Faculty of Dentistry (DEN)

Syllabi for Master of Dental Surgery

Effective from 5th November 2017 (NEW)

Courses offered:

1. **PROSTHODONTICS AND CROWN & BRIDGE (DPRO31)**
2. **PERIODONTOLOGY (DPER31)**
3. **ORAL AND MAXILLOFACIAL SURGERY (DOMS31)**
4. **CONSERVATIVE DENTISTRY AND ENDODONTICS (DEND31)**
5. **ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS (DORT31)**
6. **ORAL & MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY (DOPM31)**
7. **PEDIATRIC DENTISTRY (DPED31)**
8. **ORAL MEDICINE AND RADIOLOGY (DOMR31)**

1. PROSTHODONTICS AND CROWN & BRIDGE (DPRO31)

APPLIED BASIC SCIENCES:

Should develop thorough knowledge on the applied aspects of Anatomy, Embryology, Histology particularly head and neck, Physiology, Biochemistry, Pathology, Microbiology, Virology, Pharmacology, Health and systematic diseases principles in surgery medicine and Anesthesia, Nutrition, Behavioral sciences, age changes, genetics, Dental Material Science, congenital defects and Syndromes and Anthropology, Biomaterial Sciences, Bio-engineering and Bio-medical and Research Methodology as related to Masters degree Prosthodontics and Crown & Bridge including Implantology

It is desirable to have adequate knowledge in Bio-statistics, Research Methodology and use of computers to develop necessary teaching skills in the specialty of Prosthodontics including crown and bridge.

APPLIED ANATOMY OF HEAD AND NECK:

General Human Anatomy –Gross Anatomy, anatomy of Head and Neck in detail:Cranial and facial bones, TMJ and function, muscles of mastication and facial expression, muscles of neck and back including muscles of deglutition and tongue, arterial supply and venous drainage of the head and neck, anatomy of the Para nasal sinuses in relation to the Vth cranial nerve. General considerations of the structure and function of the brain, brief considerations of V, VII, XI, XII, cranial nerves and autonomic nervous system of the head and neck. The salivary glands, Pharynx, Larynx Trachea, Oesophagus, Functional Anatomy of masticatory muscles, Deglutition, speech, respiration, and circulation, teeth eruption, morphology, occlusion and function. Anatomy of TMJ, its movements and myofacial pain dysfunction syndrome.

Embryology –Development of the face, tongue, jaws, TMJ, Paranasal sinuses,pharynx, larynx, trachea, esophagus, Salivary glands, Development of oral and Para oral tissues including detailed aspects of tooth formation.

Growth & Development –Facial form and Facial growth and development overview ofDentofacial growth process and physiology from foetal period to maturity and old age,. General physical growth, functional and anatomical aspects of the head, changes in craniofacial skeletal development, relationship between development of the dentition and facial growth.

Dental Anatomy –Anatomy of primary and secondary dentition, concept of occlusion,mechanism of articulation, and masticatory function. Detailed structural and functional study of the oral and Para oral tissues, normal occlusion, development of occlusion in deciduous mixed and permanent dentitions, root length, root configuration & tooth-numbering systems.

Histology –histology of enamel, dentin, Cementum, periodontal ligament and alveolarbone, pulpal anatomy, histology and biological consideration. Salivary glands and Histology of epithelial tissues including glands.

Histology of general and specific connective tissue including bone, , Salivary glands, Histology of skin, oral mucosa, respiratory mucosa, connective tissue, bone, cartilage, cellular elements of blood vessels, blood, lymphatics, nerves, muscles, tongue and tooth

Cell biology –Brief study of the structure and function of the mammalian cell Components of the cell and functions of various types of cells and their consequences with tissue injury

APPLIED PHYSIOLOGY AND NUTRITION :

Introduction, Mastication, deglutition, digestion and assimilation, Homeostasis, fluid and electrolyte balance, blood composition, volume, function, blood groups and hemorrhage, Blood transfusion, circulation, Heart, Pulse, Blood pressure, capillary and lymphatic circulation. Shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration. Endocrine glands in particular reference to pituitary, parathyroid and thyroid glands and sex hormones. Role of calcium and Vit D in growth and development of teeth, bone and jaws. Role of Vit. A, C and B complex in oral mucosal and periodontal health. Physiology and function of the masticatory system. Speech mechanism, mastication, swallowing and deglutition mechanism, salivary glands and Saliva

Endocrines – General principles of endocrine activity and disorders relating to pituitary, thyroid, pancreas, parathyroid, adrenals, gonads, including pregnancy and lactation. Physiology of saliva, urine formation, normal and abnormal constituents, Physiology of pain, Sympathetic and parasympathetic nervous system, neuromuscular co-ordination of the stomatognathic system.

Applied Nutrition – General principles, balanced diet, effect of dietary deficiencies and starvation, Diet, digestion, absorption, transportation and utilization & diet for elderly patients.

APPLIED BIOCHEMISTRY:

General principles governing the various biological activities of the body, such as osmotic pressure, electrolytic dissociation, oxidation-reductionCarbohydrates, proteins, liquids and their

metabolism, Enzymes, Vitamins, and minerals, Hormones, Blood, Metabolism of inorganic elements, Detoxification in the body & anti metabolites.

APPLIED PHARMACOLOGY AND THERAPEUTICS:

Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics, analeptics and tranquilizers. Local anesthetics, Chemotherapeutics and antibiotics, Antitubercular and anti syphilitic drugs, Analgesics and antipyretics, Antiseptics, styptics, Sialogogues and antisialogogues, Haematinics, Cortisones, ACTH, insulin and other antidiabetics vitamins: A, D, B – complex group C, K etc. Chemotherapy and Radiotherapy. Drug regime for antibiotic prophylaxis and infectious endocarditis and drug therapy following dental surgical treatments like placement of implants, pre and peri prosthetic surgery

APPLIED PATHOLOGY:

Inflammation, repair and degeneration, Necrosis and gangrene, Circulatory disturbances, Ischaemia, hyperaemia, chronic venous congestion, oedema, thrombosis, embolism and infarction. Infection and infective granulomas, Allergy and hypersensitive reactions, Neoplasms; Classification of tumors, Carcinogenesis, characteristics of benign and malignant tumors, spread of tumors. Applied histo pathology and clinical pathology.

APPLIED MICROBIOLOGY:

Immunity, knowledge of organisms commonly associated with diseases of the oral cavity (morphology cultural characteristics etc) of strepto, staphylo, , Clostridia group of organisms, Spirochaetes, organisms of tuberculosis, leprosy, diphtheria, actinomycosis and moniliasis etc. Virology, Cross infection control, sterilization and hospital waste management

APPLIED ORAL PATHOLOGY:

Developmental disturbances of oral and Para oral structures, Regressive changes of teeth, Bacterial, viral and mycotic infections of the oral cavity. Dental caries, diseases of pulp and periapical tissues, Physical and chemical injuries of the oral cavity, oral manifestations of metabolic and endocrine disturbances, Diseases of the blood and blood forming organism in relation to the oral cavity, Periodontal diseases, Diseases of the skin, nerves and muscles in relation to the Oral cavity.

LABORATORY DETERMINATIONS:

Blood groups, blood matching, R.B.C. and W.B.C. count, Bleeding and clotting time, PT, PTT and INR Smears and cultures – urine analysis and culture. Interpretation of RBS, Glycosylated Hb, GTT

BIOSTATISTICS:

Characteristics and limitations of statistics, planning of statistical experiments, sampling, collection, classification and presentation of data (Tables, graphs, pictograms etc) & Analysis of data, parametric and non parametric tests

Introduction to Biostatistics - Scope and need for statistical application to biological data. Definition of selected terms – scale of measurements related to statistics, Methods of collecting data, presentation of the statistical diagrams and graphs.

Frequency curves, mean, mode of median, Standard deviation and co-efficient of variation, Correlation – Co-efficient and its significance, Binominal distributions normal distribution and Poisson's distribution, Tests of significance.

RESEARCH METHODOLOGY:

Understanding and evaluating dental research, scientific method and the behavior of scientists, understanding to logic – inductive logic – analogy, models, authority, hypothesis and causation,. Measurement and Errors of measurement, presentation of results, Reliability, Sensitivity and

specificity diagnosis tests and measurements, Research Strategies, Observation, Correlation, Experimentation and Experimental design. Logic of statistical in(ter)ferences, balance judgements, judgement under uncertainty, clinical vs., scientific judgement, problems with clinical judgement, forming scientific judgements, the problem of contradictory evidence, citation analysis as a Means of literature evaluation, influencing judgement :

Protocol writing for experimental, observational studies, survey including hypothesis, PICO statement, aim objectives, sample size justification, use of control/placebo, standardization techniques, bias and its elimination, blinding, evaluation, inclusion and exclusion criteria.

APPLIED RADIOLOGY:

Introduction, radiation, background of radiation, sources, radiation biology, somatic damage, genetic damage, protection from primary and secondary radiation, Principles of X-ray production, Applied principles of radio therapy and after care.

ROENTGENOGRAPHIC TECHNIQUES:

Intra oral, extra oral roentgenography, Methods of localization digital radiology and ultra sounds. Normal anatomical landmarks of teeth and jaws in radiograms, temporomandibular joint radiograms, neck radiograms.

Use of CT and CBCT in prosthodontics

APPLIED MEDICINE:

Systemic diseases and (its) their influence on general health and oral and dental health. Medical emergencies like syncope, hyperventilation, angina, seizure, asthma and allergy/anaphylaxis in the dental offices – Prevention, preparation, medico legal consideration, unconsciousness, respiratory distress, altered consciousness, seizures, drug related emergencies, chest pain, cardiac arrest, premedication, prophylaxis and management of ambulatory patients, resuscitation, applied psychiatry, child, adult and senior citizens.

APPLIED SURGERY & ANESTHESIA:

General principles of surgery, wound healing, incision wound care, hospital care, control of hemorrhage, electrolyte balance. Common bandages, sutures, splints, shifting of critically ill patients, prophylactic therapy, bone surgeries, grafts, etc, surgical techniques, nursing assistance, anesthetic assistance.

Principles in speech therapy, surgical and radiological craniofacial oncology, applied surgical ENT and ophthalmology.

APPLIED PLASTIC SURGERY:

Applied understanding and assistance in programs of plastic surgery for prosthodontics therapy.

APPLIED DENTAL MATERIALS:

- • Students should have understanding of all materials used for treatment of craniofacial disorders – Clinical, treatment, and laboratory materials, associated materials, technical considerations, shelf life, storage, manipulations, sterilization, and waste management.

- • Students shall acquire knowledge of testing biological, mechanical and other physical properties of all materials used for the clinical and laboratory procedures in prosthodontic therapy.

- • Students shall acquire full knowledge and practice of Equipments, instruments, materials, and laboratory procedures at a higher level of competence with accepted methods.

All clinical practices shall involve personal and social obligation of cross infection control, sterilization and waste management.

ORAL AND MAXILLOFACIAL PROSTHODONTICS AND IMPLANTOLOGY:
I. NON-SURGICAL AND SURGICAL METHODS OF PROSTHODONTICS AND IMPLANTOLOGY

- a. Prosthodontic treatment for completely edentulous patients – Complete dentures, immediate complete dentures, single complete dentures, tooth supported complete dentures & Implant supported Prosthesis for completely edentulous patients for typical and atypical cases

- b. Prosthodontic treatment for partially edentulous patients: - Clasp-retained acrylic and cast partial dentures, transitional dentures, immediate dentures, intra coronal and extra coronal precision attachments retained partial dentures & maxillofacial prosthesis for typical and atypical cases a) **Edentulous Predicament**, Biomechanics of the edentulous state, Supportmechanism for the natural dentition and complete dentures, Biological considerations, Functional and Para functional considerations, Esthetic, behavioral and adaptive responses, Temporomandibular joints changes.

b) **Effects of aging of edentulous patients** –aging population, distribution andedentulism in old age, impact of age on edentulous mouth – Mucosa, Bone, saliva, jaw movements in old age, taste and smell, nutrition, aging, skin and teeth, concern for personal appearance in old age

c) **Sequelae caused by wearing complete denture** –the denture in the oralenvironment – Mucosal reactions, altered taste perception, burning mouth syndrome, gagging, residual ridge (reduction) resorption, denture stomatitis, flabby ridge, denture irritation hyperplasia, traumatic Ulcers, Oral cancer in denture wearers, nutritional deficiencies, masticatory ability and performance, nutritional status and masticatory functions.

d) **Temporomandibular disorders in edentulous patients** –Epidemiology,etiology and management, Pharmacotherapy, Physical modalities, and Bio-behavioral modalities

e) **Nutrition Care for the denture wearing patient** –Impact of dental status onfood intake, Gastrointestinal functions, nutritional needs and status of older adults, Calcium and bone health, vitamin and herbal supplementation, dietary counseling and risk factor for malnutrition in patients with dentures and when teeth are extracted.

f) **Preparing patient for complete denture patients** –Diagnosis and treatment planning for edentulous and partially edentulous patients – familiarity with patients, principles of perception, health questionnaires and identification data, problem identification, prognosis and treatment identification data, problem identification, prognosis and treatment planning – contributing history – patient's history, social information, medical status –

Prosthodontic treatment for edentulous patients: - Complete Dentures and Implant supported Prosthesis.

Complete Denture Prosthesis – Definitions, terminologies, G.P.T., Boucher's clinical dental terminology

Scope of Prosthodontics – The Cranio Mandibular system and its functions, the reasons for loss of teeth, consequences of loss of teeth and treatment modality with various restorations and replacements

systemic status with special reference to debilitating diseases, diseases of the joints, cardiovascular disorders, diseases of the skin, neurological disorders, oral malignancies, climacteric, use of drugs, mental health – mental attitude, psychological changes, adaptability, geriatric changes – physiologic, pathological, pathological and intra oral changes. Intra oral health – mucus membrane, alveolar ridges, palate and vestibular sulcus and dental health.

Data collection and recording, visual observation, radiography, palpation, measurement of sulci or fossae, extra oral measurement, the vertical dimension of occlusion, diagnostic casts.

Specific observations – existing dentures, soft tissue health, hard tissue health – teeth, bone

Biomechanical considerations – jaw relations, border tissues, saliva, muscular development – muscle tone, neuromuscular co-ordination, tongue, cheek and lips.

Interpreting diagnostic findings and treatment planning

- g) **Pre prosthetic surgery** –Improving the patients denture bearing areas andridge relations.

- h) **Non surgical methods** –rest for the denture supporting tissues, occlusal correction of the old prosthesis, good nutrition, conditioning of the patients musculature,

- i) **Surgical methods** –Correction of conditions, that preclude optimal prosthetic function – hyperplastic ridge – epulis fissuratum and papillomatosis, frenular attachments

- and pendulous maxillary tuberosities, ridge augmentation, maxillary and mandibular oral implants, corrections of congenital deformities, discrepancies in jaw size, relief of pressure on the mental foramen, enlargement of denture bearing areas, vestibuloplasty, ridge augmentation, replacement of tooth roots with Osseo integrated denture implants.

- j) **Immediate Denture** –Advantages, Disadvantages, Contraindications,Diagnosis, treatment planning and Prognosis, Explanation to the patient, Oral examinations, Examination of existing prosthesis, Tooth modification, Prognosis, Referrals/adjunctive care, oral prophylaxis and other treatment needs.

First visit, preliminary impressions and diagnostic casts, management of loose teeth, custom trays, final impressions and master casts, two tray or sectional custom impression tray, location of posterior limit and jaw relation records, setting of the posterior denture teeth / verifying jaw relations and the patient try in.
Laboratory phase, setting of anterior teeth, Wax contouring, flasking and boil out, processing and finishing, surgical templates, surgery and immediate denture insertion, post operative care and patient instructions, subsequent service for the patient on the immediate denture.

- k) **Over dentures** (tooth supported complete dentures)–indications andtreatment planning, advantages and disadvantages, selection of abutment teeth, loss of abutment teeth, tooth supported complete dentures. Non-coping abutments, abutment with copings, abutments with attachments, submerged vital roots, preparations of the retained teeth.

- l) **Single Dentures:** Single Mandibular denture to oppose natural maxillaryteeth, single complete maxillary denture to oppose natural Mandibular teeth to oppose a partially edentulous Mandibular arch with fixed prosthesis, partially edentulous Mandibular arch with removable partial dentures. Opposing existing complete dentures, preservation of the residual alveolar ridge, necessity for retaining maxillary teeth and preventing mental trauma.

- m) **Art of communication in the management of the edentulous predicament** – Communication–scope, a model of communication, why communication is important? What are

the elements of effective communication? special significance of doctor / patient communication, doctor behavior, The iatro sedative (doctor & act of making calm) recognizing and acknowledging the problem, exploring and identifying the problem, interpreting and explaining the problem, offering a solution to the problem for mobilizing their resources to operate in a most efficient way, recognizing and acknowledging the problem, interpreting and explaining the problem, offering a solution to the problem.

- n) **Materials prescribed in the management of edentulous patients -** Denture base materials, General requirements of biomaterials for edentulous patients, requirement of an ideal denture base, chemical composition of denture base resins, materials used in the fabrication of prosthetic denture teeth, requirement of prosthetic denture teeth, denture lining materials and tissue conditioners, cast metal alloys as denture bases – base metal alloys.

- o) **Articulators – Evolution of concepts,** Classification, selection, limitations, precision, accuracy andsensitivity, and Functions of the articulator and their uses. Recent advancements including virtual articulator

- p) **Fabrication of complete dentures** –complete denture impressions–muscles of facial expressions and anatomical landmarks, support, retention, stability, aims and objectives of preservation, support, stability, aesthetics, and retention. Impression materials and techniques – need of 2 impressions the preliminary impression and final impressions.

Developing an analogue / substitute for the maxillary denture bearing area – anatomy of supporting structures – mucous membrane, hard palate, residual ridge, shape of the supporting structure and factors that influence the form and size of the supporting bones, incisive foramen, maxillary tuberosity, sharp spiny process, torus palatinus, Anatomy of peripheral or limiting structures, labial vestibule, Buccal vestibule, vibrating lines. Preliminary and final impressions, impression making, custom tray and refining the custom tray, preparing the tray to secure the final impression, making the final impression, boxing impression and making the casts

Developing an analogue / substitute for the Mandibular denture bearing area-anatomy of supporting structure, crest of the residual ridge, buccal shelf, shape of supporting structure, mylohyoid ridge, mental foramen, genial tubercles, torus mandibularis, Anatomy of peripheral or limiting structure – labial vestibule, Buccal vestibule, lingual border, mylohyoid muscle, retromylohyoid fossa, sublingual gland region, alveolingual sulcus, Mandibular impressions – preliminary impressions, custom tray, refining, preparing the tray\, final impressions.

q) **Mandibular movements, Maxillo mandibular relations and concepts of occlusion –** Gnathology, identification of shape and location of arch form–Mandibular and maxillary occlusion rims, level of occlusal plane and recording of trail denture base, tests to determine vertical dimension of occlusion, interocclusal & centric relation records. Biological and clinical considerations in making jaw relation records and transferring records from the patients to the articulator, Recording of Mandibular movements – influence of opposing tooth contacts, temporomandibular joint, muscular involvements, neuromuscular regulation of Mandibular motion, the envelope of motion, rest position.

Maxillo – Mandibular relations – the centric, eccentric, physiologic rest position, vertical dimension, occlusion, recording methods – mechanical, physiological, Determining the horizontal jaw relation – Functional graphics, tactile or interocclusal check record method, Orientation / sagittal relation records, Arbitrary / Hinge axis and face bow record, significance and requirement, principles and biological considerations and securing on articulators.

- r) **Selecting and arranging artificial teeth and occlusion for the edentulous patient –** anterior tooth selection, posterior tooth selection, and principles in

arrangement of teeth, and factors governing the position of teeth – horizontal & vertical relations. The inclinations and arrangement of teeth for aesthetics, phonetics and mechanics – to concept of occlusion.

- s) **The Try in** –verifying vertical dimension, centric relation, establishment ofposterior palatal seal, creating a facial and functional harmony with anterior teeth, harmony of spaces of individual teeth position, harmony with sex, personality and age of the patient, co-relating aesthetics and incisal guidance.

• t) **Speech considerations with complete dentures & speech production** –structural and functional demands, neuropsychological background, speech production and the roll of teeth and other oral structures – bilabial sounds, labiodental(s) sounds, linguodental sounds, linguoalveolar sound, articulatoric characteristics, acoustic characteristics, auditory characteristics, linguopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.

• u) **Waxing contouring and processing the dentures their fit and insertion and after care** –laboratory procedure–wax contouring, flasking andprocessing, laboratory remount procedures, ***selective grinding***, finishing and polishing.

Critiquing the finished prosthesis – doctors evaluation, patients evaluation, friends evaluation, elimination of basal surface errors, errors in occlusion, interocclusal records for remounting procedures – verifying centric relation, eliminating occlusal errors.
Special instructions to the patient – appearance with new denture, mastication with new dentures, speaking with new dentures, oral hygiene with dentures, preservation of residual ridges and educational material for patients, maintaining the comfort and health of the oral cavity in the rehabilitated edentulous patients. Twenty-four hours oral examination and treatment and (preventive) Prosthodontic – periodontic recall for oral examination 3 to 4 months intervals and yearly intervals.

v) **Implant supported Prosthesis for partially edentulous patients** –Scienceof Osseo integration, clinical protocol ***(diagnostic,surgical and prosthetic***) for treatment with implant supported over dentures, managing problems and complications. Implant Prosthodontics for edentulous patients: current and future directions. o Introduction and Historical Review

- o Biological, clinical and surgical aspects of oral implants
- o Diagnosis and treatment planning

Implant supported prosthesis for partially edentulous patients – Clinical and laboratory protocol: Implant supported prosthesis, managing problems and complications

o Radiological interpretation for selection of fixtures

o Splints for guidance fort surgical placement of fixtures

o ***Surgical and*** Intra oral plastic surgery, if any

o Guided bone and Tissue regeneration consideration for implants fixture.

o Implant supported prosthesis for complete edentulism and partial edentulism

o Occlusion for implant supported prosthesis.

o Peri-implant tissue and Management of peri-implantitis

o Maintenance and after care

o Management of failed restoration.

o Work authorization for implant supported prosthesis – definitive instructions, legal aspects, delineation of responsibility.

Prosthodontic treatment for partially edentulous patients – Removable partial Prosthodontics –

a**. Scope, definition** and terminology, Classification of partially edentulous arches - requirements of an acceptable method of classification, Kennedy's classification, Applegate's rules for applying the Kennedy classification

b. Components of RPD – iii) Rest and rest seats – form of the Occlusal rest and rest seat, interproximal Occlusal rest seats, internal Occlusal rests, possible movements of partial dentures, support for rests, lingual rests on canines and incisor teeth, incisal rest and rest seat.

iv) Direct retainers- Internal attachments & extracoronal direct retainers. Relative uniformity of retention, flexibility of clasp arms, stabilizing reciprocal clasp, criteria for selecting a given clasp design, the basic principles of clasp design, circumferential clasp, bar clasp, combination clasp and other type of retainers.

v) Indirect Retainers – denture rotation about an axis, factors influencing effectiveness of indirect retainers, forms of indirect retainers, auxiliary Occlusal rest, canine extensions from Occlusal rests, canine rests, continuous bar retainers and linguoplates, modification areas, rugae support, direct – indirect retention.

i) major connector–mandibular and maxillary

ii) minor connectors, design, functions & form and location of major and minor connectors, tissue stops, finishing lines, reaction of tissue to metallic coverage

(vi) Teeth and denture bases – types, materials, advantages and dis-advantages, indications and contraindications and clinical use.

Principles of removable partial Denture design – Bio mechanical considerations, and the factors influencing after mouth preparations – Occlusal relationship of remaining teeth, orientation of Occlusal plane, available space for restoration, arch integrity, tooth morphology, response of oral structure to previous stress, periodontal conditions, abutment support, tooth supported and tooth and tissue supported, need for indirect retention, clasp design, need for rebasing, secondary impression, need for abutment tooth modification, type of major connector, type of teeth selection, patients past experience, method of replacing single teeth or missing anterior teeth. Difference between tooth supported and tissue supported partial dentures. Essentials of partial denture design, components of partial denture design, tooth support, tissue support, stabilizing components, guiding planes, use of splint bar for denture support, internal clip attachments, overlay abutment as support for a denture base, use of a component partially to gain support.

c. Education of patient

d. Diagnosis and treatment planning

e. Design, treatment sequencing and mouth preparation

f. **Surveying** –Description of dental surveyor, purposes of surveying, Aims andobjectives in surveying of diagnostic cast and master cast, Final path of insertion, factors that determine path of insertion and removal, Recording relation of cast to surveyor, measuring amount of retentive area Blocking of master cast – paralleled blockout, shaped blockout, arbitrary blockout and relief.

g. **Diagnosis and treatment planning** –Infection control and cross infectionbarriers – clinical and laboratory and hospital waste management, Objectives of prosthodontic treatment, Records, systemic evaluation, Oral examination, preparation of diagnostic cast, interpretation of examination data, radiographic interpretation, periodontal considerations, caries activity, prospective surgical preparation, endodontic treatment, analysis of occlusal factors, fixed restorations, orthodontic treatment, need for determining the design of components, impression procedures and occlusion, need for reshaping remaining teeth, reduction of unfavorable tooth

contours, differential diagnosis : fixed or removable partial dentures, choice between complete denture and removable partial dentures, choice of materials

h. **Preparation of Mouth for removable partial dentures** –Oral surgicalpreparation, conditioning of abused and irritated tissues, periodontal preparation – objectives of periodontal therapy, periodontal diagnosis, control therapy, periodontal surgery.

i. **Preparation of Abutment teeth** –Classification of abutment teeth, sequenceof abutment preparations on sound enamel or existing restorations, conservative restorations using crowns, splinting abutment teeth, utilization, temporary crowns to be used as abutment.

j. **Impression Materials and Procedures for Removable Partial Dentures** –Rigid materials, thermoplastic materials, Elastic materials, Impressions of the partially edentulous arch, Tooth supported, tooth tissue supported, Individual impression trays.

k. **Support for the Distal Extension Denture Base** –Distal extensionremovable partial denture, Factors influencing the support of distal extension base, Methods of obtaining functional support for the distal extension base.

l. **Laboratory Procedures** –Duplicating a stone cast, Waxing the partialdenture framework, Anatomic replica patterns, Spruing, investing, burnout, casting and finishing of the partial denture framework, making record bases, occlusion rims, making a stone occlusal template from a functional occlusal record, arranging posterior teeth to an opposing cast or template, arrangement of anterior teeth, waxing and investing the partial denture before processing acrylic resin bases, processing the denture, remounting and occlusal correction to an occlusal template, polishing the denture.

m. **Initial placement, adjustment and servicing of the removable partial denture** – adjustments to bearing surfaces of denture framework, adjustmentof occlusion in harmony with natural and artificial dentition, instructions to the patient, follow – up services

n. **Relining and Rebasing the removable partial denture** –Relining toothsupported dentures bases, relining distal extension denture bases, methods of reestablishing occlusion on a relined partial denture.

o. **Repairs and additions to removable partial dentures** –Broken clasp arms,fractured occlusal rests, distortion or breakage of other components – major and minor connectors, loss of a tooth or teeth not involved in the support or retention of the restoration, loss of an abutment tooth necessitating its replacement and making a new direct retainer, Other types of repairs & repair by soldering.

p. **Removable partial denture considerations in maxillofacial prosthetics** – Maxillofacial prosthetics, intra oral prosthesis, design considerations,

maxillary prosthesis, Obturators, speech aids, palatal lifts, palatal augmentations, mandibular prosthesis, treatment planning, framework design, class I resection, Class II resection, mandibular flange prosthesis, jaw relation records.

q. **Management of failed restorations and work authorization details.**

II. MAXILLOFACIAL REHABILITATION:

Scope, terminology, definitions, cross infection control and hospital waste management, work authorization.

Behavioral and psychological issues in Head and neck cancer, Psychodynamic interactions between clinician and patient. **Cancer Chemotherapy:** Oral Manifestations, Complications, and management, **Radiation therapy of head and neck tumors:** Oral effects, Dental manifestations and dental treatment:

Etiology, treatment and rehabilitation (restoration).

Acquired defects of the mandible, acquired defects of hard palate, soft palate, clinical management of edentulous and partially edentulous maxillectomy patients, Facial defects, Restoration of speech, Velopharyngeal function, cleft lip and palate, cranial implants, maxillofacial trauma, Lip and cheek support prosthesis, Laryngectomy aids, Obstructive sleep apnoea, Tongue prosthesis, Oesophageal prosthesis, radiation carriers, Burn stents, Nasal stents, Vaginal and anal stents, Auditory inserts, Trismus appliances, mouth controlled devices for assisting the handicapped, custom prosthesis, conformers, and orbital prosthesis for ocular and orbital defects. Osseo integrated supported facial and maxillofacial prosthesis. Resin bonding for maxillofacial prosthesis, cranial prosthesis Implant rehabilitation of the mandible compromise by radiotherapy, Prosthodontic treatment, Material and laboratory procedures for maxillofacial prosthesis.

III. OCCLUSION

EVALUATION, DIAGNOSIS AND TREATMENT OF OCCLUSAL PROBLEMS:

Scope, definition, terminology, optimum oral health, anatomic harmony, functional harmony, occlusal stability, causes of deterioration of dental and oral health. Anatomical, physiological, neuro – muscular, psychological considerations of teeth; muscles of mastication; temporomandibular joint; intra oral and extra oral and facial musculatures and the functions of Cranio mandibular system.

Occlusal therapy, the stomatognathic system, centric relation, vertical dimension, the neutral zone, the occlusal plane, differential diagnosis of temporomandibular disorders, understanding and diagnosing intra articular problems, relating treatment to diagnosis of internal derangements of TMJ, Occlusal splints. Selecting instruments for occlusal diagnosis and treatment, mounting casts, Pankey-Mann-Schuyler philosophy of complete occlusal rehabilitation, long centric, anterior guidance, restoring lower anterior teeth, restoring upper anterior teeth, determining the type of posterior occlusal contours, methods for determining the plane of

occlusion, restoring lower posterior teeth, restoring upper posterior teeth, functionally generated path techniques for recording border movements intra orally, occlusal equilibration.
Bruxism, Procedural steps in restoring occlusion, requirements for occlusal stability, solving occlusal problems through programmed treatment planning, splinting, solving – occlusal wear problems, deep overbite problems, anterior overjet problems, anterior open bite problems. Treating – end to end occlusion, splaed anterior teeth, cross bite problems, Crowded, irregular, or interlocking anterior bite. Using Cephalometric for occlusal analysis, solving severe arch malrelationship problems, transcranial radiography, postoperative care of occlusal therapy.

IV. FIXED PROSTHODONTICS

Scope, definitions and terminology, classification and principles, design, mechanical and biological considerations of components – Retainers, connectors, pontics, work authorization.

- **Diagnosis and treatment planning** –patients history and interview, patientsdesires and expectations and needs, systemic and emotional health, clinical examinations – head and neck, oral – teeth, occlusal and periodontal, Preparation of diagnostic cast, radiographic interpretation, Aesthetics, endodontics considerations, abutment selection – bone support, root proximities and inclinations, selection of abutments for cantilever, pier
- abutments, splinting, available tooth structures and crown morphology, TMJ and muscles of mastication and comprehensive planning and prognosis.

- **Management of Carious teeth** –caries in aged population, caries control,removal caries, protection of pulp, reconstruction measure for compromised teeth – retentive pins, horizontal slots, retentive grooves, prevention of caries, diet, prevention of root caries and vaccine for caries.

- **Periodontal considerations** –attachment units, ligaments, prevention ofgingivitis, periodontitis. Microbiological aspect of periodontal diseases, marginal lesion, occlusal trauma, periodontal pockets in attached gingiva, interdental papilla, gingival embrasures, gingival/periodontal prosthesis, radiographic interpretations of Periodontia, intraoral, periodontal splinting – Fixed prosthodontics with periodontially compromised dentitions, placement of margin restorations.

- • **Biomechanical principles of tooth preparation** –individual tooth preparations - Complete metal Crowns – P.F.C., All porcelain – Cerestore crowns, dicor crowns, incer**a**m etc. porcelain jacket crowns; partial 3/4, 7/8, telescopic, pin– ledge, laminates, inlays, onlays. Preparations for restoration of teeth–amalgam, glass Ionomer and composite resins. Resin bond retainers, Gingival marginal preparations – Design, material selection, and biological and mechanical considerations – intracoronal retainer and precision attachments – custom made and prefabricated.
- • **Isolation and fluid control –** Rubber dam application(s), tissue dilation–softtissue management for cast restoration, impression materials and techniques, provisional restorations, interocclusal records, laboratory support for fixed Prosthodontics, Occlusion, Occlusal equilibration, articulators, recording and transferring of occlusal relations, cementing of restorations.

- • **Resins, Gold and gold alloys, glass Ionomer, restorations.**

- • **Restoration of endodontically treated teeth, Stomatognathic Dysfunction and management**

- • Management of failed restorations

Osseo integrated supported fixed Prosthodontics –Osseo integratedsupported and tooth supported fixed Prosthodontics

- • **CAD – CAM Prosthodontics**

V. TMJ – Temporomandibular joint dysfunction – Scope, definitions, and terminology
Temporomandibular joint and its function, Orofacial pain, and pain from the temporomandibular joint region, temporomandibular joint dysfunction, temporomandibular joint sounds, temporomandibular joint disorders, Anatomy related, trauma, disc displacement, Osteoarthrosis/Osteoarthritis, Hyper mobility and dislocation, infectious arthritis, inflammatory diseases, Eagle's syndrome (Styloid – stylohyoid syndrome), Synovial chondromatosis,

Osteochondrosis disease, Ostonecrosis, Nerve entrapment process, Growth changes, Tumors, Radiographic imaging

- • Etiology, diagnosis and cranio mandibular pain, differential diagnosis and management of orofacial pain – pain from teeth, pulp, dentin, muscle pain, TMJ pain – psychologic, physiologic – endogenous control, acupuncture analgesia, Placebo effects on analgesia, Trigeminal neuralgia, Temporal arteritis
- • Occlusal splint therapy – construction and fitting of occlusal splints, management of occlusal splints, therapeutic effects of occlusal splints, occlusal splints and general muscles performance, TMJ joint uploading and anterior repositioning appliances, use and care of occlusal splints.

- • Occlusal adjustment procedures – Reversible – occlusal stabilization splints and physical therapies, jaw exercises, jaw manipulation and other physiotherapy or irreversible therapy – occlusal repositioning appliances, orthodontic treatment, Orthognathic surgery, fixed and removable prosthodontic treatment and occlusal adjustment, removable prosthodontic treatment and occlusal adjustment. Indication for occlusal adjustment, special nature of orofacial pain, Psychopathological considerations, occlusal adjustment philosophies, mandibular position, excursive guidance, occlusal contact scheme, goals of occlusal adjustment, significance of a slide in centric, Preclinical procedures, clinical procedures for occlusal adjustment.

VI. ESTHETICS

SCOPE, DEFINITIONS :

Morpho psychology and esthetics, structural esthetic rules –facialcomponents, dental components, gingival components and physical components. Esthetics and its relationship to function – Crown morphology, physiology of occlusion, mastication, occlusal loading and clinical aspect in bio esthetic aspects, Physical and physiologic characteristic and muscular activities of facial muscle, perioral anatomy and muscle retaining exercises Smile – classification and smile components, smile design, esthetic restoration of smile, Esthetic management of the dentogingival unit, intraoral materials for management of gingival contours, and ridge contours, Periodontal esthetics, Restorations – Tooth colored restorative materials, the clinical and

laboratory aspects, marginal fit, anatomy, inclinations, form, size, shape, color, embrasures & contact point.

Prosthodontic treatment should be practiced by developing skills, by treating various and more number of patients to establish skill to diagnose and treatment and after care with bio-mechanical, biological, bio-esthetics, bio-phonetics. All treatments should be carried out in more numbers for developing clinical skills.

- • Infection control, cross infection barrier – clinical & lab ; hospital & lab waste management

Teaching / Learning Activities:

The post graduate is expected to complete the following at the end of :

I YEAR M.D.S.

- • Theoretical exposure of all applied sciences
- • ***Pre-clinical*** exercises involved in prosthodontic therapy for assessment
- • Commencement of library assignment within six months
- • To carry out short epidemiological study relevant to prosthodontics.
- • Acquaintance with books, journals and referrals.
- • To differentiate various types of articles published in and critically appraise based on standard reference guidelines.
- • To develop the ability to gather evidence from published articles.
- • To acquire knowledge of published books, journals and websites for the purpose of gaining knowledge and reference – in the field of ***Oral and Maxillofacial Prosthodontics and Implantology***
- •
- • Acquire knowledge of instruments, equipment, and research tools in Prosthodontics.

- • To acquire knowledge of Dental Material Science – Biological and biomechanical & bio-esthetics, knowledge of using material in laboratory and clinics including testing methods for dental materials.
- • Submit a protocol for their dissertation before Institutional Review Board and Institutional Ethics Committee.

- • Participation and presentation in seminars, didactic lectures.

II YEAR M.D.S.

- • Acquiring confidence in obtaining various phases and techniques in removable and fixed prosthodontics therapy

- • Acquiring confidence by clinical practice with sufficient number of patientsrequiring tooth and tooth surface restorations

- • Fabrication of adequate number of complete denture prosthesis following, higher clinical approach by utilizing semi-adjustable articulators, face bow and graphic tracing.

- • Understanding the use of dental surveyor and its application in diagnosis and treatment plan in R.P.D.
- • Adequate number of R.P.D's covering all partially edentulous situations.

- • Adequate number of Crowns, Inlays, laminates, ***FDP (fixed dental prosthesis)*** covering all clinical situations.

- • Selection of cases and following principles in treatment of partially or complete edentulous patients by implant supported prosthesis.
- • Treating single edentulous arch situations by implant supported prosthesis.
- • Diagnosis and treatment planning for implant prosthesis.
- • Ist stage and IInd stage implant surgery

- • Understanding the maxillofacial ***Prosthodontics, treating craniofacial and management of orofacial defects***
- • Prosthetic management of TMJ syndrome
- • Occlusal rehabilitation

- • Management of failed restorations.
- • Prosthodontic management of patient with psychogenic disorder.
- • Practice of child and geriatric prosthodontics.

- • Participation and presentation in seminars, didactic and non didactic Teaching and Training students.

III YEAR M.D.S

- • Clinical and laboratory practice continued from IInd year.

- • Occlusion equilibration procedures – fabrication of stabilizing splint for parafunctional disorders, occlusal disorders and TMJ functions.

- • Practice of dental, oral and facial esthetics

- • The clinical practice of all aspects of Prosthodontic therapy for elderly patients.

- • Implants Prosthodontics – Rehabilitation of Partial Edentulism, Complete edentulism and craniofacial rehabilitation.

- • Failures in all aspects of Prosthodontics and their management and after care.

- • Team management for esthetics, TMJ syndrome and Maxillofacial & Craniofacial Prosthodontics
- • Management of Prosthodontic emergencies, resuscitation.
- • Candidate should complete the course by attending a large number and variety of patients to master the prosthodontic therapy. This includes the practice management, examinations, treatment planning, communication with patients, clinical and laboratory techniques materials and instrumentation required in different aspects of prosthodontic therapy, Tooth and Tooth surface restoration, Restoration of root treated teeth, splints for periodontal rehabilitations and fractured jaws, complete dentures, R.P.D's, F.D.P's,

Immediate dentures, over dentures, implant supported prosthesis, maxillofacial and body prosthesis, occlusal rehabilitation.

- • Prosthetic management of TMJ syndrome

- • Management of failed restorations

- • Should complete and submit Main Dissertation assignment 6 months prior to examination.

- • Candidates should acquire complete theoretical and clinical knowledge through seminars, symposium, workshops and reading.
- • Participation and presentation in seminars, didactic lectures

PROSTHODONTIC TREATMENT MODALITIES

1) Diagnosis and treatment planning prosthodontics

- **2) Tooth and tooth surface restorations** • Fillings • Veneers – composites and ceramics
- • Inlays- composite, ceramic and alloys
- • Onlay – composite, ceramic and alloys
- • Partial crowns – ¾ th, 4/5th, 7/8th, Mesial ½ crowns
- • Pin-ledge
- • Radicular crowns
- • Full crowns

3) Tooth replacements

Partial	**Complete**	
	Fixed partial denture	Overdenture
• • Tooth supported		
	Interim partial denture	Complete denture
• • Tissue supported		
Intermediate partial denture	Immediate denture	

Immediate complete denture

Cast partial denture Overdenture

• • Tooth and tissue

Supported

Precision attachment

Cement retained Bar attachment

• • Implant

supported

Screw retained Ball attachment

Clip attachment

Screw retained Screw retained

• • Tooth and

implant Supported

Cement retained Cement retained

Dowel and core Over denture

• • Root supported

Pin retained

2. PERIODONTOLOGY (DPER31)

APPLIED BASIC SCIENCES

APPLIED ANATOMY:

1. Development of the Periodontium
2. Micro and Macro structural anatomy and biology of the periodontal tissues
3. Age changes in the periodontal tissues
4. Anatomy of the Periodontium • Macroscopic and microscopic anatomy

- Blood supply of the Periodontium
- Lymphatic system of the Periodontium
- Nerves of the Periodontium

5. Temporomandibular joint, Maxillae and Mandible
6. Tongue, oropharynx
7. Muscles of mastication / Face
8. Blood Supply and Nerve Supply of Head & Neck and Lymphatics.
9. Spaces of Head & Neck

PHYSIOLOGY:

1. Blood
2. Respiratory system – knowledge of the respiratory diseases which are a cause of periodontal diseases (periodontal Medicine)
3. Cardiovascular system a. Salivary secretion – composition, function & regulation
   b. Reproductive physiology
   a. Pain pathways
   b. Taste – Taste buds, primary taste sensation & pathways for sensation

a. Blood pressure
b. Normal ECG
c. Shock
4. Endocrinology – hormonal influences on Periodontium
5. Gastrointestinal system
c. Hormones – Actions and regulations, role in periodontal disease
d. Family planning methods
6. Nervous system
7. Hemostasis

BIOCHEMISTRY:

1. Basics of carbohydrates, lipids, proteins, vitamins, enzymes and minerals
2. Diet and nutrition and periodontium

3. Biochemical tests and their significance

4. Calcium and phosphorus

PATHOLOGY:

1. Cell structure and metabolism

2. Inflammation and repair, necrosis and degeneration

3. Immunity and hypersensitivity

4. Circulatory disturbances – edema, hemorrhage, shock, thrombosis, embolism, infarction and hypertension

5. Disturbances of nutrition

6. Diabetes mellitus

7. Cellular growth and differentiation, regulation

8. Lab investigations

9. Blood a. Analgesics – opiod and nonopiod

b. Local anesthetics

c. Haematinics and coagulants, Anticoagulants

d. Vit D and Calcium preparations

e. Antidiabetics drugs

f. Steroids

g. Antibiotics

h. Antihypertensive

i. Immunosuppressive drugs and their effects on oral tissues

j. Antiepileptic drugs

a. General anesthetics

b. Antipsychotics

c. Antidepressants

d. Anxiolytic drugs

e. Sedatives

f. Antiepileptics

g. Antihypertensives

h. Antianginal drugs

i. Diuretics

MICROBIOLOGY:

1. General bacteriology

a. Identification of bacteria

b. Culture media and methods

c. Sterilization and disinfection

2. Immunology and Infection

3. Systemic bacteriology with special emphasis on oral microbiology – staphylococci, genus actinomyces and other filamentous bacteria and actinobacillus actinomycetum comitans

4. Virology

a. General properties of viruses

b. Herpes, Hepatitis, virus, HIV virus

5. Mycology

a. Candidiasis

6. Applied microbiology

7. Diagnostic microbiology and immunology, hospital infections and management

PHARMACOLOGY:

1. General pharmacology

a. Definitions – Pharmacokinetics with clinical applications, routes of administration including local drug delivery in Periodontics

b. Adverse drug reactions and drug interactions

2. Detailed pharmacology of

3. Brief pharmacology, dental use and adverse effects of

a. General anesthetics

b. Antipsychotics

c. Antidepressants

d. Anxiolytic drugs

e. Sedatives

f. Antiepileptics

g. Antihypertensives

h. Antianginal drugs

i. Diuretics

j. Hormones

k. Pre-anesthetic medications

4. Drugs used in Bronchial asthma, cough
5. Drug therapy of
    a. Emergencies
    b. Seizures
    c. Anaphylaxis
    d. Bleeding
    e. Shock
    f. Diabetic ketoacidosis
    g. Acute addisonian crisis
6. Dental Pharmacology

a. Antiseptics

b. Astringents

c. Sialogogues

d. Disclosing agents

e. Antiplaque agents

7. Fluoride pharmacology

BIOSTATISTICS:

1. Introduction, definition and branches of biostatistics
2. Collection of data, sampling, types, bias and errors
3. Compiling data-graphs and charts
4. Measures of central tendency (mean, median and mode), standard deviation and variability

5. Tests of significance (chi square test, t-test and z-test)

Null hypothesis

PART II

PAPER 1

ETIOPATHOGENESIS:

1. Classification of periodontal diseases and conditions
2. Epidemiology of gingival and periodontal diseases
3. Defense mechanisms of gingival
4. Periodontal microbiology
5. Basic concepts of inflammation and immunity
6. Microbial interactions with the host in periodontal diseases
7. Pathogenesis of plaque associated periodontal diseases
8. Dental calculus
9. Role of iatrogenic and other local factors
10. Genetic factors associated with periodontal diseases
11. Influence of systemic diseases and disorders of the periodontium
12. Role of environmental factors in the etiology of periodontal disease
13. Stress and periodontal diseases
14. Occlusion and periodontal diseases
15. Smoking and tobacco in the etiology of periodontal diseases
16. AIDS and periodontium
17. Periodontal medicine
18. Dentinal hypersensitivity

PAPER-II

CLINICAL AND THERAPEUTIC PERIODONTOLOGY AND ORAL IMPLANTOLOGY

Please note:

Clinical periodontology includes gingival diseases, periodontal diseases, periodontal instrumentation, diagnosis, prognosis and treatment of periodontal diseases.

(i) GINGIVAL DISEASES

1. Gingival inflammation
2. Clinical features of gingivitis
3. Gingival enlargement
4. Acute gingival infections
5. Desquamative gingivitis and oral mucous membrane diseases
6. Gingival diseases in the childhood

(ii) PERIODONTAL DISEASES

1. Periodontal pocket
2. Bone loss and patterns of bone destruction
3. Periodontal response to external forces
4. Masticatory system disorders
5. Chronic periodontitis
6. Aggressive periodontitis
7. Necrotising ulcerative periodontitis
8. Interdisciplinary approaches

- Orthodontic
- Endodontic

(iii) TREATMENT OF PERIODONTAL DISEASES

A. History, examination, diagnosis, prognosis and treatment planning

1. Clinical diagnosis
2. Radiographic and other aids in the diagnosis of periodontal diseases
3. Advanced diagnostic techniques
4. Risk assessment
5. Determination of prognosis

6. Treatment plan

7. Rationale for periodontal treatment

8. General principles of anti-infective therapy with special emphasis on infection control in periodontal practice

9. Halitosis and its treatment

10. Bruxism and its treatment

B. Periodontal instrumentation

1. Periodontal Instruments

2. Principles of periodontal instrumentation

C. Periodontal therapy

1. Preparation of tooth surface

2. Plaque control

3. Anti microbial and other drugs used in periodontal therapy and wasting diseases of teeth

4. Periodontal management of HIV infected patients

5. Occlusal evaluation and therapy in the management of periodontal diseases

6. Role of orthodontics as an adjunct to periodontal therapy

7. Special emphasis on precautions and treatment for medically compromised patients

8. Periodontal splints

9. Management of dentinal hypersensitivity

D. Periodontal surgical phase – special emphasis on drug prescription

1. General principles of periodontal surgery

2. Surgical anatomy of periodontium and related structures

3. Gingival curettage

4. Gingivectomy technique

5. Treatment of gingival enlargements

6. Periodontal flap

7. Osseous surgery (resective and regenerative)

8. Furcation; Problem and its management
9. The periodontic – endodontic continuum
10. Periodontic plastic and esthetic surgery
11. Recent advances in surgical techniques

E. Future directions and controversial questions in periodontal therapy
1. Future directions for infection control
2. Research directions in regenerative therapy
3. Future directions in anti-inflammatory therapy
4. Future directions in measurement of periodontal diseases

F. Periodontal maintenance phase
1. Supportive periodontal treatment
2. Results of periodontal treatment

(iv) ORAL IMPLANTOLOGY
1. Introduction and historical review
2. Biological, clinical and surgical aspects of dental implants
3. Diagnosis and treatment planning
4. Implant surgery
5. Prosthetic aspects of dental implants
6. Diagnosis and treatment of Peri implant complications
7. Special emphasis on plaque control measures in implant patients
8. Maintenance phase

(v) MANAGEMENT OF MEDICAL EMERGENCIES IN PERIODONTAL PRACTICE
Periodontology treatment should be practiced by various treatment plans and more number of patients to establish skill for diagnosis and treatment and after care with bio-mechanical, biological, bio-esthetics, bio-phonetics and all treatment should be carried out in more number for developing clinical skill.

TEACHING / LEARNING ACTIVITIES:

The post graduate is expected to complete the following at the end of : S.NO	Year Wise	ACTIVITIES WORKS TO BE DONE
1.	Module 1 **(First Year)**	Orientation to the PG program **Pre-clinical work (4 months)** • **a. Dental** • 1. Practice of incisions and suturing techniques on the typodont models. • 2. Fabrication of bite guards and splints. • 3. Occlusal adjustment on the casts mounted on the

3. ORAL AND MAXILLOFACIAL SURGERY (DOMS31)

A) Applied Basic Sciences:

Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology, Pharmacology and Knowledge in Basic Statistics.

Applied Anatomy:

1. Surgical anatomy of the scalp, temple and face
2. Anatomy of the triangles of neck and deep structures of the neck
3. Cranial and facial bones and its surrounding soft tissues with its applied aspects in maxillofacial injuries.

4. Muscles of head and neck; chest , lower and upper extremities (in consideration to grafts/flaps)

5. Arterial supply, venous drainage and lymphatics of head and neck

6. Congenital abnormalities of the head and neck

7. Surgical anatomy of the cranial nerves

8. Anatomy of the tongue and its applied aspects

9. Surgical anatomy of the temporal and infratemporal regions

10. Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea, esophagus

11. Tooth eruption, morphology, and occlusion.

12. Surgical anatomy of the nose.

13. The structure and function of the brain including surgical anatomy of intra cranial venous sinuses.

14. Autonomous nervous system of head and neck

15. Functional anatomy of mastication, deglutition, speech, respiration and circulation

16. Development of face, paranasal sinuses and associated structures and their anomalies

17. TMJ: surgical anatomy and function • Physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature

Physiology:

1. Nervous system

2. Blood

• Composition

• Haemostasis, various blood dyscrasias and management of patients with the same

• Hemorrhage and its control

• Capillary and lymphatic circulation.

• Blood grouping, transfusing procedures.

3. Digestive system

• Saliva - composition and functions of saliva

• Mastication, deglutition, digestion, assimilation

• Urine formation, normal and abnormal constituents

4. Respiration

• Control of ventilation, anoxia, asphyxia, artificial respiration

• Hypoxia – types and management

5. CardioVascular System

• Cardiac cycle,

• Shock

• Heart sounds,

• Blood pressure,

• Hypertension:

6. Endocrinology

• • General endocrinal activity and disorder relating to thyroid gland,

• Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads:

• • Metabolism of calcium

7. Nutrition

• • General principles of a balanced diet, effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus.

• • Fluid and Electrolytic balance in maintaining haemostasis and significance in minor and major surgical procedures.

Biochemistry

• General principles governing the various biological activities of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc.

• • General composition of the body

• • Intermediary metabolism

• • Carbohydrates, proteins, lipids, and their metabolism

• • Nucleoproteins, nucleic acid and nucleotides and their metabolism

- • Enzymes, vitamins and minerals
- • Hormones
- • Body and other fluids.
- • Metabolism of inorganic elements.
- • Detoxification in the body.

• Antimetabolites. • Repair and regeneration, necrosis and gangrene

• Role of component system in acute inflammation,

• Role of arachidonic acid and its metabolites in acute inflammation,

• Growth factors in acute inflammation

• Role of molecular events in cell growth and intercellular signaling cell surface receptors

• Role of NSAIDs in inflammation,

• Cellular changes in radiation injury and its manifestation:

Pathology:

1. Inflammation –

2. Haemostasis

- • Role of endothelium in thrombogenesis,
- • Arterial and venous thrombi,
- • Disseminated Intravascular coagulation

3. Shock:

- • Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock
- Circulatory disturbances, ischemia, hyperemia, venous congestion, edema, infarction

4. Chromosomal abnormalities:

- • Marfans Syndrome, Ehler's Danlos Syndrome, Fragile X- Syndrome

5. Hypersensitivity:

- • Anaphylaxis, type 2 hypersensitivity, type 3 hyper sensitivity and cell mediated reaction and its clinical importance, systemic lupus erythematosus.

- • Infection and infective granulomas.

6. Neoplasia:

- • Classification of tumors.
- • Carcinogenesis and carcinogens- chemical, viral and microbial
- • Grading and staging of cancers, tumor Angiogenesis, Paraneoplastic syndrome, spread of tumors
- • Characteristics of benign and malignant tumors

7. Others:

- • Sex linked agammaglobulinemia.
- • AIDS
- • Management of immuno deficiency patients requiring surgical procedures
- • De George Syndrome
- Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis.

Oral Pathology:

- • Developmental disturbances of oral and Para oral structures
- • Regressive changes of teeth.
- • Bacterial, viral and mycotic infections of oral cavity
- • Dental caries,, diseases of pulp and periapical tissues
- • Physical and chemical injuries of the oral cavity
- • Oral manifestations of metabolic and endocrinal disturbances
- • Diseases of jawbones and TMJ
- • Diseases of blood and blood forming organs in relation to oral cavity
- • Cysts of the oral cavity
- • Salivary gland diseases
- • Role of laboratory investigations in oral surgery

Microbiology:

- • Immunity
- • Knowledge of organisms commonly associated with diseases of oral cavity.
- • Morphology cultural characteristics of strepto, staphylo, pneumo, gono, meningo, clostridium group of organisms, spirochetes, organisms of TB, leprosy, diphtheria, actinomycosis and moniliasis
- • Hepatitis B and its prophylaxis
- • Culture and sensitivity test
- • Laboratory determinations
- • Blood groups, blood matching, RBC and WBC count
- • Bleeding and clotting time etc, smears and cultures,
- • Urine analysis and cultures.

Applied Pharmacology and Therapeutics:

1. Definition of terminologies used
2. Dosage and mode of administration of drugs.
3. Action and fate of drugs in the body
4. Drug addiction, tolerance and hypersensitivity reactions.
5. Drugs acting on the CNS
6. General and local anesthetics, hypnotics, analeptics, and tranquilizers.
7. Chemo therapeutics and antibiotics
8. Analgesics and antipyretics
9. Antitubercular and antisyphilitic drugs.
10. Antiseptics, sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics
13. Vitamins A, B-complex, C, D, E, K

B) Oral and Maxillofacial Surgery:

- • Evolution of Maxillofacial surgery.
- • Diagnosis, history taking, clinical examination, investigations.

- • Informed consent/medico-legal issues.
- • Concept of essential drugs and rational use of drugs.
- • Communication skills with patients- understanding, clarity in communication, compassionate explanations and giving emotional support at the time of suffering and bereavement
- Principles of surgical audit – understanding the audit of process and outcome. Methods adopted for the same. Basic statistics.
- • Principles of evidence based surgery- understanding journal based literature study; the value of textbook, reference book articles, value of review articles; original articles and their critical assessment, understanding the value of retrospective, prospective, randomized control and blinded studies, understanding the principles and the meaning of various Bio-statistical tests applied in these studies.
- • Principles of surgery- developing a surgical diagnosis, basic necessities for surgery, aseptic technique, incisions, flap designs, tissue handling, hemostasis, dead space management, decontamination and debridement, suturing, edema control, patient general health and nutrition.
- • Medical emergencies – Prevention and management of altered consciousness, hyper sensitivity reaction, chest discomfort, respiratory difficulty.
- • Pre operative workup – Concept of fitness for surgery; basic medical work up; work up in special situation like diabetes, renal failure, cardiac and respiratory illness; risk stratification
- • Surgical sutures, drains
- • Post operative care- concept of recovery room care, Airway management, Assessment of Wakefulness, management of cardio vascular instability in this period, Criteria for shifting to the ward, pain management
- • Wound management- Wound healing, factors influencing healing, basic surgical techniques, Properties of suture materials, appropriate use of sutures.
- • Surgical Infections – Asepsis and antisepsis, Microbiological principles, Rational use of antibiotics, special infections like Synergistic Gangrene and Diabetic foot infection, Hepatitis and HIV infection and cross infection.
- • Airway obstruction/management – Anatomy of the airway, principles of keeping the airway patent, mouth to mouth resuscitation, Oropharyngeal airway, endotracheal intubation, Cricothyroidectomy, Tracheostomy.

- • Anesthesia – stages of Anesthesia, pharmacology of inhalation, intravenous and regional anesthetics, muscle relaxants.
- • Facial pain; Facial palsy and nerve injuries.
- • Pain control – acute and chronic pain, cancer and non-cancer pain, patient controlled analgesia
- • General patient management – competence in physical assessment of patients of surgery, competence in evaluation of patients presenting with acute injury, particularly to maxillofacial region. Competence in the evaluation of management of patients for Anesthesia
- • Clinical oral surgery – all aspects of dento alveolar surgery
- • Pre-prosthetic surgery – A wide range of surgical reconstructive procedures involving their hard and soft tissues of the edentulous jaws.
- • Temporomandibular joint disorders – TMJ disorders and their sequelae need expert evaluation, assessment and management. It is preferable to be familiar with diagnostic and therapeutic arthroscopic surgery procedures.
- • Tissue grafting – Understanding of the biological mechanisms involved in autogenous and heterogeneous tissue grafting.
- • Reconstructive oral and maxillofacial surgery – hard tissue and soft tissue reconstruction.
- • Cyst and tumors of head and neck region and their management – including principles of tumor surgery, giant cell lesion of jaw bones, fibro osseous lesions of jaw.

- • Neurological disorders of maxillofacial region-diagnosis and management of Trigeminal Neuralgia, MPDS, Bells palsy, Frey's Syndrome, Nerve injuries
- • Maxillofacial trauma – basic principles of treatment, primary care, diagnosis and management of hard and soft tissue injuries, Comprehensive management including polytrauma patients
- • Assessment of trauma-multiple injuries patient, closed abdominal and chest injuries, penetrating injuries, pelvic fractures, urological injuries, vascular injuries.
- • Orthognathic surgery – The trainee must be familiar with the assessment and correcting of jaw deformities
- • Laser surgery – The application of laser technology in the surgical treatment of lesions amenable to such therapy
- • Distraction osteogenesis in maxillofacial region.
- • Cryosurgeries – Principles, the application of cryosurgery in the surgical management of lesions amenable to such surgeries.
- • Cleft lip and palate surgery- detailed knowledge of the development of the face, head and neck, diagnosis and treatment planning, Current concepts in the management of cleft lip and palate deformity, knowledge of nasal endoscopy and other diagnostic techniques in the evaluation of speech and hearing, concept of multi disciplinary team management.
- • Aesthetic facial surgery – detailed knowledge of structures of face & neck including skin and underlying soft tissues, diagnosis and treatment planning of deformities and conditions affecting facial skin, underlying facial muscles, bone, eyelids, external ear etc., surgical management of post acne scaring, face lift, blepharoplasty, otoplasty, facial bone recountouring etc.
- • Craniofacial surgery – basic knowledge of developmental anomalies of face, head and neck, basics concept in the diagnosis and planning of various head and neck anomalies including facial cleft, craniosynostosis, syndromes, etc., Current concepts in the management of craniofacial anomalies.
- • Head and neck oncology – understanding of the principles of management of head and neck oncology including various pre cancerous lesions, Experience in the surgical techniques of reconstruction following ablative surgery.

- • Micro vascular surgery.
- • Implantology – principles, surgical procedures for insertion of various types of implants.
- • Maxillofacial radiology/ radio diagnosis
- • Other diagnostic methods and imaging techniques

C) Allied Specialties:

- • General medicine: General assessment of the patient including children with special emphasis on cardiovascular diseases, endocrinal, metabolic respiratory and renal diseases, Blood dyscrasias
- • General surgery: Principles of general surgery, exposure to common general surgical procedures.
- • Neuro – surgery: Evaluation of a patient with head injury, knowledge & exposure of various Neuro – surgical procedures

Anesthesiology: Evaluation of patients for GA technique, general anesthetic drugs use and complications, management of emergencies, various IV sedation techniques.

- Plastic Surgery- Basic Principles • Minor oral surgery and higher surgical training
- Submission of library assignment
- Oncologyposting – 1 month

• ENT/Ophthalmology: Examination of ear, nose, throat, exposure to ENT surgical procedures, ophthalmic examination and evaluation, exposure to ophthalmic surgical procedures. • Orthopedic: basic principles of orthopedic surgery, bone diseases and trauma as relevant to Maxillofacial surgery, interpretation of radiographs, CT, MRI and ultrasound Anesthesiology: Evaluation of patients for GA technique, general anesthetic drugs use and complications, management of emergencies, various IV sedation techniques.

- Plastic Surgery- Basic Principles • Minor oral surgery and higher surgical training
- Submission of library assignment
- Oncologyposting – 1 month

TEACHING / LEARNING ACTIVITIES:

The post graduate is expected to complete the following at the end of :

I Year

Study ofapplied basic sciences including practicals (wherever necessary), basic computer sciences, exodontia, seminars on basic topics, selection of dissertation topic, library assignment topic, attending O.T, ward rounds, Medical Record keeping, Pre-clinical exercises, preparation of synopsis and its submission within the six months after admission to the university as per calendar of events.

Rotation and postings in other departments:

General medicine - 1 month

General surgery - 1 month

Ophthalmology - 15 days

Neuro Surgery - 15 days

ENT - 15 days

Orthopedic - 15 days

Plastic Surgery - 15 days

Casualty - 15 days

Anesthesia (ICU) - 15 days

Radiology (CT, MRI, USG) - 15 days

II Year

III Year

- • Maxillofacial surgery
- • Submission of dissertation to the university, six months before the final examination.

It is desirable to enter general surgical skills and operative procedures that are observed, assisted or

Procedure	**Category**	**Number**

performed in the log book in the format as given below:-

Sl.No			
1	Injection I.M. and I.V.	PI	50, 20
2	Minor suturing and removal of sutures	PI	N,A
3	Incision & drainage of an abscess	PI	10
4	Surgical extraction	PI	15
5	Impacted teeth	PI, A	30,20

4. CONSERVATIVE DENTISTRY AND ENDODONTICS (DEND31)

PART-I:

Applied Basic Sciences:

Applied Anatomy of Head and Neck:

• • Development of face, paranasal sinuses and the associated structures and their anomalies, cranial and facial bones, TMJ anatomy and function, arterial and venous drainage of head and neck, muscles of face and neck including muscles of mastication and deglutition, brief consideration of structures and function of brain. Brief consideration of all cranial nerves and autonomic nervous system of head and neck. Salivary glands, Functional anatomy of mastication, deglutition and speech. Detailed anatomy of deciduous and permanent teeth, general consideration in physiology of permanent dentition, form, function, alignment, contact, occlusion.

- • Internal anatomy of permanent teeth and its significance.
- • Applied histology – histology of skin, oral mucosa, connective tissue, bone, cartilage, blood vessels, lymphatics, nerves, muscles, tongue.

Anatomy and Development of Teeth:

- • Enamel – development and composition, physical characteristics, chemical properties, structure.
- • Age changes – clinical structure.
- • Dentin – development, physical and chemical properties, structure type of dentin, innervations, age and functional changes and clinical considerations.
- • Pulp – development, histological structures, innervations, functions, regressive changes, clinical considerations.
- • Dentin and pulp complex.
- • Cementum – composition, cementogenesis, structure, function, clinical considerations.
- • Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
- • Periodontal ligament – development, structure, function and clinical considerations.
- • Salivary glands – structure, function, clinical considerations.

Applied Physiology:

- • Mastication, deglutition, digestion and assimilation, fluid and electrolyte balance.
- • Blood composition, volume, function, blood groups, haemostasis, coagulation, blood transfusion, circulation, heart, pulse, blood pressure, shock, respiration-control, anoxia, hypoxia, asphyxia, artificial respiration, and endocrinology – general principles of endocrine activity and disorders relating to pituitary, thyroid, parathyroid, adrenals including pregnancy and lactation.
- • Physiology of saliva – composition, function, clinical significance.
- • Clinical significance of vitamins, diet and nutrition – balanced diet.
- • Physiology of pain, sympathetic and Para sympathetic nervous system, pain pathways, physiology of pulpal pain, Odontogenic and non Odontogenic pain, pain disorders – typical and atypical.

- • Biochemistry such as osmotic pressure, electrolytic dissociation, oxidation, reduction etc. Carbohydrates, proteins, lipids and their metabolism, nucleoproteins, nucleic acid and their metabolism. Enzymes, vitamins and minerals, metabolism of inorganic elements, detoxification in the body, anti metabolites, chemistry of blood lymph and urine.

Pathology:

- • Inflammation, repair, degeneration, necrosis and gangrene.
- • Circulatory disturbances – ischemia, hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.
- • Neoplasms – classifications of tumors, characteristics of benign and malignant tumors, spread of tumors.
- • Blood dyscrasias.
- • Developmental disturbances of oral and Para oral structures, dental caries, regressive changes of teeth, pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
- • Bacterial, viral, mycotic infections of the oral cavity.

Microbiology:

- • Pathways of pulpal infection, oral flora and micro organisms associated with endodontic diseases, pathogenesis, host defense, bacterial virulence factors, healing, theory of focal infections, microbes relevance to dentistry – strepto, staphylococci, lactobacilli, cornyebacterium, actinomycetes, clostridium, neisseria, vibrio, bacteriods, fusobacteria, spirochetes, mycobacterium, virus and fungi.
- • Cross infection, infection control, infection control procedure, sterilization and disinfection.
- • Immunology – antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotic sensitivity test).

Pharmacology:

- • Dosage and route of administration of drugs, actions and fate of drug in body, drug addiction, tolerance of hypersensitivity reactions.
- • Local anesthesia – agents and chemistry, pharmacological actions, fate and metabolism of anaesthetic, ideal properties, techniques and complications.
- • General anesthesia – pre medications, neuro muscular blocking agents, induction agents, inhalation anesthesia, and agents used, assessment of anesthetic problems in medically compromised patients.
- • Anaesthetic emergencies
- • Antihistamines, corticosteroids, chemotherapeutic and antibiotics, drug resistance, haemostasis, and haemostatic agents, anticoagulants, sympathomimitic drugs, vitamins and minerals (A, B, C, D, E, K IRON), anti sialogogue, immunosupressants, drug interactions, antiseptics, disinfectants, anti viral agents, drugs acting on CNS.

Biostatistics:

- • Introduction, Basic concepts, Sampling, Health information systems – collection, compilation, presentation of data. Elementary statistical methods – presentation of statistical data, Statistical averages – measures of central tendency, measures of dispersion, Normal distribution. Tests of significance – parametric and non – parametric tests (Fisher extract test, Sign test, Median test, Mann Whitney test, Kruskal Wallis one way analysis, Friedmann two way analysis, ANOVA, Regression analysis), Correlation and regression,Use of computers.

Research Methodology:

- • Essential features of a protocol for research in humans
- • Experimental and non-experimental study designs
- Ethical considerations of research

Applied Dental Materials:

- • Physical and mechanical properties of dental materials, biocompatibility.
- • Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding- recent developments, tarnish and corrosion, dental amalgam, direct filling gold, casting alloys, inlay wax, die materials, investments, casting

procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.

- • Dental ceramics-recent advances, finishing and polishing materials.
- • Dental burs – design and mechanics of cutting – other modalities of tooth preparation.

Methods of testing biocompatibility of materials used.

PART-II:

Paper-I: Conservative Dentistry

1. Examination, diagnosis and treatment plan

2. Occlusion as related to conservative dentistry, contact, contour, its significance. Separation of teeth, matrices, used in conservative dentistry.

3. Dental caries- epidemiology, recent concept of etiological factors, pathophysiology, histopathology, diagnosis, caries activity tests, prevention of dental caries and management – recent methods.

4. Hand and rotary cutting instruments, development of rotary equipment, speed ranges, hazards.

5. Dental burs and other modalities of tooth reparation- recent developments (air abrasions, lasers etc.)

6. Infection control procedures in conservative dentistry, isolation equipments etc.

7. Direct concepts in tooth preparation for amalgam, composite, GIC and restorative techniques, failures and management.

8. Biologic response of pulp to various restorative materials and operative procedures.

9. Direct and indirect composite restorations.

10. Indirect tooth colored restorations- ceramic, inlays and onlays, veneers, crowns, recent advances in fabrication and gingival tissue management.

11. Impression procedures used for indirect restorations.

12. Cast metal restorations, indications, contraindications, tooth preparation for class II inlay, onlay, full crown restorations.

Restorative techniques, direct and indirect methods of fabrication including materials used for fabrication like inlay wax, investment materials and casting.

13. Direct gold restorations.

14. Recent advances in restorative materials.
15. Esthetics including smile design
16. Management of non-carious lesions.
17. Management of discolored tooth
18. Minimal intervention dentistry.
19. Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth.
20. Hypersensitivity-theories, causes and management.
21. Lasers in Conservative Dentistry.
22. CAD-CAM in restorative dentistry.
23. Digital imaging and its applications in restorative dentistry.
24. Clinical Photography.

Paper-II: Endodontics

1. Rationale of endodontics.
2. Pulp and periapical pathology.
3. Pathobiology of periapex.
4. Diagnostic procedures – Orofacial dental pain emergencies: endodontic diagnosis and management, recent advances used for diagnosis.
5. Case selection and treatment planning.
6. Endodontic microbiology.
7. Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
8. Endodontic emergencies and management.
9. Access cavity preparation – objectives and principles
10. Endodontic instruments and instrumentation – recent developments, detailed description of hand, rotary, sonic, ultra sonic etc.
11. Working length determination, cleaning and shaping of root canal system and recent developments in techniques of canal preparation.
12. Root canal irrigants and intra canal medicaments.
13. Obturation materials, techniques and recent advances.

14. Traumatic injuries and management – endodontic treatment for young permanent teeth.

15. Endodontic surgeries, recent developments in technique and devices and wound healing.

16. Endoperio interrelationship and management.

17. Lasers in Endodontics.

18. Multidisciplinary approach to endodontic situations.

19. Radiology and CBCT in endodontic practice.

20. Procedural errors in endodontics and their management.

21. Endodontic failures and retreatment.

22. Resorptions and its management.

23. Microscopes and Microsurgery in endodontics.

24. Single visit endodontics, current concepts and controversies.

25. Regenerative Endodontics

Paper-III: Essays (descriptive and analyzing type questions)

TEACHING / LEARNING ACTIVITIES:

The post graduate is expected to complete the following at the end of :

The following is the minimum required to be completed before the candidate can be considered eligible to appear for final MDS exam.

First Year

- **• Pre Clinical Work – Conservative and Endodontics**
- • Preclinical work on typhodont teeth

  1. Class II amalgam cavities a. Conservative preparation - 03

  b. Conventional preparation - 03

2. Inlay cavity preparation including wax pattern and casting on premolars and molars – MO, DO, MOD - 02

3. Onlay preparation on molars including wax pattern and casting - 02

4. Full Crown

a. Anterior - 02

b. Posterior - 02

(1 each to be processed)

- • Pre Clinical work on natural teeth
- 1. Wax Carving of all permanent teeth
- 2. Inlay on molars and premolars MO, DO, and MOD including wax pattern and casting - 05

3. Amalgam cavity preparation a. Conventional - 02

b. Conservative - 02

4. Complex amalgam on molar teeth - 02

5. Onlay on molars including wax pattern and casting - 02

(1 to be processed)

6. Full crown premolars and molars (metal, PFM & - 04

Ceramic)

7. Full crown anterior (PFM, composite& Ceramic) - 03

8. Veneers anterior teeth - 02

9. Composite a. Composite Filling (Class I,II,III & V) -05 (each)

b. Inlay (Class I & II) -02

c. Veneer -02

d. Diastema Closure -02

e. Angle Buildups -02

Endodontics:

1. Sectioning of all maxillary and mandibular teeth (vertical & horizontal).

2. Access cavity opening in relation to maxillary and mandibular permanent teeth.

3. Access cavity preparation, BMP and Obturation (2 lateral compaction and 1 thermoplasticized) (2 upper and 2 lower) obturation 1 each

a) Anterior (3 maxillary and 3 mandibular) - 06

- Conventional prep - 02
- Step back - 02
- Crown down - 02
- Obturation - 03

b) Premolar - 04

c) Molar - 06

(3 upper – 2 first molars and 1 second molar

3 lower – 2 first molars and 1 second molar) obturation 1 each

4. Post and core preparation and fabrication in relation to anterior and posterior teeth a. Anterior 10 (Cast Post 5 and prefabricated post 5)

b. Posterior 05 (Cast Post 2 and prefabricated post 5)

5. Removable dies - 04

Note : Technique work to be completed in the first four months

Clinical Work: A	Composite restorations	30
B	GIC Restorations	30

5. ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS (DORT31)

PART-I:

A. Applied Basic Sciences:

Applied Anatomy:

a. Prenatal growth of head:

Stages of embryonic development, origin of head, origin of face, origin of teeth.

b. Postnatal growth of head:

Bones of skull, the oral cavity, development of chin, the hyoid bone, general growth of head, growth of the face.

c. Bone growth:

Origin of bone, composition of bone, units of bone structure, schedule of Ossification, mechanical properties of bone, roentgen graphic appearance of bone

d. Assessment of growth and development:

Growth prediction, growth spurts, the concept of normality and growth increments of growth, differential growth, gradient of growth, methods of gathering growth data. Theories of growth and recent advances, factors affecting physical growth.

e. Muscles of mastication:

Development of muscles, muscle change during growth, muscle function and facial development, muscle function and malocclusion

f. Development of dentition and occlusion:

Dental development periods, order of tooth eruption, chronology of permanent tooth formation, periods of occlusal development, pattern of occlusion.

g. Assessment of skeletal age.

Physiology:

a. Endocrinology and its disorders:

Growth hormone, thyroid hormone, parathyroid hormone, ACTH.

b. Calcium and its metabolism:

c. Nutrition-metabolism and their disorders:

Proteins, carbohydrates, fats, vitamins and minerals

d. Muscle physiology:

e. Craniofacial Biology:

Adhesion molecules and mechanism of adhesion

f. Bleeding disorders in orthodontics: Hemophilia

Dental Materials:

a. Gypsum products:

Dental plaster, dental stone and their properties, setting reaction etc.

b. Impression materials:

Impression materials in general and particularly of alginate impression material.

c. Acrylics:

Chemistry, composition physical properties 102

d. Composites:

Composition types, properties, setting reaction

e. Banding and bonding cements:

f. Wrought metal alloys:

Deformation, strain hardening, annealing, recovery, recrystallization, grain growth, properties of metal alloys

g. Orthodontic arch wires

h. Elastics:

Latex and non-latex elastics.

i. Applied physics, Bioengineering and metallurgy:

j. Specification and tests methods used for materials used in Orthodontics:

k. Survey of all contemporary literature and recent advances in above mentioned materials:

Genetics:

a. Cell structure, DNA, RNA, protein synthesis, cell division

b. Chromosomal abnormalities

c. Principles of orofacial genetics

d. Genetics in malocclusion

e. Molecular basis of genetics

f. Studies related to malocclusion

g. Recent advances in genetics related to malocclusion

h. Genetic counseling

i. Bioethics and relationship to Orthodontic management of patients.

Physical Anthropology:

a. Evolutionary development of dentition

b. Evolutionary development of jaws.

Pathology:

a. Inflammation

b. Necrosis

Biostatistics:

a. Statistical principles • Data Collection

• Method of presentation

• Method of Summarizing

• Methods of analysis – different tests/errors

b. Sampling and Sampling technique

c. Experimental models, design and interpretation

d. Development of skills for preparing clear concise and cognent scientific abstracts and publication

Applied Research Methodology In Orthodontics:

- a. Experimental design
- b. Animal experimental protocol
- c. Principles in the development, execution and interpretation of

methodologies in Orthodontics

- d. Critical Scientific appraisal of literature.

Applied Pharmacology

Definitions & terminologies used – Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics, analeptics and tranquilizers. Local anesthetics, Chemotherapeutics and antibiotics. Vitamins: A, D, B – complex group, C & K etc.

PART-II:

Paper-I:Basic Orthodontics

OrthodonticHistory:

- a. Historical perspective,
- b. Evolution of orthodontic appliances,
- c. Pencil sketch history of Orthodontic peers
- d. History of Orthodontics in India

Concepts of Occlusion and Esthetics:

- a. Structure and function of all anatomic components of occlusion,
- b. Mechanics of articulation,
- c. Recording of masticatory function,
- d. Diagnosis of Occlusal dysfunction,
- e. Relationship of TMJ anatomy and pathology and related neuromuscular physiology.

Etiology and Classification of Malocclusion:

- a. A comprehensive review of the local and systemic factors in the causation of malocclusion
- b. Various classifications of malocclusion

Dentofacial Anomalies:

- a. Anatomical, physiological and pathological characteristics of major groups of developmental defects of the orofacial structures.

Diagnostic Procedures and Treatment Planning in Orthodontics:

- a. Emphasis on the process of data gathering, synthesis and translating it into a treatment plan

- b. Problem cases – analysis of cases and its management
- c. Adult cases, handicapped and mentally retarded cases and their special problems
- d. Critique of treated cases.

Cephalometrics

a. Instrumentation

b. Image processing

c. Tracing and analysis of errors and applications

d. Radiation hazards

e. Advanced Cephalometrics techniques including digital cephalometrics

f. Comprehensive review of literature

g. Video imaging principles and application.

Practice Management in Orthodontics:

- a. Economics and dynamics of solo and group practices
- b. Personal management
- c. Materials management
- d. Public relations
- e. Professional relationship
- f. Dental ethics and jurisprudence
- g. Office sterilization procedures
- h. Community based Orthodontics.

Paper-II:Clinical Orthodontics

Myofunctional Orthodontics:

- a. Basic principles
- b. Contemporary appliances –design, manipulation and management
- c. Case selection and evaluation of the treatment results
- d. Review of the current literature.

Dentofacial Orthopedics:

- a. Principles

- b. Biomechanics
- c. Appliance design and manipulation
- d. Review of contemporary literature

Cleft lip and palate rehabilitation:

- a. Diagnosis and treatment planning
- b. Mechanotherapy
- c. Special growth problems of cleft cases
- d. Speech physiology, pathology and elements of therapy as applied to orthodontics
- e. Team rehabilitative procedures.

Biology of tooth movement:

- a. Principles of tooth movement-review
- b. Review of contemporary literature
- c. Applied histophysiology of bone, periodontal ligament
- d. Molecular and ultra cellular consideration in tooth movement

Orthodontic / Orthognathic surgery:

- a. Orthodontist's role in conjoint diagnosis and treatment planning
- b. Pre and post-surgical Orthodontics
- c. Participation in actual clinical cases, progress evaluation and post retention study
- d. Review of current literature

Ortho / Perio / Prostho/Endo inter relationship:

- a. Principles of interdisciplinary patient treatment
- b. Common problems and their management

Basic principles of mechanotherapy includes removable appliances and fixed appliances:

- a. Design
- b. Construction
- c. Fabrication

- d. Management
- e. Review of current literature on treatment methods and results

Applied preventive aspects in Orthodontics:

- a. Caries and periodontal disease prevention
- b. Oral hygiene measures
- c. Clinical procedures a. Principles
- b. Growth guidance
- c. Diagnosis and treatment planning
- d. Therapy emphasis on: • Dento-facial problems
- • Tooth material discrepancies
- • Minor surgery for Orthodontics
-

Interceptive Orthodontics:

Evidence Based Orthodontics:

Different types of fixed Mechanotherapy:

Orthodontic Management of TMJ problems, sleep-apnoea etc.:

Retention and relapse:

- a. Mechanotherapy – special reference to stability of results with various procedures
- b. Post retention analysis
- c. Review of contemporary literature

Recent Advances :

- a. Use of implants
- b. Lasers
- c. Application of F.E.M.
- d. Distraction Osteogenesis
- e. Invisible Orthodontics
- f. 3D imaging Digital Orthodontics, Virtual Treatment Planning

- g. CAD-CAM bracket Customization
- h. Robotic Wire Bending

i. Accelerated Orthodontics • Surgical

• Device assisted or mechanical stimulation

• Biochemical Mediators

j. Lingual Orthodontics

Paper-III: Essays (descriptive and analyzing type questions)

PRE – CLINICAL EXERCISES

(Should be completed within 3 months)

A general outline of the type of exercises is given here:

1. General Wire bending exercises to develop the manual dexterity.
2. Clasps, Bows and springs used in the removable appliances.
3. Soldering and welding exercises.
4. Fabrication of removable, habit breaking, mechanical and functional appliances, also all types of space maintainers and space regainers.
5. Bonwill Hawley Ideal arch preparation.
6. Construction of orthodontic models trimmed and polished.
7. Cephalometric tracing and various Analyses, also superimposition methods –
8. Fixed appliance typodont exercises.

a) Training shall be imparted in one basic technique i.e. Standard Edgewise / Begg technique or its derivative / Straight wire etc., with adequate exposure to other techniques.

b) Typodont exercise

- • Band making
- • Bracket positioning and placement
- • Different stages in treatment appropriate to technique taught

9. Clinical photography
10. Computerized imaging

11. Preparation of surgical splints, and splints for TMJ problems.

12. Handling of equipment like vacuum forming appliances and hydro solder etc.

Basic Pre-Clinical Exercise Work for the MDS Students:

1. Clasps: Sl.No	**Exercise**	**No.**
1	¾ Clasps	1
2.	Triangular Clasps	1
3.	Adam's clasp	2
4.	Modification of Adam's – With Helix	2
5.	Southend Clasp	1

6. ORAL & MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY (DOPM31)

I MDS:

***1. Biostatistics and Research Methodology*:**

• Basic principles of biostatistics and study as applied to dentistry and research

• Collection/ organization of data/ measurement scales / presentation of data and analysis

• Measures of central tendency

• Measures of variability

• Sampling and planning of health survey

• Probability, normal distribution & indicative statistics

• Estimating population values

• Tests of significance(parametric/non-parametric qualitative methods)

• Analysis of variance

• Association, correlation and regression

Approach:

- • Didactic Lectures

2. Applied Gross Anatomy of head and neck, histology and genetics :

• Temporo-mandibular joint

• Trigeminal nerve and facial nerve

• Muscles of mastication

• Tongue

• Salivary glands

• Nerve supply, blood supply, lymphatic drainage & venous drainage of oro-dental tissues

• Development of face, palate, mandible, maxilla, tongue and applied aspects of the same

• Development of teeth & dental tissues and developmental defects of oral and maxilla-facial region & abnormalities of teeth

• Maxillary sinus

• Jaw muscles and facial muscles

• Introduction to genetics

- • Modes of inheritance
- • Chromosomal anomalies of oral tissues & single gene disorders

Approach:

- • Didactic Lectures
- • Postings in the Department of Anatomy for dissection of Head, Face and Neck

3. Physiology (General & Oral) **:**

• Saliva

• Pain

• Mastication

• Taste

• Deglutition

• Wound healing

• Vitamins (influence on growth, development and structure of oral soft and hard tissues & paraoral tissues)

• Calcium metabolism

• Theories of mineralization

• Tooth eruption and shedding

• Blood and its constituents

• Hormones (influence on growth, development and structure of oral soft and hard tissues & paraoral tissues)

Approach:

• • Didactic Lectures

4. Cell Biology :

• Cell structure and function (ultra structural & molecular aspects)

• Intercellular junctions

• Cell cycle and division

• Cell cycle regulators

• Cell–cell & cell-extracellular matrix interactions

• Detailed molecular aspects of DNA,RNA and intracellular organelles, transcription and translation and molecular biology techniques

Approach:

- • Seminars & Didactic Lectures

5. General Histology :

• Light & electron microscopy considerations of epithelial tissues and glands,bone.

• Light & electron microscopy considerations of hemopoetic system, lymphatic system, muscle, neural tissue, endocrinal system (thyroid, pituitary, parathyroid)

Approach:

- • Didactic Lectures
- • Postings in the Department of Anatomy & Histology for slide discussion
- • Record book to be maintained

6. Biochemistry :

• Chemistry of carbohydrates, lipids and proteins

- Methods of identification and purification
- • Metabolism of carbohydrates, lipids and proteins
- • Biological oxidation
- • Various techniques-cell fractionation and ultra filtration, centrifugation, electrophoresis, spectrophotometry and radioactive techniques

Approach:

- • Didactic Lectures
- • Postings in the Department of Biochemistry to familiarize with various techniques
- • Record book to be maintained

7. General Pathology :

• Inflammation and chemical mediator

• Thrombosis

• Embolism

• Necrosis

• Repair

• Degeneration

• Shock

• Hemorrhage

• Pathogenic mechanisms at molecular level

• Blood dyscrasias

• Carcinogenesis and neoplasia

Approach:

• • Didactic Lectures & Seminars

8. General Microbiology :

• Definitions of various types of infections

• Routes of infection and spread

• Sterilization ,disinfection and antiseptics

• Bacterial genetics

• Physiology, growth of microorganisms

Approach:

• • Didactic Lectures & Seminars

9. Basic Immunology :

• Basic principles of immunity, antigen and antibody reaction

• Cell mediated and humoral immunity

• Immunology of hypersensitivity

• Immunological basis of auto immune phenomena

• Immunodeficiency with relevance to opportunistic infections

• Basic principles of transplantation and tumor immunity

Approach:

- • Didactic Lectures & Seminars
- ***10. Systemic Microbiology / Applied Microbiology :***

Morphology, classification, pathogenicity, mode of transmission, methods of prevention, collection and transport of specimen for laboratory diagnosis, staining methods, common culture media, interpretation of laboratory reports and antibiotic sensitivity tests.

- Staphylococci
- • Streptococci
- • Corynebacterium diphtheria
- • Mycobacteria
- • Clostridia, bacteroids & fusobacteria
- • Actinomycetales
- • Spirochetes
- • General structure, broad classification of viruses, pathogenesis, pathology of viral infections
- • Herpes virus
- • Hepatitis virus
- • HIV
- • General properties of fungi
- • Superficial, subcutaneous, deep opportunistic infections

- • General principles of fungal infections, method of collection of samples, diagnosis and examination of fungi

Approach:

- • Didactic Lectures & Seminars
- • Postings in the Department of Microbiology to familiarize with relevant diagnostic methods
- • Record book to be maintained

11. Oral biology (Oral and Dental Histology) :

• Study of morphology of permanent and deciduous teeth

• Structure and function of oral, dental and paraoral tissues including their ultra structure, molecular and biochemical aspects

Approach:

- • Didactic Lectures & Seminars
- • Slide discussion on histological appearance of normal oral tissues
- • Record book to be maintained

12. Basic Histo-Techniques and Microscopy :

• Routine hematological tests and clinical significance of the same

• Biopsy procedures for oral lesions

• Tissue processing

• Microtome and principles of microtomy

• Various stains used in histopathology and their applications

• Microscope, principles and theories of microscopy

• Light microscopy and various other types including electron microscopy

• Fixation and fixatives

• Ground sections and decalcified sections

• Cytological smears

Approach:

- • Didactic Lectures & Seminars
- • Postings in Clinical Pathology and Microbiology for relevant training
- • Preparation of Ground and decalcified sections, tissue processing, sectioning and staining
- • Tooth Carving (Permanent Dentition)
- • Record book to be maintained

II MDS:

1. Oral and Dental Pathology:

- • Developmental disorders of oral and paraoral structures
- • Potentially malignant disorders
- • Benign and malignant tumors of the oral cavity
- • Odontogenic cysts and tumors
- • Pathology of salivary glands
- • Regressive alterations of teeth
- • Bacterial, fungal, viral and protozoal infections of the oral cavity
- • Dental caries
- • Diseases of pulp and periapical region
- • Spread of oral infection
- • Healing of oral wounds
- • Physical and chemical injuries of oral cavity
- • Oral aspects of metabolic diseases
- • Diseases of bones and joints
- • Diseases of skin and mucous membrane
- • Diseases of periodontia
- • Diseases of blood and blood forming organs
- • Diseases of nerves and muscles
- • Oro-facial pain
- • Immunological diseases of oral cavity including tumor immunology
- • Molecular pathology
- • Oral Microbiology

Approach:

- • Didactic Lectures & Seminars
- • Postings in the Department of Dermatology of a Medical College
- • Postings in a Cancer Centre

2. Basic histo-techniques and microscopy:

- • Enzyme histochemistry
- • Principles, techniques and applications of immunofluorescence
- • Principles, techniques and applications of immunohistochemistry
- • Preparation of frozen sections
- • Museum set up
- • Quality control
- • Animal models

Approach:

- • Didactic Lectures & Seminars
- • Training to be imparted in the Department or in other institutions having the facility
- • Visit to the centre of animal experimentation to be familiarize with laboratory techniques, upkeep and care of animals
- • Record book to be maintained

3. Recent Molecular Techniques:

- Basic principles, techniques and applications of –
- • PCR
- • BLOTS
- • Hybridization
- • Recombinant DNA technology
- • Micro array
- • DNA sequencing
- • Cell culture and cloning

Approach:

- • Didactic Lectures & Seminars
- • Training to be imparted in the Department or in other institutions having the facility

- • Record book to be maintained

4. Recording of Case History and Clinico-Pathological Discussions:

Approach:

- • Postings in the Department of Oral Medicine, Diagnosis & Radiology
- • Record of minimum 10 case histories to be maintained

5. Histopathology – Slide discussion:

- • Record book to be maintained

III MDS:

- • Forensic odontology
- • Giant cell lesions
- • Clear cell lesions
- • Round cell lesions
- • Spindle cell lesions
- • Pigmented lesions
- • Fibro-osseous lesions
- • Mechanism of formation and expansion of cysts of orofacial region
- • Mechanism of growth and metastasis of tumors
- • Lab diagnosis of bacterial infections
- • Lab diagnosis of viral infections
- • Lab diagnosis of fungal infections
- • Hamartomas
- • Phakomatoses
- • Vascular tumors of oro-facial region
- • Genodermatoses
- • Tumor markers
- • Histogenesis of salivary gland tumors
- • Tumor angiogenesis

- • Concept of premalignancy
- • Blue cell lesions
- • Molecular basics of oral squamous cell carcinoma
- • Matrix remodelling in pathological condition
- • Etiopathogenesis of developmental defects of teeth
- • Viral oncogenesis
- • Lesions associated with impacted and missing teeth
- • Syndromes affecting oro-facial region
- • Hereditary oral defects
- Techniques to assess the prognosis of neoplastic lesions
- • Vesiculo-bullous lesions
- • Lymphoreticular malignancy
- • Haemopoietic malignancy
- • Micronutrients
- • Oral aspects of metabolic disorders
- • Hormones and oro-maxillofacial lesions
- • Matrix metalloproteinases
- • Current concepts in HIV related oral diseases
- • Current concepts in OSMF
- • Epithelial –connective tissue interaction
- • Stem cell research

Approach:

- • Didactic Lectures & Seminars
- • Postings in the Department of Forensic Medicine / Sciences
- • Record book to be maintained

7. PEDIATRIC DENTISTRY (DPED31)

A) Applied Basic Sciences:

Applied Anatomy of Head and Neck:

- • Anatomy of the scalp, temple and face
- • Anatomy of the triangles of neck and deep structures of the neck
- • Cranial and facial bones and its surrounding soft tissues with its applied aspects
- • Muscles of head and neck
- • Arterial supply, venous drainage and lymphatics of head and neck
- • Congenital abnormalities of the head and neck
- • Anatomy of the cranial nerves
- Anatomy of the tongue and its applied aspects
- • Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea, esophagus
- • Autonomous nervous system of head and neck
- • Functional anatomy of mastication, deglutition, speech, respiration and circulation
- • TMJ: anatomy and function

Applied Physiology:

Introduction, Mastication, deglutition, digestion and assimilation, Homeostasis, fluid and electrolyte balance. Blood composition, volume, function, blood groups and hemorrhage, Blood transfusion, circulation, Heart, Pulse, Blood pressure, Normal ECG,capillary and lymphatic circulation, shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration. Endocrine glands in particular reference to pituitary, parathyroid and thyroid glands and sex hormones. Role of calcium and Vit D in growth and development of teeth, bone and jaws.Role of Vit.A, C and B complex in oral mucosal and periodontal health.Physiology and function of the masticatory system. Speech mechanism, swallowing and deglutition mechanism, salivary glands and Saliva

Applied Pathology:

Inflammation and chemical mediators, Thrombosis, Embolism, Necrosis, Repair, Degeneration , Shock, Hemorrhage , Blood dyscrasias, Pathogenesis of Dental Caries, Periodontal diseases, tumors, oral mucosal lesions etc. in children

Applied Microbiology:

Microbiology & Immunology as related to Oral Diseases in Children: Basic concepts, immune system in human body, Auto Immune diseases and Immunology of Dental caries.

Applied Nutrition & Dietics:

- • General principles, balanced diet, effect of dietary deficiencies and starvation, protein energy, malnutrition, Kwashiorkor, Marasmus.
- • Fluid and Electrolytic balance in maintaining haemostasis
- • Diet, digestion, absorption, transportation and utilization

Genetics:

- • Introduction to genetics
- • Cell structure, DNA, RNA, protein synthesis, cell division
- • Modes of inheritance
- • Chromosomal anomalies of oral tissues & single gene disorders

Growth & Development:

Prenatal and Postnatal development of cranium, face, jaws, teeth and supporting structures.Chronology of dental development and development of occlusion. Dimensional changes in dental arches. Cephalometric evaluation of growth.

B) Pediatric Dentistry:

- • Child Psychology:

Development & Classification of behavior, personality, intelligence in children, theories of child psychology, stages of psychological child development, fear, anxiety, apprehension & its management.

- • Behavior Management: Non- pharmacological & Pharmacological methods.
- Child Abuse & Dental Neglect:

- • Conscious Sedation:
- • Deep Sedation & General Anesthesia in Pediatric Dentistry: (Including Other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children

Preventive Pedodontics:

Concepts, chair side preventive measures for dental diseases, high-risk caries including rampant & extensive caries – Recognition, Features & Preventive Management, Pit and Fissures Sealants, Oral Hygiene measures, Correlation of brushing with dental caries and periodontal diseases. Diet & Nutrition as related to dental caries. Diet Counseling

Dental Plaque:

Definition, Initiation, Pathogenesis, Biochemistry, and Morphology & Metabolism.

Gingival & Periodontal diseases in Children:

- • Normal Gingiva & Periodontium in children.
- • Gingival & Periodontal diseases – Etiology, Pathogenesis, Prevention & Management

Pediatric Operative Dentistry:

- • Principle of Operative Dentistry along with modifications of materials/past, current & latest including tooth colored materials.
- • Modifications required for cavity preparation in primary and young permanent teeth.
- • Various Isolation Techniques
- • Restorations of decayed primary, young permanent and permanent teeth in children using various restorative material like Glass Ionomer, Composites, Silver, Amalgam & latest material (gallium)

• Stainless steel, Polycarbonate & Resin Crowns / Veneers & fibre post systems. • Primary Dentition: - Diagnosis of pulpal diseases and their management – Pulp capping, Pulpotomy, Pulpectomy (Materials & Methods), Controversies & recent concepts.

• Young permanent teeth and permanent teeth, Pulp capping, Pulpotomy, Apexogenesis, Apexification, Concepts, Techniques and Materials used for different procedures.

• Recent advances in Pediatric diagnosis and Endodontics.

Pediatric Endodontics:

Prosthetic consideration in Pediatric Dentistry.

Traumatic Injuries in Children:

- • Classifications & Importance.
- • Sequelae & reaction of teeth to trauma.
- • Management of Traumatized teeth with latest concepts.
- • Management of jaw fractures in children.

Interceptive Orthodontics:

- • Concepts of occlusion and esthetics: Structure and function of all anatomic components of occlusion, mechanics of articulations, recording of masticatory function, diagnosis of Occlusal dysfunction, relationship of TMJ anatomy and pathology and related neuromuscular physiology.

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• A comprehensive review of the local and systemic factors in the causation of malocclusion.

- • Recognition and management of normal and abnormal developmental occlusions in primary, mixed and permanent dentitions in children (Occlusal Guidance).
- • Biology of tooth movement: A comprehensive review of the principles of teeth movement. Review of contemporary literature. Histopathology of bone and Periodontal ligament, Molecular and ultra cellular consideration in tooth movement.
- • Myofunctional appliances: Basic principles, contemporary appliances: Design & Fabrication
- • Removable appliances: Basic principles, contemporary appliances: Design & Fabrication
- • Case selection & diagnosis in interceptive Orthodontics (Cephalometrics, Image processing, Tracing, Radiation hygiene, Video imaging & advance Cephalometric techniques).

• Space Management: Etiology, Diagnosis of space problems, analysis, Biomechanics, Planned extraction in interceptive orthodontics. • Definition, Etiology & Classification

• Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits.

• Management of oral habits in children

Oral Habits in Children:

Dental care of Children with special needs:

Definition, Etiology, Classification, Behavioral, Clinical features & Management of children with:

- • Physically handicapped conditions
- • Mentally compromising conditions
- • Medically compromising conditions

• Genetic disorders • Historical background

• Definition, Aeitology & Pathogenesis

• Caries pattern in primary, young permanent and permanent teeth in children.

• Rampant caries, early childhood caries and extensive caries. Definition, aeitology, Pathogenesis, Clinical features, Complications & Management.

• Role of diet and nutrition in Dental Caries

• Dietary modifications & Diet counseling.

• Subjective & objective methods of Caries detection with emphasis on Caries Activity tests, Caries prediction, Caries susceptibility & their clinical Applications

Oral manifestations of Systemic Conditions in Children & their Management

Management of Minor Oral Surgical Procedures in Children

Dental Radiology as related to Pediatric Dentistry

Cariology:

Pediatric Oral Medicine & Clinical Pathology: Recognition & Management of developmental dental anomalies, teething disorders, stomatological conditions, mucosal lesions, viral infections etc.

Congenital Abnormalities in Children: Definition, Classification, Clinical features & Management.

Dental Emergencies in Children and their Management.

Dental Materials used in Pediatric Dentistry.

Preventive Dentistry:

- • Definition
- • Principles & Scope
- • Types of prevention
- • Different preventive measures used in Pediatric Dentistry including fissure sealants and caries vaccine.

Dental Health Education & School Dental Health Programmes:
Dental health concepts, Effects of civilization and environment, Dental Health delivery system, Public Health measures related to children along with principles of Pediatric Preventive Dentistry
Fluorides:

- • Historical background
- • Systemic & Topical fluorides
- • Mechanism of action
- • Toxicity & Management.
- • Defluoridation techniques. 1. Carving of all deciduous teeth
- 2. Basic wire bending exercises(Clasps, Bows, Retractors and Springs, etc., on patient models)
- 3. Basics for Spot welding exercises
- 4. Fabrication of
-

Medico legal aspects in Pediatric Dentistry with emphasis on informed concert.
Counseling in Pediatric Dentistry
Case History Recording: Outline of principles of examination, diagnosis & treatment planning.
Epidemiology: Concepts, Methods of recording & evaluation of various oral diseases. Various national & global trends of epidemiology of oral diseases.
Comprehensive Infant Oral Health Care.
Principles of Bio-Statistics& Research Methodology & Understanding of Computers and Photography

Comprehensive cleft care management with emphasis on counseling, feeding, nasoalveolar bone remodeling, speech rehabilitation.

Setting up of Pediatric Dentistry Clinic.

Emerging concepts in Pediatric Dentistry of scope of lasers / minimum invasive procedures in Pediatric Dentistry.

Preclinical Work

(Duration – first 6 Months of First Year MDS)

(One on Each Exercise)

1. Carving of all deciduous teeth
2. Basic wire bending exercises(Clasps, Bows, Retractors and Springs, etc., on patient models)
3. Basics for Spot welding exercises
4. Fabrication of

a. Maxillary bite plate / Hawley's'

b. Maxillary expansion screw appliance

c. Canine retractor appliance

d. All habit breaking appliances

- - Removable type
- - Fixed type
- Partially fixed and removable

e. Myofunctional appliances – Twin block, Activator, Lip bumper, Oral Screen

f. Making of inclined plane appliance

g. Feeding appliance

- a. Maxillary bite plate / Hawley's'
- b. Maxillary expansion screw appliance
- c. Canine retractor appliance
- d. All habit breaking appliances
- - Removable type
- - Fixed type
- - Partially fixed and removable

• 5. Basic soldering exercises – making of a lamppost of stainless steel wire pieces of different gauges soldered on either side of heavy gauge main post.

• 6. Fabrication of space maintainers

a. Removable type-

• Unilateral Non – Functional space maintainer

• Bilateral Non-Functional space maintainer

b. Space Regainers –

• Gerber or Opencoil space regainer

c. Fixed Space maintainers

• Band & loop space maintainer

• Transpalatal arch space maintainer

• Nance Palatal holding arch

• Distal shoe appliance 7. Basics for spot welding exercise

8. Collection of extracted deciduous and permanent teeth

a. Sectioning of the teeth at various levels and planes

b. Drawing of section and shapes of pulp

c. Phantom Head Exercises : Performing ideal cavity preparation for various restorative materials for both Deciduous and permanent teeth

d. Performing pulpotomy, root canal treatment and Apexification procedure i) Tooth preparation and fabrication of various temporary and permanent restorations on fractured anterior teeth.

ii) Preparation of teeth for various types of crowns

iii) Laminates/veneers

iv) Bonding & banding exercise

b. Developing and processing of films, thus obtained

c. Tracing of soft tissue dental and skeletal landmarks as observed on Cephalometric radiographs and drawing of various planes and angles, further interpretation of Cephalometric radiographs.

d. Mixed dentition cast analysis

9. Performing of behavioral rating and IQ tests for children.

10. Computation of: -

a. Caries index and performing various caries activity tests.

b. Oral Hygiene Index

c. c. Fluorosis Index

11. Surgical Exercises :

a. Fabrication of splints

b. Type of Wiring

c. Suturing

12. a. Taking of periapical, occlusal, bitewing radiographs of children

13. Library assignment

14. Synopsis

Clinical work Requirements from 7 to 36 months

The following is the minimum requirement to be completed before the candidate can be considered eligible to appear in the final M.D.S Examinations:	Clinical Work	Total	7 To 12	13 To 24	25 To 36

8. ORAL MEDICINE AND RADIOLOGY (DOMR31)

A) Applied Basic Sciences:

Applied Anatomy:

1. Gross anatomy of the face: a. Muscles of Facial Expression and Muscles of Mastication

b. Facial nerve

c. Facial artery

d. Facial vein

e. Parotid gland and its relations

f. Sub mandibular salivary gland and its relations

2. Neck region: a. Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures

b. Facial spaces

c. Carotid system of arteries, Vertebral Artery, and Subclavian arteries

d. Jugular system

e. Lymphatic drainage

f. Cervical plane

g. Muscles derived from Pharyngeal arches

h. Infratemporal fossa in detail and temporomandibular joint

i. Endocrine glands

j. Exocrine glands

Internal jugular

External jugular

- • Pituitary
- • Thyroid
- • Parathyroid
- • Parotid

- • Thyroid

- • Parathyroid k. Sympathetic chain
- l. Cranial nerves- V, VII, IX, XI, & XII
-
- 3. Oral Cavity: a. Vestibule and oral cavity proper
- b. Tongue and teeth
- c. Palate – soft and hard
-
- 4. Nasal Cavity a. Nasal septum
- b. Lateral wall of nasal cavity
- c. Paranasal air sinuses
-
- 5. Pharynx:
- 6. Gross salient features of brain and spinal cord with references to attachment of cranial nerves to the brainstem

Detailed study of the cranial nerve nuclei of V, VII, IX, X, XI, XII

7. Osteology:

a) Comparative study of fetal and adult skull

b) Mandible: Development, ossification, age changes and evaluation of mandible in detail

Embryology:

1. Development of face, palate, nasal septum and nasal cavity, paranasal air sinuses
2. Pharyngeal apparatus in detail including the floor of the primitive pharynx
3. Development of tooth in detail and the age changes
4. Development of salivary glands
5. Congenital anomalies of face must be dealt in detail.

Histology:

1. Study of epithelium of oral cavity and the respiratory tract
2. Connective tissue

3. Muscular tissue

4. Nervous tissue

5. Blood vessels

6. Cartilage

7. Bone and tooth

8. Tongue

9. Salivary glands

10. Tonsil, thymus, lymph nodes

Physiology:

1. General Physiology: a. Cell

b. Body Fluid Compartments

c. Classification

d. Composition

e. Cellular transport

f. RMP and action potential

2. Muscle Nerve Physiology:

- a. Structure of a neuron and properties of nerve fibers
- b. Structure of muscle fibers and properties of muscle fibers
- c. Neuromuscular transmission
- d. Mechanism of muscle contraction

3. Blood:

- a. RBC and Hb
- b. WBC – Structure and functions
- c. Platelets – functions and applied aspects
- d. Plasma proteins
- e. Blood Coagulation with applied aspects
- f. Blood groups
- g. Lymph and applied aspects

4. Respiratory System:

- a. Air passages, composition of air, dead space, mechanics of respiration with pressure and volume changes
- b. Lung volumes and capacities and applied aspects
- c. Oxygen and carbon dioxide transport
- d. Neural regulation of respiration
- e. Chemical regulation of respiration
- f. Hypoxia, effects of increased barometric pressure and decreased barometric pressure

5. Cardio-Vascular System:

- a. Cardiac Cycle
- b. Regulation of heart rate/ Stroke volume / cardiac output / blood flow
- c. Regulation of blood pressure
- d. Shock, hypertension, cardiac failure

6. Excretory System:

- a. Renal function tests

7. Gastro – intestinal tract:

a. Composition, functions and regulation of:

- • Saliva
- • Gastric juice

- • Pancreatic juice
- • Bile and intestinal juice
- • Mastication and deglutition

8. Endocrine System:

- a. Hormones – classification and mechanism of action
- b. Hypothalamic and pituitary hormones
- c. Thyroid hormones
- d. Parathyroid hormones and calcium homeostasis
- e. Pancreatic hormones
- f. Adrenal hormones

9. Central Nervous System:

a. Ascending tract with special references to pain pathway

10. Special Senses:

a. Gustation and Olfaction

Biochemistry:

1. Carbohydrates – Disaccharides specifically maltose, lactose, sucrose

- a. Digestion of starch/absorption of glucose
- b. Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis
- c. Blood sugar regulation
- d. Glycogen storage regulation

- e. Glycogen storage diseases
- f. Galactosemia and fructosemia

2. Lipids
- a. Fatty acids- Essential/non essential
- b. Metabolism of fatty acids- oxidation, ketone body formation, utilization ketosis
- c. Outline of cholesterol metabolism- synthesis and products formed from cholesterol

3. Protein
- a. Amino acids- essential/non essential, complete/ incomplete proteins
- b. Transamination/ Deamination (Definition with examples)
- c. Urea cycle
- d. Tyrosine-Hormones synthesized from tyrosine
- e. In born errors of amino acid metabolism
- f. Methionine and transmethylation

4. Nucleic Acids
- a. Purines/Pyrimidines
- b. Purine analogs in medicine
- c. DNA/RNA – Outline of structure
- d. Transcription/translation
- e. Steps of protein synthesis
- f. Inhibitors of protein synthesis
- g. Regulation of gene function

5. Minerals
- a. Calcium/Phosphorus metabolism specifically regulation of serum calcium levels
- b. Iron metabolism
- c. Iodine metabolism
- d. Trace elements in nutrition

6. Energy Metabolism

- a. Basal metabolic rate
- b. Specific dynamic action (SDA) of foods

7. Vitamins

- a. Mainly these vitamins and their metabolic role- specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

Pathology:

1. Inflammation:

- a. Repair and regeneration, necrosis and gangrene
- b. Role of complement system in acute inflammation
- c. Role of arachidonic acid and its metabolites in acute inflammation
- d. Growth factors in acute inflammation
- e. Role of molecular events in cell growth and intercellular signaling cell surface receptors
- f. Role of NSAIDS in inflammation
- g. Cellular changes in radiation injury and its manifestations

2. Homeostasis:

- a. Role of Endothelium in thrombo genesis
- b. Arterial and venous thrombi
- c. Disseminated Intravascular Coagulation

d. Shock:Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory disturbances, ischemic hyperemia, venous congestion, edema, infarction

3. Chromosomal Abnormalities:

a. Marfan's syndrome

b. Ehler's Danlos Syndrome

c. Fragile X Syndrome

4. Hypersensitivity:

a. Anaphylaxis

b. Type II Hypersensitivity

c. Type III Hypersensitivity

d. Cell mediated Reaction and its clinical importance

e. Systemic Lupus Erythmatosus

f. Infection and infective granulomas

5. Neoplasia:

a. Classification of Tumors

b. Carcinogenesis & Carcinogens – Chemical, Viral and Microbial

c. Grading and Staging of Cancer, tumor Angiogenesis, Paraneoplastic Syndrome

d. Spread of tumors

e. Characteristics of benign and malignant tumors

6. Others:

a. Sex linked agamaglobulinemia

b. AIDS

c. Management of Immune deficiency patients requiring surgical procedures

d. De George's Syndrome

e. Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis

Pharmacology:

1. Definition of terminologies used
2. Dosage and mode of administration of drugs
3. Action and fate of drugs in the body
4. Drugs acting on CNS
5. Drug addiction, tolerance and hypersensitive reactions
6. General and local anesthetics, hypnotics, antiepileptics and tranquilizers
7. Chemotherapeutics and antibiotics
8. Analgesics and anti – pyretics
9. Anti – tubercular and anti – syphilitic drugs
10. Antiseptics, sialogogues, and anti – sialogogues
11. Haematinics
12. Anti – diabetics
13. Vitamins – A, B Complex, C, D, E & K
14. Steroids

B) Oral and Maxillofacial Radiology:

Study includes Seminars / lectures / Demonstrations

1. History of radiology, structure of x – ray tube, production of x – ray, property of x – rays

2. Biological effects of radiation

3. Films and recording media

4. Processing of image in radiology

5. Design of x –ray department, dark room and use of automatic processing units

6. Localization by radiographic techniques

7. Faults of dental radiographs and concept of ideal radiograph

8. Quality assurance and audit in dental radiology

9. Extra – oral-imaging techniques

10. OPG and other radiologic techniques

11. Advanced imaging techniques like **CBCT,**CT Scan, MRI, Ultrasound

12. Basic Anatomy of sectional imaging with case interpretations of CT / CBCT / MRI

13. Radio nucleotide techniques

14. Contrast radiography in salivary gland, TMJ, and other radiolucent pathologies

15. Radiation protection and ICRP guidelines

16. Art of radiographic report, writing and descriptors preferred in reports

17. Radiograph differential diagnosis of radiolucent, radio opaque and mixed lesions

18. Digital radiology and its various types of advantages

C) Oral Medicine, therapeutics and laboratory investigations:

Study includes seminars / lectures / discussion

1. Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissues including modern diagnostic techniques

2. Laboratory investigations including special investigations of oral and oro – facial diseases

3. Teeth in local and systemic diseases, congenital, and hereditary disorders

4. Oral manifestations of systemic diseases

5. Oro – facial pain

6. Psychosomatic aspects of oral diseases

7. Management of medically compromised patients including medical emergencies in the dental chair

8. Congenital and Hereditary disorders involving tissues of oro facial region
9. Systemic diseases due to oral foci of infection
10. Hematological, Dermatological, Metabolic, Nutritional, & Endocrinal conditions with oral manifestations
11. Neuromuscular diseases affecting oro –facial region
12. Salivary gland disorders
13. Tongue in oral and systemic diseases
14. TMJ dysfunction and diseases
15. Concept of immunity as related to oro – facial lesions, including AIDS
16. Cysts, Neoplasms, Odontomes, and fibro – osseous lesions
17. Oral changes in Osteo – dystrophies and chondro – dystrophies
18. Pre malignant and malignant lesions of oro facial region
19. Allergy and other miscellaneous conditions
20. Therapeutics in oral medicine –clinical pharmacology
21. Forensic odontology
22. Computers in oral diagnosis and imaging
23. Evidence based oral care in treatment planning
24. Molecular Biology

Essential Knowledge:

Basic medical subjects, Oral Medicine, Clinical Dentistry, Management of Medical Emergencies, Oral Radiology techniques and Interpretation, Diagnosis of Oro – facial disorders

Procedural and Operative Skills:

1st Year:

1. Examination of Patient - Case history recordings – 100

- FNAC – 50
- Biopsy – 50
- Observe, Assist, & Perform under supervision

2. Intra – oral radiographs:

- Perform and interpretation – 500

3. Full mouth intra oral radiograph tracings – 3

4. Age estimation using radiographs – 10

2nd Year:

1. Dental treatment to medically compromised patients – 2

- Observe, assist, and perform under supervision

2. Extra oral radiographs, digital radiography – 20

- Observe, assist and perform under supervision, Interpretation

3. Extra Oral radiographs tracings – 3

4. CBCT Interpretations – 5

Operative skills:

1. Giving intra muscular and intravenous injections

2. Administration of oxygen and life saving drugs to the patients

3. Performing basic CPR and certification by Red Cross or similar authorized organization - Performed independently – Case history: Routine cases – 100

- Interesting Cases – 25
- OPG – 50
- Periapical view – 100
- Bitewing view – 50
- Occlusal view – 50
- Extra – oral radiographs of different views – **25**
- CBCT Interpretations – 10

- Treatment of mucosal lesions with LASER – 3

3rd Year

All the above