Student should successfully complete 60 Credits courses for specialty diploma and additional 6 Credits Thesis to fulfill the Master’s Degree in Orthodontics

General Courses

**ANAT 651-General Anatomy and Embryology**  
(1Cr: 1Lec, 2Prac)

*Anatomy:* Cardiovascular system, Respiratory system; Skull, mandible & cervical vertebrae; Scalp and face; Cranial cavity (fossae, folds, venous sinuses & pituitary gland); Orbit; Parotid Region; Temporal & Infratemporal Region; Pterygo-palatine fossa; T.M.J.; Nasal cavity; Mouth cavity (lips & cheeks, gum & teeth, tongue and palate); Ear and facial nerve; Posterior triangle of the neck; Anterior triangle subdivisions; Submandibular Region; Thyroid gland; Blood vessels of the neck; Cranial nerves in the neck; Fasciae of the neck; Pharynx; Larynx; Pathway of exteroceptive sensations from the face & teeth to the cerebral cortex; Pathway of taste sensation to the cerebral cortex.  
**Embryology:** Fertilization; Cleavage; Implantation; Formation of the 3 germ layers & their derivatives; Pharyngeal arches & derivatives; Pharyngeal pouches & fate; Branchial sinus, cyst & fistula; Development of face; Development of palate; Development of tongue; Development of thyroid gland; Development of pituitary gland; Development of salivary glands.

**BIOM 602-Basic Biomaterials Science**  
(1Cr: 1Lec, 0Prac)


**COMD 602-Biostatistics & Research Methodology**  
(1Cr: 1Lec, 0Prac)

Introduction to the course, definitions, Characteristics of data and Collection of data, Sampling (Types of sample, Methods of sample), Essentials for research design (Types of research study, Components of research protocol), Tabular and graphical Presentation of data (Frequency distribution tables, Contingency tables, Bar-chart, Histogram, Frequency polygon and pie-chart), Mathematical presentation of data: Measures of central tendency: Mean, Median, Mode; Measures of variation: Range, Standard deviation, Standard of error, CO-variance, Normal distribution Curve, Hypotheses Formulation, Tests of Hypotheses and significance (Parametric tests): Z test, "t" tests, Correlation test r-test, Analysis of variance F-test, Chi- square test. Non-Parametric tests.

**MICR 651-Microbiology, Immunology & Molecular Biology**  
(1Cr: 1Lec, 2Prac)

*Microbiology:* Prokaryotes and eukaryotes; Structure of bacterial cell; Biological requirements for bacterial growth; Bacterial growth: growth curve, kinetic of growth, continuous growth and synchronous growth; Bacterial products: pigments, toxins and enzymes; Genetic elements: Chromosomal and non-chromosomal elements; Mode of transferring genetic elements; Mutation; General properties, structure, classification, replication, cultivation and detection.  
**Immunology:** Types of immunity; Immune response; Antigen and antibody; Surface markers on cells of immune system; Immune deficiency diseases; Hypersensitivity and autoimmunity; Serological techniques.
**OPTH 603-Advanced Oral Pathology**
(2Cr: 2Lec, 2Prac)

Introduction to oral pathology; Developmental anomalies of teeth; Dental caries; Pulp diseases; Periapical pathologic conditions; Osteomyelitis; Cysts of oral and para oral region; Bone diseases; Salivary gland diseases; Developmental abnormalities of oral and para oral tissues; Viral, bacterial and mycotic diseases. Classification, etiology and pathogenesis, microbiologic factors, clinical features and differential diagnosis. Microscopic features and management. Oral ulceration and vesiculo bollous lesions; Oral manifestations of AIDs; Metabolic and endocrinal disturbances; White lesions; Precancerous conditions and lesions; Etiology of oral cancer and Oncogenes; Salivary gland tumors; Odontogenic tumors; Non-Neoplastic inflammatory overgrowth of the oral mucosa; Non-Odontogenic epithelial tumors; Non-Odontogenic Mesenchymal tumors; Pigmented oral lesions; Muscle tumors; Malignant lymphomas and leukemia; Nerve tissue tumors, classification, clinical and microscopic features; Undifferentiated head and neck tumors; Oro-facial pain; Arterio-Venous Malformations; Diseases of TMJ; Forensic problems and oral pathology.

**ORBL 601-Oral Biology**
(2Cr: 2Lec, 2Prac)

Development and growth of the teeth; Enamel; Dentin; Pulp; Cementum; Periodontal ligament; Embryology; Maxilla and mandible; Oral Mucosa; Salivary Glands; Bone and alveolar process; Eruption and shedding; Temporo-mandibular joint; Maxillary sinus & lymph drainage; Wound healing, repair & regeneration; Physiologic tooth forms protecting the periodontium; Dental and Para dental Tissues; Advanced Oral Biology.

**PHYL 651-Advanced General Physiology**
(1Cr: 1Lec, 0Prac)

Blood; Digestive system; Autonomic Nervous System; Excitable Tissues; Endocrine System; Renal system; Cardiovascular system; Central nervous system; Renal system; Respiratory System.
Specialty Courses

**ORTD 601-Preclical Orthodontics**  
(3Cr: 2Lec, 3Prac)

Orthodontics-Theory and Practice, Orthodontic Appliances (Attachments, Wires, and Auxiliaries), Recent Advances in Wire Technology, Wire Bending Exercise, Bonding and Banding in Orthodontics, Force System and Tissue Reaction in Orthodontics, Edgewise Typodont Course.

**ORTD 602-Craniofacial Growth I**  
(4Cr: 2Lec, 6Prac)


**ORTD 603-Oclusion II**  
(2Cr: 1Lec, 3Prac)

Study Cast Analysis, Classification of Occlusion, Angle’s and Supplementary Classifications, the Validity and Limitations of Classifications of Occlusion, the Prevalence of Malocclusion, Occlusal Indices, Skeletal and Dento-alveolar Abnormality in 3-Ds. Static Versus Functional Occlusion, 6 Keys of Andrews. Interocclusal Splint Therapy.

**ORTD 604-Oclusion I**  
(2Cr: 1Lec, 3Prac)

Facial Growth and Occlusal Development, Normal and Abnormal Development of Occlusion, Etiology of Malocclusion, Review of the Craniofacial malformation Syndromes Relevant to Orthodontics.

**ORTD 605-Craniofacial Growth II**  
(2Cr: 1Lec, 2Prac)

Bone Physiology and Calcium Metabolism, Ossification Intramembranous and Enchondral, Theory of Equilibrium and Compensating Mechanisms, Wolff’s Law of Bone (Form and Function), Methods of Studying Growth and Development, Controlling Factors and Theories of Craniofacial Growth Mechanisms.

**ORTD 606-Advanced Clinical Orthodontics II**  
(4Cr: 2Lec, 4Prac)

Orthodontic Case Analysis, Diagnostic Procedures (Data Collection and Interpretation), Clinical Evaluation of Soft and Hard Tissues Components, Functional Examination, Radiographic Examination, the Clinical Value of Photographs, Problem Listing, Stating Treatment Objectives, Formulating a Treatment Planning, Extraction Decision in Orthodontics.
**ORTD 607-Advanced Clinical Orthodontics I**  
(4Cr: 2Lec, 4Prac)  
Force System and Tissue Reaction, Types and Magnitude of Forces Generated by Orthodontic Appliances, Theories of Tooth Movement, Orthopedic Versus Orthodontic Forces, Orthodontic Appliances and Materials. Timing of Orthodontic Treatment, Bjork's Four Phases of Treatment to Four Phases of Growth, Treatment Modalities (Growth Modification, Camouflage, and Orthognathic Surgery).

**ORTD 608-Cephalometrics**  
(4Cr: 2Lec, 4 Prac)  
Anatomic Considerations, Radiographic Source and Hazards of Irradiation, Standardization of Cephalometric Radiography, How to Obtain a Good Quality Cephalogram? Validity and Reliability of Head films, Landmarks Identification and Cephalometric Tracing, the Diagnostic Value of Cephalometrics, Cephalometric Analyses Currently Used for Diagnostic Purposes.

**ORTD 609-Advanced Clinical Orthodontics III**  
(6Cr: 3Lec, 9Prac)  
Uses and Limitations of Removable Orthodontic Appliances, Functional Appliances and Growth Modification, Screening Devices as Habit Breakers, Comprehensive Orthodontic Treatment with Fixed Appliances, Early Versus Adult Treatment, Combined Orthodontic Orthosurgical Correction of Severe Dentofacial Deformities- Interdisciplinary Approach, Skeletal Anchorage (Miniscrews and Dental Implants).

**ORTD 610-Advanced Clinical Orthodontics IV**  
(6Cr: 3Lec, 9Prac)  
Orthodontics- Periodontics Interrelationship, Moving Teeth with Minimal Attached Gingiva, Management of Impacted Teeth (Surgical Exposure and Orthodontic Treatment), Preparing a Case for Orthosurgical Correction, Orthodontic Management of Cleft Lip and Palate Cases, Possible Complications of Orthodontic Therapy. Retention and Relapse after Orthodontic Treatment.

**ORTD 695-Seminars in Orthodontics I**  
(2Cr: 2Lec, 0Prac)  
Literature Review of Selected Topics and Relevant Clinical Cases. Short Talk Case Presentation, Case Analysis and Interpretation, Sharing Experiences with Colleagues and faculty Members. Cases Must Include Different Treatment Modalities and Difficulties:  
- Early Correction of Class II Div1 Malocclusion (Phase I Treatment)  
- Vertical Correction of Class II Div2 in Different Age Groups  
- Palatal Expansion to Correct Transverse Problems (Rapid Versus Slow)  
- Anchorage Value of Extra Oral Forces versus Mini-implants.

**ORTD 696-Seminars in Orthodontics II**  
(2Cr: 2Lec, 0Prac)  
Literature Review and Case Presentation of Clinical Cases:  
- Early Versus Late Correction of Class III Malocclusion  
- The Optimal Timing for Bone Graft in Cleft Alveolus  
- Esthetic Occlusal Plane and Lip Teeth Relationship
Elective Courses
(10 Cr: 10Lec, 0Prac)

Could be selected from different dental specialties.