases</p> <p><b>APPLIED PHARMACOLOGY</b></p> <p>a. Analgesics, Anti Inflammatory</p> <p>b. Topical &amp; Local Anesthetics</p> <p>c. Management Of Medically Compromised Patients</p> <p>d. Antibiotics</p>
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Theme 2	Dental material and its application	<p><b>APPLIED DENTAL MATERIALS:</b></p> <ul style="list-style-type: none"> <li>a. <b>Gypsum Products:</b> Dental Plaster, Dental Stone And Type III, IV, V and Their Properties, Setting Reaction Accelerators, Retarders, Practical Consideration. Impression Plaster, Model Plaster (Orthocal),</li> <li>b. <b>Impression Materials:</b> Impression Materials In General And Irreversible Hydrocolloid.</li> <li>c. <b>Acrylics:</b> Chemistry, Composition Physical Properties</li> <li>d. <b>Composites:</b> Composition Types, Properties Setting Reaction</li> <li>e. <b>Banding And Bonding Cements:</b> Zn (P04)2, Zinc Silicophosphate, Zinc Polycarboxylate, Resin Cements And Glass Ionomer Cements</li> <li>f. <b>Wrought Metal Alloys:</b> Deformation, Strain Hardening, Annealing, Recovery, Recrystallization, Grain Growth, Properties Of Metal Alloys</li> <li>g. <b>Orthodontic Arch Wires:</b> Stainless Steel Gold, Wrought Cobalt Chromium Nickel Alloys, Alpha &amp; Beta Titanium Alloys.</li> <li>h. <b>Elastics:</b> Latex And Non-Latex Elastics.</li> <li>i. Applied Physics, Bioengineering And Metallurgy.</li> <li>j. Allergic Reaction To Dental Materials.</li> </ul> <p>Sterilization And Disinfection Of Dental Materials</p>
Theme 3	General orthodontics	<ul style="list-style-type: none"> <li>a. Orthodontic History</li> <li>b. Concept of Occlusion and esthetics</li> <li>c. Etiology and Classification of malocclusion</li> <li>d. Dentofacial Anomalies</li> <li>e. Child and Adult Psychology</li> <li>f. Diagnostic procedure and Treatment planning in Orthodontics</li> </ul>

Theme 4	Clinical orthodontics	<ul style="list-style-type: none"> <li>a. Clinical Orthodontics – Myofunctional Orthodontics</li> <li>b. Cleft lip and Palate</li> <li>c. Biology of Tooth movement</li> <li>d. Orthodontic/ Orthognathic surgery</li> <li>e. Review of current literature on treatment methods and results</li> <li>f. Clinical procedures – Interceptive Orthodontics Principle</li> </ul>
Theme 5	Recent advances	<ul style="list-style-type: none"> <li>a. Use of Implants</li> <li>b. Lasers</li> <li>c. Application of FEM</li> <li>d. Distraction Osteogenesis</li> </ul>