JKKN
Dental College & Hospital

J.K.K.NATTRAJA DENTAL COLLEGE & HOSPITAL
(MANAGED BY J.K.K. RANGAMMAL CHARITABLE TRUST)
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BRANCH – 1

PROSTHODONTICS AND CROWN & BRIDGE

AIM:

To train the dental graduates so as to ensure higher level of competence in both general and specialty areas of Prosthodontics and prepare candidates with teaching, researchand clinical abilities including prevention and after care in Prosthodontics – removable dental prosthodontics, fixed dental prosthodontics (Crown &Bridge), implantology, maxillofacial prosthodontics and esthetic dentistry.

GENERAL OBJECTIVES OF THE COURSE:

Training program for the dental graduates in Prosthetic dentistry– removable dental prosthodontics, fixed dental prosthodontics (Crown & Bridge), implantology, maxillofacial prosthodontics and esthetic dentistry and Crown & Bridge including Implantology is structured to achieve knowledge and skill in theoretical and clinical laboratory, attitude, communicative skills and ability to perform research with a good understanding of social, cultural, educational and environmental background of the society.

- To have adequate acquired knowledge and understanding of applied basic and systemic medical sciences, both in general and in particularly of head and neck region.
- The postgraduates should be able to provide Prosthodontic therapy for patients with competence and working knowledge with understanding of applied medical, behavioral and clinical science, that are beyond the treatment skills of the general BDS graduates and MDS graduates of other specialties,
- To demonstrate evaluative and judgment skills in making appropriate

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decisions regarding prevention, treatment, after care and referrals to deliver comprehensive care to patients.

KNOWLEDGE:

The candidate should possess knowledge of applied basic and systemic medicalsciences.

- On human anatomy, embryology, histology, applied in general and particularly to head and neck, Physiology & Biochemistry, Pathology Microbiology & virology; health and diseases of various systems of the body (systemic) principles in surgery and medicine, pharmacology, nutrition, behavioral science, age changes, genetics, Immunology, Congenital defects & syndromes and Anthropology, Bioengineering, Bio-medical & Biological Principles
- The student shall acquire knowledge of various Dental Materials used in the specialty and be able to provide appropriate indication, understand the manipulation characteristics, compare with other materials available, be adept with recent advancements of the same.
- Students shall acquire knowledge and practice of history taking, Diagnosis, treatment planning, prognosis, record maintenance of oral, craniofacial and systemic region.
- Ability for comprehensive rehabilitation concept with pre prosthetic treatment plan including surgical re-evaluation and prosthodontic treatment planning, impressions, jaw relations, utility of face bows, articulators, selection and positioning of teeth, teeth arrangement for retention, stability, esthetics, phonation, psychological comfort, fit and insertion.
- Instructions for patients in after care and preventive Prosthodontics and management of failed restorations shall be possessed by the students.

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- Understanding of all the applied aspects of achieving physical, psychological well-being of the patients for control of diseases and / or treatment related syndromes with the patient satisfaction and restoring function of Cranio mandibular system for a quality life of a patient.
- Ability to diagnose and plan treatment for patients requiring Prosthodontic therapy.
- Ability to read and interpret radiographs, and other investigations for the purpose of diagnosis and treatment planning.
- The theoretical knowledge and clinical practice shall include principles involved for support, retention, stability, esthetics, phonation, mastication, occlusion, behavioral, psychological, preventive and social aspects of Prosthodontics science of Oral and Maxillofacial Prosthodontics and Implantology
- Tooth and tooth surface restorations, Complete denture Prosthodontics, removable partial denture Prosthodontics, fixed prosthodontics and maxillofacial and Craniofacial Prosthodontics, implants and implant supported Prosthodontics, T.M.J. and occlusion, craniofacial esthetics, and biomaterials, craniofacial disorders, problems of psychogenic origin.
- Should have knowledge of age changes, geriatric psychology, nutritional considerations and prosthodontic therapy in the aged population.
- Should have ability to diagnose failed restoration and provide prosthodontic therapy and after care.
- Should have essential knowledge on ethics, laws, and Jurisprudence and Forensic Odontology in Prosthodontics.
- Should know general health conditions and emergency as related to prosthodontics treatment like allergy of various materials and first line management of aspiration of prosthesis.

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- Should identify social, cultural, economic, environmental, educational and emotional determinants of the patient and consider them in planning the treatment.
- Should identify cases, which are outside the area of his specialty / competence, refer them to appropriate specialistsand perform interdisciplinary case management.
- To advice regarding case management involving surgical and interim treatment
- Should be competent in specialization of team management in craniofacial prosthesisdesign.
- To have adequate acquired knowledge, and understanding of applied basic, and systemicmedical science knowledge in general and in particular to head and neck regions.
- Should attend continuing education programmes, seminars and conferences related toProsthodontics, thus updating himself/herself.
- To teach and guide his/her team, colleagues and other students.
- Should be able to use information technology tools and carry out research both in basic and clinical areas, with the aim of publishing his/ her work and presenting his/her work at various scientific forums.
- Should have an essential knowledge of personal hygiene, infection control, prevention of cross infection and safe disposal of waste, keeping in view the risk of transmission of potential communicable and transmissible infections like Hepatitis and HIV.
- Should have an ability to plan and establish Prosthodontics clinic/hospital teachingdepartment and practice management.
- Should have a sound knowledge (of the applications in pharmacology, effects of drugs on oral tissues and systems of body and in medically

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compromised patient.

COURSE CONTENTS:

The course content has been identified and categorized as essential knowledge given below.

ESSENTIAL KNOWLEDGE:

The topics to be considered are Applied Basic Sciences, Oral and Maxillofacial Prosthodontics and Implantology.

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,

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brief considerations of V, VII, XI,

XII, cranial nerves and autonomic nervous system of the headand neck. The salivary glands, Pharynx, Larynx Trachea, Oesophagus, Functional Anatomy of masticatory muscles, Deglutition, speech, respiration, and circulation, teeth eruption, morphology, occlusion and function.

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 andfacial 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 alveolar bone, 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,

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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

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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

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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 bloodforming 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 –

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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 Experimentaldesign. 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 Meansof 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.

All MDS candidates shall compulsorily attend the Research Methodology Workshop conducted by the University within 6 months from the date of joining the course. In this regard, the candidates will be issued a completion Certificate by the University.

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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 prosthodontic

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 and **diseases like diabetes,hypertension and blood dyscrasias.**

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 surgicalENT and ophthalmology.

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APPLIED PLASTIC SURGERY:

Applied understanding and assistance in programs of plastic surgery for prosthodonticstherapy.

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.

- **Tell show do technique –training skills.**
  - All clinical practices shall involve personal and social obligation of cross infection control,sterilization and waste management.

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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 typicaland 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.

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.

(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

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andedentulism inold 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 appearancein 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 on food 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 , 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,

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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 diagnosticfindings 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 theold 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) 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.

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(k) Single Dentures: Single Mandibular denture to oppose natural maxillary teeth, 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.

(l) 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.

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.

(m) Materials prescribed in the management of edentulous patients - Denture base materials, General requirements of biomaterials for edentulous patients, requirement ofan ideal denture base, chemical composition of denture base resins, materials used.

(n)Articulators – **Evolution of concepts,** Classification, selection, limitations, precision, accuracy andsensitivity, and Functions of the articulator and their

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uses. Recent advancements including virtual articulator.

(o) 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.

(p) 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

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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.

(q) 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 – toconcept of occlusion.

(r) 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.

(s) 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.

(t) Waxing contouring and processing the dentures their fit and insertion and

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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.

(u) 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.

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

- Introduction and Historical Review
- Biological, clinical and surgical aspects of oral implants
- Diagnosis and treatment planning
- Radiological interpretation for selection of fixtures
- Splints for guidance fort surgical placement of fixtures
- ***Surgical and*** Intra oral plastic surgery, if any

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- Guided bone and Tissue regeneration consideration for implants fixture.
- Implant supported prosthesis for complete edentulism and partial edentulism
- Occlusion for implant supported prosthesis.
- Peri-implant tissue and Management of peri-implantitis
- Maintenance and after care
- Management of failed restoration.
- Work authorization for implant supported prosthesis – definitive instructions, legalaspects, delineation of responsibility.

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Prosthodontic treatment for partially edentulous patients –

Removable partialProsthodontics –

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

Components of RPD –

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

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 uniformityof 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

vi) from Occlusal rests, canine rests, continuous bar retainers and linguoplates, modificationareas, rugae support, direct – indirect retention.

vii) Teeth and denture bases – types, materials, advantages and dis-advantages, indicationsand contraindications and clinical use.

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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 abutmenttooth 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.

a) Education of patient
b) Diagnosis and treatment planning
c) Design, treatment sequencing and mouth preparation
d) **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.

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e) **Diagnosis and treatment planning** –Infection control and cross infectionbarriers – clinicaland 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

f) **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.

g) **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.

h) **Impression Materials and Procedures for Removable Partial Dentures** Rigid materials, thermoplastic materials, elastic materials, impression of partially edentulous arch, tooth supported, tooth tissue supported, individual impression trays.

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

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j) **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

k) **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.

l) **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.

m) **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.

n) **Management of failed restorations and work authorization details**.

II. MAXILLOFACIAL REHABILITATION:

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

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

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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, cranialimplants, 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

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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

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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 andneck, 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 andvaccine 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.

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- **Biomechanical principles of tooth preparation** –individual tooth preparations - Complete metal Crowns – P.F.C., All porcelain – Cerestore crowns, dicor crowns, incer**a**metc. 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 toothsupported fixed Prosthodontics

- **CAD – CAM Prosthodontics**

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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, temporomandibularjoint 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 oforofacial 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 andcare 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,

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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 –facial components, 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 muscleretaining 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 managemen

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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 onstandard 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*** **Prosthodonticsand 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.

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II YEAR M.D.S.

- Acquiring confidence in obtaining various phases and techniques in removable and fixedprosthodontics therapy
- Acquiring confidence by clinical practice with sufficient number of patientsrequiring toothand tooth surface restorations
- Fabrication of adequate number of complete denture prosthesis following, higher clinicalapproach by utilizing semi-adjustable articulators, face bow and graphic tracing.
- Understanding the use of dental surveyor and its application in diagnosis and treatmentplan 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 completeedentulous 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 andmanagement 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 andTraining students.

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III YEAR M.D.S

- Clinical and laboratory practice continued from IInd year.
- Occlusion equilibration procedures – fabrication of stabilizing splint forparafunctional 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.
- 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

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through seminars,symposium, workshops and reading.

- Participation and presentation in seminars, didactic lecture

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PROSTHODONTIC TREATMENT MODALITIES

1) Diagnosis and treatment planning prosthodontics
2) Tooth and tooth surface restorations
    i) Fillings
    ii) Veneers-composites and ceramics Inlays-composite, ceramic and alloys
    iii) Onlay - composite, ceramic and alloys
    iv) Partial crowns -- th, 4/5th, 7/8th, Mesial ½ crowns
    v) Pin-ledge
    vi) Radicular crowns
    vii) Full crowns
3) Tooth replacements Partial Complete
    i) Tooth supported Fixed partial denture Overdenture
    ii) Tissue supported Interim partial denture Complete denture
    iii) Intermediate partial denture Immediate denture
    iv) Immediate complete denture
    v) Tooth and tissue Supported Cast partial denture Overdenture
    vi) Precision attachment
    vii) Implant supported Cement retained Bar attachment
    viii) Screw retained Ball attachment
        (1) Implant supported Cement retained Bar attachment
    ix) Screw retained Ball attachment
    x) Clip attachment
    xi) Tooth and implant Supported
    xii) Screw retained Screw retained
    xiii) Cement retained Cement retained

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xiv) Root supported Dowel and core Over denture

xv) Pin retained

xvi) Precision attachments

xvii) Bar-slide attachments

xviii) Joints and hinge joint attachments

4) Tooth and tissue defects (Maxillo-facial and Cranio-facial prosthesis)

i. Congenital Defects

1. Cleft lip and palate
2. Pierre Robin Syndrome
3. Hemifacial microstomia cast partial dentures
4. Anodontia
5. Oligodontia complete dentures
6. Malformed teeth fixed partial dentures

ii. Acquired defects

1. Head and neck cancer patients - prosthodontic splints and stents
2. Restoration of facial defects
    a. Auricular prosthesis
    b. Nasal prosthesis
        i. Orbital prosthesis
        ii. Craniofacial implants

iii. Midfacial defects

iv. Restoration of maxillofacial trauma

v. Hemimandibulectomy cast partial denture

vi. Maxillectomy implant supported Dentures

vii. Lip and cheek support prosthesis complete dentures

viii. Ocular prosthesis

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ix. Speech and Velopharyngeal prosthesis
x. Laryngectomy aids
xi. Esophageal prosthesis
xii. Nasal stents
xiii. Tongue prosthesis
xiv. Bum stents
xv. Auditory inserts
xvi. Trismus appliances

5) T.M. J and Occlusal disturbances
   i. Occlusal equilibration
   ii. Splints Diagnostic
   iii. Repositioners / Deprogrammers
   iv. Anterior bite planes
   v. Posterior bite planes
   vi. Bite raising appliances
   vii. Occlusal rehabilitation

6) Esthetic/Smile designing
   i. Laminates/Veneers
   ii. Tooth contouring (peg laterals, malformed teeth)
   iii. Tooth replacements
   iv. Team management

7) Psychological therapy
   i. Charts, papers, photographs
   ii. Models
   iii. Case reports
   iv. Patient counseling
   v. Behavioral modifications

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vi. Referrals

8) Geriatric Prosthodontics

i. Prosthodontics for the elderly

ii. Behavioral and psychological counseling

iii. Removable Prosthodontics

iv. Implant supported Prosthodontics

v. Maxillofacial Prosthodontics

vi. Psychological and physiological considerations

9) Preventive measures

i. Diet and nutrition modulation and counseling

b. Referrals

Sl No.	Name of the Program	Name of the course	Course outcome
1.1	MDS in Prosthodontics and Crown & Bridge	Applied Anatomy, Physiology, Pathology and Dental Materials	1. The candidate would knowledge about applied basic and systematic medical sciences. 2. The candidate would be able to examine the patients requiring Prosthodontics therapy, investigate the patient systemically, analyze the investigation results. 3. The candidate would diagnose the ailment, plan treatment, communicate it with the patient and

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			execute it
1.2		Removable Prosthodontics and Oral Implantology	1. The candidate would Possess knowledge about age changes and Prosthodontic Therapy for the aged Related to removable Prosthodontics and oral Implantology 2. The candidate would be able to Demonstrate the clinical Competence to restore lost System namely mastication, speech, appearance and psychological comforts by removable prosthesis. 3. The candidate would be able to adopt ethical principles in Prosthodontic practice. Professional honesty and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or religion of patient.

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1.3		Fixed Prosthodontics	1. The candidate would be Understand the prevalence and Prevention of diseases of Craniomandibular system related to Fixed prosthetic dentistry. 2. The candidate would be willing to Adopt new methods and Techniques in fixed prosthodontics From time to time based on Scientific research, which is in Patient's best interest. 3. The candidate would be able to communicate in simple understandable language with the patient and explain the principles of fixed prosthodontics to the patient
1.4		Essay	1. The candidate would be able to outline the knowledge, procedural and operative skills needed in Master Degree in Prosthodontics. 2. The candidate would possess comprehensive knowledge and the ability to apply the same in all the sub branches of prosthodontics in total.

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INTERDISCIPLINARY OR INTERDEPARTMENTAL ACTIVITIES:

1. Interdisciplinary treatment planning approach for temporomandibular joint treatment, orofacial pain, maxillofacial defects rehabilitation, endodontically treated teeth, implant-based rehabilitation and maintenance.

2. Interdepartmental teaching and learning activities with department of orthodontics and conservative dentistry and endodontics for dental materials syllabus.

3. Interdepartmental teaching and learning activities with Basic sciences departments of medical colleges for basic sciences syllabus.

TEACHING METHODOLOGY:

(a) LECTURES:

There shall be some didactic lectures in the specialty and in the allied fields. The departments shall encourage guest lectures in the required areas and integrated lectures by multi-disciplinary teams

(b) JOURNAL REVIEW:

The journal review meetings shall be held at least once a week. All trainees, associate and staff associated with the post-graduate programe are expected to participate actively and enter relevant details in the logbook. The trainee shall make presentations from the allotted journals of selected articles.

(c) SEMINARS:

The seminars shall be held at least twice a week in each department. All trainees are expected to participate actively and enter relevant details

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in logbook.

(d) SYMPOSIUM:

It is recommended to hold symposium on topics covering multiple disciplines.

(e) CLINICAL POSTINGS:

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases.

(f) CLINICO-PATHOLOGICAL CONFERENCE

The clinical pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical departments. The trainees shall be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

(g) INTER-DEPARTMENTAL MEETINGS.

To encourage integration among various specialties, there shall be inter departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

(h) TEACHING SKILLS:

All the trainees shall be encouraging to take part in undergraduate teaching programmes either in the form of lectures or group discussion.

(i) DENTAL EDUCATION PROGRAMMES:

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Each department shall organize dental education programmes on regular basis involving other institutions. The trainees shall also be encouraged to attend such programmes conducted outside their university or institute.

(j) CONFERENCES/WORKSHOPS/ADVANCED COURSES:

The trainees shall be encouraged to attend conference/workshops/advanced courses and also to present at least two scientific papers and two posters at State/national level specialty and allied conferences/conventions during the training period

(k) ROTATION AND POSTING IN OTHER DEPARTMENTS:

To bring in more integration among the specialties and allied fields, each department shall workout a programme to rotate the trainees in related disciplines

ICT TOOLS USED:

ICT tools for teaching and Learning

1. LCD projector with smart Classrooms
2. Visualizer
3. webinars
4. Wireless and collar microphones
5. Amplifiers
6. Noise isolation speakers
7. Accessory tools Keynote, Pages, Numbers, Google Docs, etc.

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8. Internet and Intranet through Wi-Fi and LAN connectivity

9. Photocopying

10. Online information services

Paper-I, Paper-II and Paper III shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Distribution of topics for each paper will be as follows:

Part-I

Applied Basic Sciences: Applied Anatomy

Nutrition & Biochemistry, Pathology & Microbiology, virology, Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II

Paper-I: Removable Prosthodontics and Implant supported prosthesis (Implantology), Geriatric dentistry and Cranio facial Prosthodontics

Paper-II: Fixed prosthodontics, occlusion, TMJ, esthetics.

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

*The topics assigned to the different papers are generally evaluated under those sections. However, a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

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REFERENCE BOOKS

1. Essential of Complete Denture Prosthodontics - Winkler
2. Prosthodontic Treatment for Edentluous Patients - Zarb Bolender
3. Impression Techniques for Complete Denture - Bernard Levin
4. Clinical Removable Partial Denture -Stewart
5. Removable Partial Prosthodontics - Mc Cracken
6. Fundamentals of Fixed Prosthodontics -Shillingburg
7. Contemporary Fixed Partial Denture - Rosenstiel
8. Functional Occlusion from TMJ to Smile Design -Peter E Dawson
9. Maxillofacial Prosthodontics -Thomas D Taylor
10. Maxillofacial Rehabilitation -John Beumer III
11. Dental Implant Prosthetics - Carl E Misch
12. Contemporary Implant Dentistry -Carl E Misch
13. TextBook Of Prosthodontics -Deepak Nallaswamy

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BRANCH – II

PERIODONTOLOGY

OBJECTIVES:

A) KNOWLEDGE:

Discuss historical perspective to advancement in the subject proper and related topics.

- Describe etiology, pathogenesis, diagnosis and management of common periodontaldiseases with emphasis on Indian population
- Familiarize with the biochemical, microbiologic and immunologic genetic aspects ofperiodontal pathology
- Describe various preventive periodontal measures
- Describe various treatment modalities of periodontal disease from historical aspect tocurrently available ones
- Describe interrelationship between periodontal disease and various systemic conditions
- Describe periodontal hazards due to estrogenic causes and deleterious habits andprevention of it
- Identify rarities in periodontal disease and environmental/Emotional determinates in agiven case
- Recognize conditions that may be outside the area of his/her Specialty/ competence andrefer them to an appropriate Specialist
- Decide regarding non-surgical or surgical management of the case
- Update the student by attending courses, conferences and seminars relevant toperiodontics or by self-learning process.
- Plan out/ carry out research activity both basic and clinical aspects with the aim ofpublishing his/her work in scientific journals
- Reach to the public to motivate and educate regarding periodontal disease,

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its preventionand consequences if not treated

- Plan out epidemiological survey to assess prevalence and incidence of early onset periodontitis and adult periodontitis in Indian population (Region wise)
- Shall develop knowledge, skill in the science and practice of Oral Implantology
- Shall develop teaching skill in the field of Periodontology and Oral Implantology
- Principals of Surgery and Medical Emergencies.
- To sensitize students about inter disciplinary approach towards the soft tissues of the oralcavity with the help of specialist from other departments.

B) SKILLS:

- Take a proper clinical history, thorough examination of intra oral, extra oral, medical history evaluation, advice essential diagnostic procedures and interpret them to come to areasonable diagnosis
- Effective motivation and education regarding periodontal disease maintenance after the treatment
- Perform both non-surgical & education regarding periodontal disease, maintenance after the treatment
- Perform both non-surgical and surgical procedures independently.

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COURSE CONTENTS:

PART-I:

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 ofperiodontal diseases (periodontal Medicine)
3. Cardiovascular system
    a. Blood pressure
    b. Normal ECG
    c. Shock
4. Endocrinology – hormonal influences on Periodontium
5. Gastrointestinal system

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a. Salivary secretion – composition, function & regulation
b. Reproductive physiology
c. Hormones – Actions and regulations, role in periodontal disease
d. Family planning methods

6. Nervous system
    a. Pain pathways
    b. Taste – Taste buds, primary taste sensation & pathways for sensation
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

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MICROBIOLOGY:

1. General bacteriology
    - Identification of bacteria
    - Culture media and methods
    - 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
    - General properties of viruses
    - Herpes, Hepatitis, virus, HIV virus
5. Mycology
    - Candidiasis
6. Applied microbiology
7. Diagnostic microbiology and immunology, hospital infections and management

PHARMACOLOGY:

1. General pharmacology
    - Definitions – Pharmacokinetics with clinical applications, routes of administration including local drug delivery in Periodontics
    - Adverse drug reactions and drug interactions
2. Detailed pharmacology of
    - Analgesics – opioid and non-opioid
    - Local anesthetics

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- Haematinics and coagulants, Anticoagulants
- Vit.D and Calcium preparations
- Antidiabetics drugs
- Steroids
- Antibiotics
- Antihypertensive
- Immunosuppressive drugs and their effects on oral tissues
- Antiepileptic drugs

3. Brief pharmacology, dental use and adverse effects of
    - General anesthetics
    - Antipsychotics
    - Antidepressants
    - Anxiolytic drugs
    - Sedatives
    - Antiepileptic
    - Antihypertensive
    - Antianginal drugs
    - Diuretics
    - Hormones
    - Pre-anesthetic medications
4. Drugs used in Bronchial asthma, cough
5. Drug therapy of
    - Emergencies
    - Seizures
    - Anaphylaxis
    - Bleeding
    - Shock

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- Diabetic ketoacidosis
- Acute addisonian crisis

6. Dental Pharmacology
    - Antiseptics
    - Astringents
    - Sialogogues
    - Disclosing agents
    - 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 andvariability
5. Tests of significance (chi square test, t-test and z-test) Null hypothesis

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PART II

PAPER -I

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

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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. Necrotizing ulcerative periodontitis
8. Interdisciplinary approaches
    - Orthodontic
    - Endodontic
    - Prosthodontic

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(iii) TREATMENT OF PERIODONTAL DISEASES

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

- Clinical diagnosis
- Radiographic and other aids in the diagnosis of periodontal diseases
- Advanced diagnostic techniques
- Risk assessment
- Determination of prognosis
- Treatment plan
- Rationale for periodontal treatment
- General principles of anti-infective therapy with special emphasis on infectioncontrol in periodontal practice
- Halitosis and its treatment
- Bruxism and its treatment

B. Periodontal instrumentation

- Periodontal Instruments
- Principles of periodontal instrumentation
- Instruments used in various parts of the mouth

C. Periodontal therapy

- Preparation of tooth surface
- Plaque control
- Anti-microbial and other drugs used in periodontal therapy and wasting diseases ofteeth
- Periodontal management of HIV infected patients
- Occlusal evaluation and therapy in the management of periodontal diseases
- Role of orthodontics as an adjunct to periodontal

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therapy

- Special emphasis on precautions and treatment for medically compromisedpatients
- Periodontal splints
- Management of dentinal hypersensitivity

1. Periodontal surgical phase – special emphasis on drug prescription
2. General principles of periodontal surgery
3. Surgical anatomy of periodontium and related structures
4. Gingival curettage
5. Gingivectomy technique
6. Treatment of gingival enlargements
7. Periodontal flap
8. Osseous surgery (resective and regenerative)
9. Furcation; Problem and its management
10. The periodontic – endodontic continuum
11. Periodontic plastic and esthetic surgery
12. Recent advances in surgical techniques

D. Future directions and controversial questions in periodontal therapy

- Future directions for infection control
- Research directions in regenerative therapy
- Future directions in anti-inflammatory therapy
- Future directions in measurement of periodontal diseases

E. Periodontal maintenance phase

(iv) ORAL IMPLANTOLOGY

1. Introduction and historical review
2. Biological, clinical and surgical aspects of dental implants

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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.

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Training in research methodology, Biostatistics, Ethics / Bio-ethics in dentistry,Jurisprudence and Audits-

Adopt ethical principles in all periodontic practice. Professional honesty and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or religion of patient. Respect patient's rights and privileges including patients right to information and right to seek second opinion. Understanding, Observation, Correlation, Experimentation and evaluating dental research, scientific method, hypothesis and Research Strategies.

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.

All MDS candidates shall compulsorily attend the Research Methodology Workshop conducted by the University within 6 month from the date of joining the course. In this regard, the candidates will be issued a completion Certificate by the University.

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COURSE OUTCOMES:

Part I

Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics

Part-II

Paper I: Normal Periodontal structure, Etiology & Pathogenesis of Periodontal diseases.

Paper II: epidemiology as related to Periodontics Periodontal diagnosis, therapy & Oral Implantology

Paper III: Essays (descriptive and analyzing type questions)

*The topics assigned to the different papers are generally evaluated under those sections. However, a strict division of the subject may not be possible and some overlapping of topics is inevitable Students should be prepared to answer overlapping topics

TEACHING LEARNING METHODS (including Clinical Study)

(a) LECTURES:

There shall be some didactic lectures in the speciality and in the allied fields. The departments shall encourage guest lectures in the required areas and integrated lectures by multi-disciplinary teams on selected topics, to strengthen the training programmes.

(b) JOURNAL REVIEW:

The journal review meetings shall be held at least once a week. All trainees, associate and staff associated with the post-graduate programme are expected to participate actively and enter relevant details in the logbook. The trainee shall make presentations from the allotted journals of selected articles

(c) SEMINARS:

The seminars shall be held at least twice a week in each department. All

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trainees are expected to participate actively and enter relevant details in logbook.

(d) SYMPOSIUM:

It is recommended to hold symposium on topics covering multiple disciplines.

(e) CLINICAL POSTINGS:

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases.

(f) CLINICO-PATHOLOGICAL CONFERENCE:

The clinico pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical departments. The trainees shall be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

(g) INTER-DEPARTMENTAL MEETINGS:

To encourage integration among various specialties, there shall be inter-departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

(h) TEACHING SKILLS:

All the trainees shall be encouraging to take part in undergraduate teaching programmes either in the form of lectures or group discussion.

(i) DENTAL EDUCATION PROGRAMMES:

Each department shall organize dental education programmes on regular basis involving other institutions. The trainees shall also be encouraged to attend such programmes conducted outside their university or institute.

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(j) CONFERENCES/WORKSHOPS/ADVANCED COURSES:

The trainees shall be encouraged to attend conference/workshops/advanced courses and also to present at least two scientific papers and two posters at State/national level specialty and allied conferences/conventions during the training period.

(k) ROTATION AND POSTING IN OTHER DEPARTMENTS:

To bring in more integration among the specialties and allied fields, each department shall workout a programme to rotate the trainees in related disciplines.

Journal clubs- 5

Seminars 5

Lectures 5

Clinico Pathological conference 2

Presentations in 3 years Conferences 2 paper and 2 posters in 3 years

Note: Maintenance of Work Diary / Check list / Log books as prescribed.

REFERENCE BOOKS

1. Clinical Periodontology by Carranza and Newmann
2. Contemporary Periodontics by Robert GencoHenry.M.Goldman D Walter Cohen
3. Clinical Periodontology &Implant Dentistry by Jan Lindhe,T.Karning,N.P.Lang
4. Manual of periodontal Instruments by Glickman
5. Periodontics by Grant SternListgarten
6. Atlas of Periodontal Surgery by Cohen
7. Contemporary Implant dentistry by Carl E .Mis

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BRANCH - III

CONSERVATIVE DENTISTRY AND ENDODONTICS

OBJECTIVES:

Knowledge:

At the end of 36 months of training, the candidates should be able to:

- Describe etiology, pathophysiology, periapical diagnosis and management of common restorative situations, endodontic situations that will include contemporary management of dental caries, management of trauma and pulpal pathosis including periodontal situations.
- Demonstrate understanding of basic sciences as relevant to conservative / restorativedentistry and Endodontics.
- Identify social, economic, environmental and emotional determinants in a given case or community and take them into account for planning and execution at individual andcommunity level.
- Ability to master differential diagnosis and recognize conditions that may require multi-disciplinary approach or a clinical situation outside the realm of the specialty, which he or she should be able to recognize and refer to appropriate specialist.
- Update himself by self-study and by attending basic and advanced courses, conferences, seminars, and workshops in the specialty of Conservative Dentistry-Endodontics-Dental Materials and Restorative Dentistry.
- Ability to teach/guide, colleagues and other students.

Use information technology tools and carry out research both basic and clinical with theaim of his publishing his work and presenting the same at scientific platform.

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Skills:

- Take proper chair side history, examine the patient and perform medical and dental diagnostic procedures as well as perform relevant tests and interpret to them to come to a reasonable diagnosis about the dental condition in general and Conservative Dentistry – Endodontics in particular. And undertake complete patient monitoring including preoperative as well as post operative care of the patient.
- Perform all levels of restorative work, surgical and non-surgical Endodontics as well as endodontic-periodontal surgical procedures as part of multidisciplinary approach to clinical condition.
- Provide basic life saving support in emergency situations.
- Manage acute pulpal and pulpo periodontal situations.
- Have a thorough knowledge of infection control measures in the dental clinical environment and laboratories.
- Should have proper knowledge of sterilization procedures

Department: BRANCH IV - CONSERVATIVE DENTISTRY AND ENDODONTICS

Course code :MDS-2424

Year of study:MDS

Course outcomes:

PART-I

Applied Basic Sciences: Applied Anatomy, Physiology, Pathology including Oral

Microbiology, Pharmacology, Biostatistics and

Research Methodology and Applied Dental Materials.

PART-II

Paper-I

Paper-II

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Conservative Dentistry

Endodontics

Paper-III

Essays (descriptive and analyzing type questions)

*The topics assigned to the different papers are generally evaluated under those sections However a strict division of the subject may not be possible and some overlapping of topics is inevitable Students should be prepared to answer overlapping topics.

COURSE CONTENTS:

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:

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- 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.
- Eruption of teeth

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.

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- 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

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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, drugaddiction, 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,

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drug resistance, haemostasis, and haemostatic agents, anticoagulants, sympathomimitic drugs, vitaminsand 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 – parametrictests (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, casting procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.

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- 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.

Training in Research Methodology, Biostatistics, Ethics / Bioethics, in Dentistry,Jurisprudence and Audits:

- Respect human life and the dignity of human individual
- Refrain from supporting or committing crimes against humanity and condemn allsuch acts
- Treat the sick and injured with competence and compassion
- Protect the privacy and confidentiality of those whom we care.
- Work freely with colleagues
- Educate the public
- Teach and mentor those who follow us

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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, lasersetc.)
6. Infection control procedures in conservative dentistry, isolation equipment 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, fullcrown restorations.

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

1. Direct gold restorations.
2. Recent advances in restorative materials.
3. Esthetics including smile design
4. Management of non-carious lesions.
5. Management of discolored tooth
6. Minimal intervention dentistry.
7. Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth.
8. Hypersensitivity-theories, causes and management.
9. Lasers in Conservative Dentistry.
10. CAD-CAM in restorative dentistry.
11. Digital imaging and its applications in restorative dentistry.
12. Clinical Photography.
13. Principles of esthetics.
    - ➢ Color
    - ➢ Facial analysis
    - ➢ Smile design
    - ➢ Principles of esthetic integration
    - ➢ Treatment planning in esthetic dentistry

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Paper-II: Endodontics

1. Rationale of endodontics.
2. Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications inendodontic treatment.
3. Dentin and pulp complex
4. Pulp and periapical pathology.
5. Pathobiology of peri-apex.
6. Diagnostic procedures – Orofacial dental pain emergencies: endodontic diagnosis and management,recent advances used for diagnosis.
7. Case selection and treatment planning.
8. Endodontic microbiology.
9. Infection control procedures used in Endodontics (aseptic techniques such as rubber dam,sterilization of instruments etc.)
10. Endodontic emergencies and management.
11. Access cavity preparation – objectives and principles
12. Endodontic instruments and instrumentation – recent developments, detailed description of hand,rotary, sonic, ultra-sonic etc.
13. Working length determination, cleaning and shaping of root canal system and recent developments in techniques of canal preparation.
14. Root canal irrigants and intra canal medicaments.
15. Obturation materials, techniques and recent advances.
16. Traumatic injuries and management – endodontic treatment for young permanent teeth.
17. Endodontic surgeries, recent developments in technique and devices and wound healing.
18. Endo-perio interrelationship and management.
19. Lasers in Endodontics.

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20. Multidisciplinary approach to endodontic situations.
21. Radiology and CBCT in endodontic practice.
22. Procedural errors in endodontics and their management.
23. Endodontic failures and retreatment.
24. Resorptions and its management.
25. Microscopes and Microsurgery in endodontics.
26. Single visit endodontics, current concepts and controversies.
27. Regenerative Endodontics
28. Geriatric Endodontics
29. Biologic response of pulp to various restorative materials and operative procedures
30. Local anesthesia in endodontics.
31. Restoration of endodontically treated teeth, recent advances
32. Effect of age and systemic health endodontics, with emphasis on treatment of medically complexendodontic patient.
33. Rhinosinusitis and endodontic disease
34. Vital pulp therapy
35. Records and legal responsibilities
36. Inflammation and immunology in endodontics
37. Non microbial endodontic disease
38. Pulpal reaction to caries and endodontic procedures
39. Bleaching principles
40. Outcome of endodontic treatment
41. Cracks and fracture

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

The teaching and learning activities in each speciality shall be as under

(a) LECTURES:

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There shall be some didactic lectures in the speciality and in the allied fields. The departments shall encourage guest lectures in the required areas and integrated lectures by multi-disciplinary teams on selected topics, to strengthen the training programmes.

(b) JOURNAL REVIEW:

The journal review meetings shall be held at least once a week. All trainees, associate and staff associated with the post-graduate programme are expected to participate actively and enter relevant details in the logbook. The trainee shall make presentations from the allotted journals of selected articles.

(c) SEMINARS:

The seminars shall be held at least twice a week in each department. All trainees are expected to participate actively and enter relevant details in logbook.

(d) SYMPOSIUM:

It is recommended to hold symposium on topics covering multiple disciplines.

(e) CLINICAL POSTINGS:

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases.

(f) CLINICO-PATHOLOGICAL CONFERENCE:

The clinical pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral

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Pathology and allied clinical departments. The trainees shall be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

(g) INTER-DEPARTMENTAL MEETINGS:

To encourage integration among various specialities, there shall be inter-departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

(h) TEACHING SKILLS:

All the trainees shall be encouraging to take part in undergraduate teaching programmes either in the form of lectures or group discussion.

The clinical pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical departments. The trainees shall be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

(i) INTER-DEPARTMENTAL MEETINGS:

To encourage integration among various specialities, there shall be inter-departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

(j) TEACHING SKILLS:

All the trainees shall be encouraging to take part in undergraduate teaching programmes either in the form of lectures or group discussion.

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REFFERENCE BOOKS:

1. Fractures of the teeth, prevention and treatment of the vital and non-vital pulp by Basrani
2. Textbook of operative dentistry by Baum
3. Dentin and pulp in restorative dentistry by Brannstorm
4. Principles and practice of operative dentistry by Charbeneau
5. Operative dentistry by Gilmore
6. Esthetic composite bonding by Jordan
7. Operative dentistry: modem theory and practice by Marzook
8. Art, science and practice of operative dentistry by Sturdevant
9. Atlas of operative dentistry - pre clinical and clinical procedures by Evans & Wetz
10. New concepts in operative dentistry by Fusiyama
11. Handbook of clinical Endodontics by Bence.
12. Pathways of the pulp by Cohen & Burns
13. Bleaching teeth by Feinman
14. Endodontic practice by Grossman
15. Problem solving in Endodontics, prevention, identification and management by Gutmann
16. Endodontics in clinical practice by Harty
17. Endodontics by Ingle & Taintor
18. Endodontics- science and practice by Schroeder
19. Endodontology - biologic considerations in Endodontic procedures by Seltzer
20. Restoration of the endodontically treated tooth by Schillingberg & Kessler
21. Principles and practice of Endodontics by Walton & Torabinejad
22. Endodontic therapy by Franklin S Weine

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23.Fundamentals of operative dentistry-James B summit

24.Surgical endodontics-Gutman

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BRANCH - IV

ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

OBJECTIVES:

Knowledge:

1. The dynamic interaction of biologic processes and mechanical forces acting on the stomatognathicsystem during orthodontic treatment.
2. The etiology, pathophysiology, diagnosis and treatment planning of various common Orthodonticproblems
3. Various treatment modalities in Orthodontics – preventive, interceptive and corrective.
4. Basic sciences relevant to the practice of Orthodontics
5. Interaction of social, cultural, economic, genetic and environmental factors and their relevance tomanagement of oro – facial deformities
6. Factors affecting the long-range stability of orthodontic correction and their management
7. Personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste, keeping in view the high prevalence of Hepatitis and HIV and other highly contagious diseases.

Skills:

1. To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures, and interpret them and arrive at a reasonable diagnosis about the Dento-facial deformities.
2. To be competent to fabricate and manage the most appropriate appliance – intra or extra oral, removable or fixed, mechanical or functional, and active or passive – for the treatment of any orthodontic problem to be treated singly or as a part of multidisciplinary treatment of oro-facial deformities.

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COURSE CONTENT:

(components of post graduate curriculum)

The program outlined, addresses both the knowledge needed in Orthodontics and allied Medicalspecialties in its scope.

Theoretical knowledge:

All the teaching faculty and especially Professors should actively take part in imparting clinical, theoretical knowledge to each of the student. The students can be posted on rotation under each Professor and also have their clinical cases guided equally by all of them. The Associate Professors shall also discuss and guide / co – guide the students if they have adequate teaching experience

Spread of the Curriculum:

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, growthof the face.
c. Bone growth:
   Origin of bone, composition of bone, units of bone structure, schedule of Ossification, mechanicalproperties of bone, roentgen graphic appearance of bone
d. Assessment of growth and development:

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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.

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

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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 propertiesComposites:

Composition types, properties, setting reaction

d. Banding and bonding cements:

e. Wrought metal alloys:

Deformation, strain hardening, annealing, recovery, recrystallization, grain growth, properties ofmetal alloys

f. Orthodontic arch wires

g. Elastics:

Latex and non-latex elastics.

h. Applied physics, Bioengineering and metallurgy:

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

j. 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

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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.

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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 OrthodonticsOrthodontic History:

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 defectsof the orofacial structures.

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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.
i. Orthodontic office design

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Paper-II: Clinical OrthodonticsMyofunctional 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

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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

Interceptive Orthodontics:

a. Principles
b. Growth guidance
c. Diagnosis and treatment planning
d. Therapy emphasis on:
    - Dento-facial problems
    - Tooth material discrepancies
e. Minor surgery for Orthodontics

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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)

Department: BRANCH V -ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

Course code: MDS-2425

Year of study: MDS

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Course outcomes:

PART-I: Applied Basic Sciences: Applied anatomy, Physiology, Dental Materials, Genetics, Pathology, Physical Anthropology, Applied Research methodology, Bio-Statistics and Applied Pharmacology.

PART-II

Paper I: Orthodontic history, Concepts of occlusion and esthetics, Child and Adult Psychology, Etology and classification of maloclusion, Dentofacial Anomalies, Diagnostic procedures and treatment planning in Orthodontics, Practice management in Orthodontics

Paper II: Clinical Orthodontics

Paper III: Essays (descriptive and analyzing type questions)

The topics assigned to the different papers are generally evaluated under those sections. However, a strict division of the subject may not be possible and some overlapping of topics is inevitable Students should be prepared to answer overlapping topics

Interdisciplinary or Interdepartmental

WRITING THESIS/RESEARCH PAPERS:

Attitudes including Communication Skills

A. Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular Dentofacial problem and to obtain a true informed consent from them for the most appropriate treatment available at that point of time

B. Develop the ability to communicate with professional colleagues in orthodontics or other specialities through various media like correspondence, internet, e-video, conference, etc.

C. Training in Research Methodology, Biostatistics, Ethics / Bioethics in Dentistry, Jurisprudence and Audits All MDS candidates shall compulsorily attend the Research Methodology Workshop conducted by the University within 6 months from the date of joining the course. In this regard, the candidates will be issued

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EVERY POST GRADUATE STUDENT MUST UNDERGO A TRAINING IN RESEARCH METHODOLOGY, BIOSTATISTICS, ETHICS, BIOETHICS IN RESEARCH, JURISPRUDENCE ANDAUDITS, WITHIN THE FIRST SIX MONTHS OF COURSE, WHICH WILL HELP THEM TO DECIDETHEIR DISSERTATION TOPIC AND METHODOLOGY

Health Informatics ¨C usage of Information technology (Computer) STUDENTS SHOULD BE MADEWELL FAMILIAR WITH THE REQUIRED COMPUTER AND INFORMATICS SKILLS.

a. LECTURES:

There shall be some didactic lectures in the speciality and in the allied fields. The departments shall encourage guest lectures in the required areas and integrated lectures by multi-disciplinary teams on selected topics, to strengthen the training programmes.

b. JOURNAL REVIEW:

The journal review meetings shall be held at least once a week. All trainees, associate and staff associated with the post-graduate programme are expected to participate actively and enter relevant details in the logbook. The trainee shall make presentations from the allotted journals of selected articles.

c. SEMINARS:

The seminars shall be held at least twice a week in each department. All trainees are expected to participate actively and enter relevant details in logbook.

d. SYMPOSIUM:

It is recommended to hold symposium on topics covering multiple disciplines.

e. CLINICAL POSTINGS:

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases.

f. CLINICO-PATHOLOGICAL CONFERENCE:

The clinico pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical

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departments. The trainees shall be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

g. INTER-DEPARTMENTAL MEETINGS:

To encourage integration among various specialities, there shall be inter-departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

h. TEACHING SKILLS:

All the trainees shall be encouraging to take part in undergraduate teaching programmes either in theform of lectures or group discussion.

i. DENTAL EDUCATION PROGRAMMES:

Each department shall organise dental education programmes on regular basis involving other institutions. The trainees shall also be encouraged to attend such programmes conducted outside their university or institute.

j. CONFERENCES/WORKSHOPS/ADVANCED COURSES:

The trainees shall be encouraged to attend conference/workshops/advanced courses and also to present at least two scientific papers and two posters at State/national level speciality and allied conferences/conventions during the training period.

k. ROTATION AND POSTING IN OTHER DEPARTMENTS:

To bring in more integration among the specialities and allied fields, each department shall workout a programto rotate the trainees in related discipline

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REFERENCE BOOKS:

1. Dentofacial orthopedics with functional appliances by thomas m graber thomas rakosi alexander gpetrovic
2. Orthodontics - current principles and techniques by lee w graber robert vanersdall jr katherine viggreg j huang
3. Esthetics and biomechanics in orthodontics by ravindran nanda
4. Orthodontic diagnosis by thomas rakosi irmtrud jones thomas graber
5. Contemporary orthodontics by william r proffit henry fields david sarver
6. Twin block functional therapy - application in dentofacial orthopedics by william j clark
7. Systematised orthodontic by mclaughlin bennett trevisi
8. Contemporary treatment of dentofacial deformity by william r proffit raymond p white david m sarver
9. Facial growth -by donald h.enlow
10. Dentofacial deformities- bruce n.epker, john paul stella and leward c.fish.
11. The biomechanical foundation of clinical orthodontics - charles j burstone and kwangchul choy.
12. Self-ligation in orthodontics - nikolaos pandis and theodore eliades

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