

**THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY,
CHENNAI - 600 032.**



**M.D.S. BRANCH – VI
PROSTHODONTICS**

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Aim:

To train dental graduates so as to ensure higher competence in both general and special area of Prosthodontics and prepare a candidate for teaching, research and clinical abilities including prevention and after care in Prosthodontics including crown and bridge and implantology.

General Objectives of the Course:

- Training programme in Prosthodontic dentistry including Crown & Bridge & Implantology is structured to achieve knowledge and skill in theoretical and clinical laboratory, attitude, communicative skills and ability to research with understanding of social, cultural, education and environmental background of the society.
- To have acquired adequate knowledge and understanding of applied basic and systematic medical science knowledge in general and with reference to head and neck in particular.
- The postgraduates will be able to provide Prosthodontic therapy for patients with competence and working knowledge with understanding of applied medical, behavioural and clinical science that are beyond the treatment skills of the general B.D.S. graduates and M.D.S. graduates of other specialities evaluation and judgement skills in making appropriate decisions regarding prevention, treatment after care and referral to deliver comprehensive care to patients.

Knowledge:

The candidate should possess knowledge of applied basic and systematic medical sciences -

- On human anatomy, embryology, histology, applied in general and particular to head and neck, Physiology & Biochemistry, Pathology and Microbiology, Virology, Health and diseases of various systems of the body (systemic), principles in Surgery and Medicine, Pharmacology, Nutrition, Behavioural Science, Age changes, Genetics, Immunology, Congenital defects and syndromes, Anthropology, Bio-engineering, Bio-medical and Biological Principle and Applied Dental Material Science.
- Ability to diagnose and planned treatment for patients requiring Prosthodontic Therapy.

- Ability to read and interpret a radiograph and other investigations for the purpose of diagnosis and treatment plan.
- Tooth and tooth surface restorations, Complete denture Prosthodontics, removable partial dentures Prosthodontics, fixed Prosthodontics and maxillofacial and craniofacial Prosthodontics, implants supported Prosthodontics, T.M.J. and occlusion, craniofacial aesthetics, and biomaterials.
- Craniofacial disorders – problems of psychogenic origin.
- Age changes and Prosthodontic Therapy for the aged.
- Ability to diagnose failed restoration and provide Prosthodontic therapy and after care.
- Should have essential knowledge of ethics, laws and jurisprudence and forensic odontology in Prosthodontics.
- General health conditions and emergency as related to Prosthodontics treatment.
- Should be able to identify social, cultural, economic, environmental, educational and emotional determinants of the patient and consider them in planning the treatment.
- Identify cases, which are outside the area of his / her speciality / competence and refer them to appropriate specialists.
- Advice regarding case management involving surgical, interim treatment, etc.
- Should be competent in team management of craniofacial defects.
- Should attend continuing education programmes, seminars and conferences related to Prosthodontics thus updating himself / herself.
- Teach and guide his / her team, colleagues and other students.
- Should be able to use information technology tools and carry out research both basic and clinical, with the aims of publishing his / her work and presenting his / her work at various scientific forum.
- Should have the ability to plan establishing Prosthodontic clinic / hospital teaching department and practice management.

- Should have a sound knowledge for the application of Pharmacology. Effects of drugs on oral tissue and systems of body and for medically compromised patients.

Skills:

- The candidate should be able to examine the patients requiring Prosthodontic therapy, investigate the patient systematically, analyze the investigation results, radiographs, diagnose the ailment, plan a treatment, communicate it with the patient and execute it.
- Understand the prevalence and prevention of diseases of craniomandibular system related to Prosthetic dentistry.
- The candidate should be able to restore lost functions of stomatognathic system namely mastication, speech, appearance and psychological comforts, by understanding biological, biomedical, bioengineering principles and systemic condition of the patient to provide a quality health care of the craniofacial region.
- The candidate should be able to interact with other specialities including medical speciality for planned team management of patients for craniofacial and oral acquired and congenital defects, temporomandibular joint syndromes, esthetics, implant supported prosthetics and problems of psychogenic origin.
- Should be able to demonstrate the clinical competence necessary to carry out appropriate treatment (at higher level of knowledge, training and practice skills currently available in their speciality area).
- Identify target diseases and create awareness amongst the population for Prosthodontic therapy.
- Perform clinical and Laboratory procedure with understanding of biomaterials, tissue conditions related to prosthesis and have competent dexterity and skill for performing clinical and laboratory procedures in fixed, removable, implant and maxillofacial T.M.J., esthetics Prosthodontics.
- Laboratory technique management based on skills and knowledge of Dental Materials and dental equipment and instruments, management.
- To understand demographic distribution and target diseases of Cranio mandibular region related to Prosthodontics including crown & bridge and implantology.

Attitudes:

- Adopt ethical principles in all Prosthodontic practice. Professional honesty and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or religion of patient.
- Willing to share the knowledge and clinical experience with professional colleagues.
- Willing to adopt new methods and techniques in Prosthodontics from time to time based on scientific research, which is in patient's best interest.
- Respect patient's rights and privileges including patient's rights to information and right to seek second opinion.

Communication Abilities:

- Develop communication skills, in particular, to explain treatment options available in management.
- Provide leadership and get the best out of his / her group in a congenial working atmosphere.
- Should be able to communicate in simple understandable language with the patient and explain the principles of Prosthodontics to the patient. He / she should be able to guide and counsel the patient with regard to various treatment modalities available.
- Develop the ability to communicate with professional colleagues through various media like Internet, E-mail, Video conference etc., to render the best possible treatment.

Course Contents :

The candidates shall undergo training for 3 academic years with satisfactory attendance of 80% for each year.

- The course includes epidemiology and demographic studies, research and teaching skills.
- Ability to prevent, diagnose and treat with after care for all patients for

Control of diseases and / or treatment related syndromes with patient satisfaction for restoring functions of Stomatognathic system by Prosthodontic therapy.

The programme outline addresses the knowledge, procedural and operative skills needed in Master Degree in Prosthodontics. A minimum of 3 years of formal training through a graded system of education as specified will enable the trainee to achieve Master Degree in Prosthodontics including Crown & Bridge and Implantology, competently and have the necessary skills / knowledge to update themselves with advancements in the field. The course content has been identified and categorized as essential knowledge as given below.

Essential Knowledge:

The topics to be considered are: - Basic Sciences, Biological and Mechanical considerations in Prosthodontics including Crown & Bridge and Implantology and Material Science.

APPLIED BASIC SCIENCES:

- A thorough knowledge on the applied aspects of Anatomy, Embryology, Histology in General and Particular to Head and Neck, Physiology, Biochemistry, Pathology and Microbiology, Virology.
- Pharmacology, Health and Diseases of various systems of Body (systemic) principles in Surgery, Medicine and Anaesthesia, Nutrition, Behavioural Sciences, Age changes, Genetics, Dental Material Science, Congenital defects and Syndromes and Anthropology, Biomaterial Sciences, Bio-engineering, Research Methodology as related to Master Degree in Prosthodontics including Crown & Bridge and Implantology.

It is desirable to have knowledge in Bio-statistics Research Methodology and use of computers & to develop necessary teaching skills in Prosthodontics including Crown & Bridge and Implantology.

Applied Anatomy of Head and Neck:

General Human Anatomy – Gross Anatomy, Anatomy of Head & Neck in detail. Cranial and facial bones, T.M.J. and function, muscles of mastication and facial expression, muscles of neck and chain of back muscles including muscles of deglutition and tongue, arterial supply and venous drainage of the head and neck, Anatomy of the Para nasal sinuses with relation to the Vth cranial nerve. General consideration of the structure and function of the brain. Brief considerations of V, VII, XI, XII, cranial nerves

and autonomic nervous system of the head and neck. The salivary glands, Pharynx, Larynx, Trachea, Esophagus, Functional Anatomy of mastication, Deglutition, Speech, Respiration and Circulation, Teeth eruption, Morphology, Occlusion and function. Anatomy of T.M.J., its movements and myofascial pain dysfunction syndrome.

Embryology – Development of the face, tongue, jaws, T.M.J., paranasal sinuses, pharynx, larynx, trachea, esophagus, salivary glands, development of oral and para oral tissues including detailed aspects of tooth and dental hard tissue formation.

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 dental and para oral tissues. Normal occlusion, development of occlusion in deciduous mixed and permanent dentitions, root length, root configuration, tooth numbering system.

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, haematopoietic system, lymphoid, etc.

Muscle and neural tissues.

Endocrinal system including thyroid.

Salivary glands.

Histology of skin, oral mucosa, respiratory mucosa, connective tissue, bone, cartilage, cellular elements of blood vessels, lymphatics, nerves, muscles, tongue, tooth and its surrounding structures.

Applied Physiology and Nutrition – Introduction, mastication, deglutition, digestion and assimilation, homeostasis, fluid and electrolyte balance. Blood composition, volume, blood pressure, capillary and lymphatic circulation, shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration. Endocrine glands with particular reference to pituitary, parathyroid and thyroid glands and sex hormones. Role of calcium and Vitamin D in growth and development of teeth, bone and jaws. Role of Vitamin – 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.

Applied Biochemistry – General principles governing the various biological activities of the body, such as osmotic pressure, electrolytic dissociation, oxidation-reduction, etc., general composition of the body, intermediary

metabolism, carbohydrates, proteins, liquids and their metabolism, enzymes, vitamins and minerals, hormones, blood and other body fluids, metabolism of inorganic elements, detoxication in the body, anti metabolites.

Applied Pharmacology and Therapeutics – Definition of terminologies used – dosage and mode of administration of drugs. Action and fate of drugs in the body, drug addiction, tolerance and hypersensitivity reaction, drugs acting on the central nervous system, general anaesthetics, hypnotics, Analeptics and tranquilizers, local anaesthetics, chemotherapeutics and antibiotics, antitubercular and anti syphilitic drugs, analgesics and antipyretics, antiseptics, styptics, sialogogues and anti-sialogogues, haematinics, cortisone, ACTH, insulin and other anti-diabetics, Vitamins – A, D, B-complex, group - C and K etc., Chemotherapy and Radiotherapy.

Applied Pathology – Inflammation, repair and degeneration, necrosis and gangrene, circulatory disturbances, ischemia, hyperemia, chronic venous congestion, edema, thrombosis, embolism and infarction. Infection and infective granulomas, allergy and hypersensitivity reaction, neoplasm; Classification of tumours, carcinogenesis, characteristics of benign and malignant tumours, spread of tumours. 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, pneumo, gono and meningococci, clostridia group of organism, spirochetes, organisms of tuberculosis, leprosy, diphtheria, actinomycosis and moniliasis, etc. Virology, cross infection control, sterilization and hospital waste management.

(a) Applied Oral Pathology – Developmental disturbance of Oral and Para oral structures. Regressive changes of teeth, bacterial, viral and mycotic infections of oral cavity, dental oral cavity, oral manifestations of metabolic and endocrine disturbances. Diseases of the blood and blood forming organism in relation to the oral cavity, periodontal diseases, diseases of the skin, nerves and muscles in relation to the oral cavity.

Applied Dental Material:

- All materials used for treatment of craniofacial disorders and defects – Clinical, treatment and laboratory materials, Associated materials, Technical consideration, Shelf life, Storage, Manipulations, Sterilization, and Waste management.
- Students shall be trained and practiced for all clinical procedures with an advanced knowledge of theory of principles, concepts and techniques of various accepted materials for Prosthodontic, treatment modalities includes honourable accepted methods of diagnosis, treatment plan,

records maintenance and treatment and laboratory procedures and after care and prevention.

- Understanding all applied aspects for 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 quality life of a patient.
- The theoretical knowledge and clinical practice shall include principles involved for support, retention, stability, esthetics, phonation, mastication, occlusion, behavioural, psychological, preventive and social aspects of science of Prosthodontics including Crown & Bridge and Implantology.
- Theoretical knowledge and clinical practice shall include knowledge for laboratory practice and material science. Students shall acquire knowledge and practice of history taking, systemic and oro and craniofacial region and diagnosis and treatment plan and prognosis, record maintaining. A comprehensive rehabilitation concept with pre prosthetic treatment plan including surgical re-evaluation and Prosthodontic treatment plan, impressions, jaw relations, utility of face bow and articulators, selection and positioning of teeth for retention, stability, esthetics, phonation and psychological comfort. Fit and insertion and instruction for patients after care and preventive Prosthodontics, management of failed restorations.
- T.M.J. syndromes, occlusion, rehabilitation and craniofacial esthetics. State of the art clinical methods and materials for implants supported extra oral and intra oral prosthesis.
- Student shall acquire knowledge of testing biological, mechanical and other physical property of all materials used for the clinical and laboratory procedures in Prosthodontic Therapy.
- Students shall acquire full knowledge and practice equipments, instruments, materials, and laboratory procedures at a higher competence with accepted methods.
- All clinic practice shall involve personal and social obligation of cross infection control, sterilization and waster management.

I. REMOVABLE PROSTHODONTICS AND IMPLANTS -

- (a) Prosthodontic treatment for completely edentulous patients: – Complete denture, immediate complete denture, single complete denture, tooth supported complete denture, Implant supported Prosthesis for completely edentulous.

- (b) Prosthodontic treatment for partially edentulous patients: - Clasp-retained partial dentures, intra coronal and extra coronal precision attachments retained partial dentures, maxillofacial prosthesis.

Prosthodontic treatment for edentulous patients:-

Complete Dentures and Implant supported Prosthesis for Edentulous in both the arches.

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

Scope of Prosthodontics – the Cranio mandibular system and its function, the reasons for loss of teeth and methods of restorations.

Infection control, cross infection barrier – Clinical and laboratory and hospital and lab waste management.

- a) Edentulous Predicament, Biomechanics of the edentulous state, Support mechanism for the natural dentition and complete dentures, Biological considerations, Functional and Para functional considerations, Esthetic, Behavioural and adaptive responses, Temporomandibular joints changes.
- b) Effects of aging of edentulous patients – aging population, distribution and edentulism in old age, impact of age on edentulous mouth – mucosa, bone, saliva, jaw movements in old age, taste and smell, nutrition, aging skin and teeth, concern for personal appearance in old age.
- c) Sequelae caused by wearing complete denture – the denture in the oral environment – mucosal reactions, altered taste perception, burning mouth syndrome, gagging, residual ridge reduction, denture stomatitis, flabby ridge, denture irritation hyperplasia, traumatic ulcers, oral cancer in denture wearers, nutritional deficiencies, masticatory ability and performances, nutritional status and masticatory functions.
- d) Temporomandibular disorders in edentulous patients – Epidemiology, etiology and management, pharmacotherapy, physical modalities, and bio-behavioural modalities.
- e) Nutrition care for the denture wearing patient – Impact of dental status of 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 therapy – 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 joint, cardiovascular, disease of the skin, neurological disorders, oral diseases, malignancies, climacteric, use of drugs, mental health – mental attitude, psychological and intra oral changes. Intra oral health – mucous membrane, alveolar ridges, palate and vestibular sulcus and dental health.

Data collection and recording, visual observation, radiography, palpation, measurement – sulci or fossae, extra oral measurement is 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 tones, neuromuscular co-ordination, tongue, cheek and lips.

Interpreting diagnostic findings and treatment planning.

- g) Pre prosthetic surgery – Improving the patients’ denture bearing areas and ridge relations : non-surgical methods – rest for the denture supporting tissues, occlusal correction of the old prosthesis, good nutrition, conditioning of the patients’ musculature, 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.
- h) Immediate Denture – Advantages, disadvantages, contra indication, diagnosis, treatment plan and prognosis, explanation to the patient, oral examinations, examination of existing prosthesis, tooth modification, prognosis, referrals / adjunctive care, oral prophylaxis and other treatment needs.

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

- i) Over dentures (tooth supported complete dentures) – indications and treatment 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.
- j) 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 mental trauma.
- k) Art of communication in the management of the edentulous predicament – Communication – scope, a model of communication, why communication important, what are the elements of effective communications, special significance of doctor / patient Communication, doctor behaviour, the iatrosedative (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 most efficient way.
- l) Materials prescribed in the management of edentulous patients – Denture base materials, general requirements of biomaterials for edentulous patients, requirement of an ideal denture base, chemical composition of denture base resins, materials used in the fabrication of prosthetic denture teeth, requirement of prosthetic denture teeth, denture lining materials and tissue conditioners, cast metal alloys as denture, bases – base metal alloys.

- m) Articulators – Classification, selection, limitations, precision, accuracy and sensitivity and functional activities of the lower member of the articulator and uses.
- n) Fabrications of complete dentures – complete denture impressions – muscles of facial expressions and anatomical landmarks, support, retention, stability, aims and objectives – preservation, support, stability, aesthetics, and retention. Impression materials and techniques – need of 2 impressions the preliminary impression and final impression.

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 line, 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 – mandible – Anatomy of supporting structure, crest of the residual ridge, the 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.

- o) Mandibular movements, maxillo mandibular relation and concept of occlusion – Gnathology, identification of shape and location of arch form – Mandibular and maxillary, occlusion rim, level of occlusal plane and recording of trail denture base, tests to determine vertical dimension of occlusion, interocclusal, centric relation records, Biological and clinical considerations in making jaw relation records and transferring records from the patients to the articulator, Recording of mandibular movements – influence of opposing tooth contacts, temporomandibular joint, muscular involvements, neuromuscular regulation of mandibular motion, the envelope of motion, rest position, maxillo- mandibular relations – the centric, eccentric, physiologic rest position, vertical dimension, occlusion, recording methods – mechanical, physiological, Determining the horizontal jaw relation – functional graphics, tactile or interocclusal check record methods,

orientation / sagittal relation records. Arbitrary / Hinge axis and face bow record, significance and requirement, principles and biological considerations and securing on articulators.

- p) 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 position of teeth – horizontal, vertical. The inclinations and arrangement of teeth for aesthetics, phonetics and mechanics – to concept of occlusion.
- q) The Try in – verifying vertical dimension, centric relation, establishment of posterior 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.
- r) 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, labiodentals sounds, linguodental sounds, linguoalveolar sound, articulatoric characteristics, acoustic characteristics, auditory characteristics, linguopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.
- s) Waxing contouring and processing the dentures their fit and insertion and after care – laboratory procedure – wax contouring, flasking and processing, laboratory remount procedures and selective, 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, speaking with new dentures, oral hygiene with dentures, preserving 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.
- t) Implant supported Prosthesis for partially edentulous patients - Science of Osseo integration, clinical protocol for treatment with implant supported over dentures, managing problems and complications,

implant Prosthodontics for edentulous patients' current and future directions.

u) 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 for surgical placement of fixtures.
- ❖ Intra oral plastic surgery.
- ❖ Guided bone and tissue generation consideration for implants fixture.
- ❖ Implants supported prosthesis for complete edentulism and partial edentulism.
- ❖ Occlusion for implants supported prosthesis.
- ❖ Peri – implant tissue and management.
- ❖ Peri – implant and management.
- ❖ Maintenance and after care.
- ❖ Management of failed restoration.
- ❖ Work authorization for implant supported prosthesis – definitive instructions, legal aspects, delineation of responsibility.

Prosthodontic treatment for edentulous patients – Removable partial Prosthodontics –

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

- (b) Components of R.P.D. – major connector – mandibular and maxillary, minor connectors, design, functions, form and location of major and minor connectors, tissue stops, finishing lines, reaction of tissue to metallic coverage.

Rest and rest seats – from 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.

Direct retainer – Internal attachment, extracoronary direct retainer, relative uniformity of retention, flexibility of clasp arms, stabilizing – reciprocal clasp are, criteria for selecting a given clasp design, the basic principles of clasp design, circumferential clasp, bar clasp, combination clasp and other type of retainers.

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

Principles of removable partial denture design – Bio mechanic considerations, and the factors influence after mouth preparations – Occlusal relationship of remaining teeth, orientation of Occlusal plane, available space for restoration, arch integrity, tooth morphology, response of oral structure to previous stress, periodontal conditions, abutment support, tooth supported and tooth and tissue supported, need for indirect retention, clasp design, need for rebasing, secondary impression, need for abutment tooth modification, type of major connector, type of teeth selection, patients past experience, methods of replacing single teeth or missing anterior teeth.

Difference between tooth supported and tissue supported partial dentures, essential of partial denture design, components of partial denture design, tooth support, ridge 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 partial to gain support.

- (c) Education of patient.
- (d) Diagnosis and treatment planning.
- (e) Design, treatment sequencing and mouth preparation.

- (f) Surveying – Description of dental surveyor, purposes of surveyor procedure of survey, Aims and objectives in surveying of diagnostic cast and master cast, Final path of placement, Factors that determine path of placement and removal, Recording relation of cast to surveyor, measuring retention, Blocking of master cast – paralleled blockout, shaped blockout, arbitrary block out and relief.
- (g) Diagnosis and treatment planning – Infection control and cross infection barriers – clinical and laboratory and hospital and lab 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 unfavourable tooth contours, differential diagnosis : fixed or removable partial dentures, choice between complete denture and removable partial dentures, choice of materials.
- (h) Preparation of Mouth for removable partial dentures – Oral surgical preparation, conditioning of abused and irritated tissues, periodontal preparation – objectives of periodontal therapy, periodontal diagnosis, control therapy, periodontal surgery.
- (i) Preparation of Abutment teeth – Classification of abutment teeth, sequence of abutment preparations on sound enamel or existing restorations, conservative restoration – using crowns, splinting abutment teeth, utilization, temporary crowns to be used as abutment.
- (j) Impression Materials and Procedures for Removable Partial Dentures – Rigid materials, thermoplastic materials, Elastic materials, Impressions of the partially edentulous arch, Tooth supported, Tooth tissue supported, Individual impression trays.
- (k) Support for the Distal Extension Denture Base – Distal extension removable partial denture, Factors influencing the support of distal extension base, Methods for obtaining functional support for the distal extension base.
- (l) Laboratory Procedures – Duplicating a stone case, Waxing the partial denture frame work, Anatomic replica patterns, Spruing, investing, burnout, casting and finishing of the partial denture framework, making record bases, occlusion rims, making a stone occlusal template from a functional occlusal record, arranging posterior teeth to an opposing case or template, types of anterior teeth, waxing and investing the partial denture before processing acrylic resin bases, processing the denture, remounting and occlusal correction to an occlusal template, polishing the denture.

- (m) Initial placement, adjustment and servicing of the removable partial denture – adjustments to bearing surfaces of denture framework, adjustment of occlusion in harmony with natural and artificial dentition, instructions to the patient, follow – up services.
- (n) Relining and Rebasement the removable partial denture – Relining tooth supported dentures bases, relining distal extension denture bases, methods of reestablishing occlusion on a relined partial denture.
- (o) Repairs and additions to removable partial dentures – Broken clasp arms, fractured occlusal rests, distortion or breakage of other components – major and minor connectors, loss of a tooth or teeth not involved in the support or retention of the restoration, loss of an abutment tooth necessitating its replacement and making a new direct retainer, Other types of repairs, Repair by soldering.
- (p) Removable partial denture considerations in maxillofacial prosthetics – Maxillofacial prosthetics, intra oral prosthesis, design considerations, maxillary prosthesis, Obturators, speech aids, palatal lifts, palatal augmentations, mandibular prosthesis, treatment planning, framework design, Class I resection, Class II resection, mandibular flange prosthesis, jaw relation record.
- (q) Management of failed restorations, work authorization.

II. MAXILLOFACIAL REHABILITATION:

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

Behavioural and Psychological issues in Head and Neck cancer, Psychodynamic interactions – clinician and patient – Cancer Chemotherapy : Oral Manifestations, Complications, and management, Radiation therapy of head and neck tumours : Oral effects, Dental manifestations and dental treatment : Etiology, treatment and rehabilitation (restoration) – Acquired defects of the mandible, acquired defects of hard palate, soft palate, clinical management of edentulous and partially edentulous maxillectomy patients, Facial defects, Restoration of speech, Velopharyngeal function, cleft lip and palate, cranial implants, maxillofacial trauma, Lip and cheek support prosthesis, Laryngectomy aids, Obstructive sleep apnoea, Tongue prosthesis, Esophageal prosthesis, Vaginal radiation carrier, Burn stents, Nasal stents, Auditory inserts, trismus appliances, mouth controlled devices for assisting the handicapped, custom prosthesis for lagophthalmos of the eye. Osseo integrated supported facial and maxillofacial prosthesis. Resin bonding for maxillofacial prosthesis, Implant rehabilitation of the mandible

compromise by Radiotherapy, Craniofacial Osseo integration, 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, the functions of Cranio mandibular system.

Occlusal therapy, the stomatognathic system, centric relation, vertical dimension, the neutral zone, the occlusal plane, differential diagnosis of temporomandibular disorders, understanding and diagnosing intra articular problems, relating treatment to diagnosis of internal derangements of T.M.J, 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 teeth, restoring upper posterior teeth, functionally generated path techniques fro recording border movements intra orally, occlusal equilibration, Bruxism, Procedural steps in restoring occlusions, requirements for occlusal stability, solving – occlusal wear problems, deep overbite problems, anterior overjet problems, anterior open bite problems. Treating – end to end occlusion, splayed anterior teeth, cross bite patient, crowded, irregular or interlocking anterior bite, using cephalometric for occlusal analysis, solving severe arch malrelationship problems, transcranial radiography, post operative care of occlusal therapy.

IV. FIXED PROSTHODONTICS

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

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

morphology, T.M.J. and muscles mastication and comprehensive planning and prognosis.

- **Caries Management Teeth** – caries in aged, caries control, removing infected carious materials, protection of pulp, reconstruction measure for compromising teeth – retentive pins, horizontal slots, retention grooves, prevention of caries, diet, prevention of root caries and vaccine for caries.
 - **Periodontal considerations** – attachment units, ligaments, gingivitis, periodontitis. Microbiological aspect of periodontal diseases, marginal lesion, occlusal trauma, periodontal pockets attached gingival, interdental papilla, gingival embrasures, radiographic interpretations of Periodontia, intraoral plastics, periodontal splinting – Fixed Prosthodontics with periodontially compromised dentitions, placement of margin restorations.
 - **Biomechanical principle of tooth preparations** – individual tooth preparations – complete metal crowns – P.F.C., All porcelain – cerestore crowns, dicor crowns, incerem, etc., porcelain jacket crowns partial 3/4, half and half, ridiculer, telescopic, pin – hole, pin – ledge, laminates, inlays, onlays and preparations for restoration of teeth – amalgam, glass ionomer and composite resins, Resin Bond retainer, Gingival marginal preparations – Design, material selection, and biological and mechanical considerations – intracoronal retainer and precision attachments – custom made and ready made.
 - **Isolation and fluid control** – Rubber dam applications, tissue dilation – soft tissue management for cast restoration, impression materials and techniques, provisional restoration, interocclusal records, laboratory support for fixed Prosthodontics, Occlusion, Occlusal equilibration, articulators, recording and transferring of occlusal relations, cementing of restoration.
 - **Resins, Gold and gold alloys, glass ionomer, restorations.**
 - **Restorations of endodontically treated teeth, Stomatognathic Dysfunction and managements.**
 - **Management of failed restorations.**
- Osseo integrated supported fixed Prosthodontics** – Osseo integrated supported and tooth supported fixed Prosthodontics.

V. T.M.J. – Temporomandibular Joint Dysfunction – Scope, Definitions and Terminology

Temporomandibular joint and its function, Orofacial pain, and pain from the temporomandibular joint region, temporomandibular joint dysfunction, temporomandibular joint sounds, temporomandibular joint disorders.

Anatomy related, trauma, disc displacement, Osteoarthritis / Osteoarthritis, Hyper mobility and dislocation, infectious arthritis, inflammatory disease, Eagle's syndrome (Styloid – stylohyoid syndrome), Synovial chondromatosis, Osteochondrosis disease, Osteonecrosis, Nerve entrapment process, Growth changes, Tumours, Radiographic imaging.

- Etiology, diagnosis and cranio mandibular pain, differential diagnosis and management, orofacial pain – pain from teeth, pulp, dentin, muscle pain, T.M.J. pain – psychologic, physiologic – endogenous control, acupuncture analgesia, placebo effects on analgesia, trigeminal neuralgia, temporal arterities.
- Occlusal splint therapy – construction and fitting of occlusal splints, management of occlusal splints, therapeutic effects of occlusal splints, occlusal splints and general muscles performance, T.M.J. joint uploading and anterior repositioning appliances, use and care of occlusal splints.
- Occlusal adjustment procedures – Reversible – occlusal stabilization splints and physical therapies, jaw exercises, jaw manipulation and other physiotherapy or irreversible therapy – occlusal repositioning appliances, orthodontic treatment, orthognathic surgery, fixed and removable Prosthodontic treatment and occlusal adjustment, removable Prosthodontic treatment and occlusal adjustment, indication for occlusal adjustment, special nature of orofacial pain, indication for occlusal adjustment, special nature of orofacial pain, psychopathological considerations, occlusal adjustment philosophies, mandibular position, excursive guidance, occlusal contact scheme, goals of occlusal adjustment, significance of a slide in centric, preclinical procedures, clinical procedures for occlusal adjustment.

VI. AESTHETIC

Scope, Definitions –

Morpho psychology and esthetics, structural esthetic rules – facial components, dental components, gingival components, physical components. Esthetics and its

relationship to function – Crown morphology, physiology of occlusion, mastication, occlusal loading and clinical aspect in bio esthetic aspects, physical and physiologic characteristic and muscular activities of facial muscle, perioral anatomy and muscle retaining exercises Smile – classification and smile components, smile design, esthetic restoration of smile, Esthetic management of the dentogingival unit, intraoral plastic for management of gingival contours, and ridge contours, Periodontal esthetics, Restorations – Tooth coloured restorative materials, the clinical and laboratory aspects, marginal fit anatomy, inclinations, form, size, shape, colour, embrasures, contact point.

Teaching and learning activities:-

All the candidates registered for M.D.S. course shall pursue the course for a period of three years as full – time students. During this period each student shall take part actively in learning and teaching activities designed by the Institution / University. The following teaching and learning activities in each speciality are as follows:

Prosthodontic treatment should be practiced by treating plan various and more number of patients to establish skill for diagnosis and treatment plan 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.

- 1) **Lectures:** There shall be didactic lectures both in the speciality and in the allied fields. The postgraduate departments should encourage the guest lectures in the required areas to strengthen the training programmes. It is also desirable to have certain integrated lectures by multidisciplinary teams on selected topics.
- 2) **Journal Club:** The journal review meetings shall be held at least once a week. All trainees are expected to participate actively and enter relevant details in logbook. The trainee should make presentations from the allotted journal of selected articles at least 5 times in a year.
- 3) **Seminars:** The seminars shall be held at least twice a week in the department, all trainees associated with postgraduate teachers are expected to participate actively and enter relevant details in logbook. Each trainee shall make at least 5 – seminar presentation in each year.
- 4) **Symposium:** It is recommended to hold symposium on topics covering multiple disciplines one in each academic year.
- 5) **Workshops:** It is recommended to hold workshops on topics covering multiple disciplines one in each academic year.

- 6) **Clinical Postings:** Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist.
- 7) **Clinico Pathological Conference :** The Clinico pathological conferences should be held once in a month involving the faculties of oral biology, oral medicine and radiology, oral pathology, oral surgery, periodontology, endodontia and concerned clinical department. The trainees should be encouraged to present the clinical details, radiological and histo – pathological interpretations and participation in the discussions.
- 8) **Interdepartmental Meetings:** To bring in more integration among various specialities there shall be interdepartmental meetings chaired by the Dean with all heads of postgraduate departments at least once a month.
- 9) **Rural Oriented Prosthodontic Health Care:** To carry out Prosthodontic therapy interacting with rural centers and the institution.
- 10) **Teaching Skills:** All the trainees shall be encouraged to take part in undergraduate teaching programmes either in the form of lectures or group discussions.
- 11) **Evaluation Skills:** All the trainees shall be encouraged to take part evaluating the skills and knowledge in clinical laboratory practice including theory by formulating question banks and model answers.
- 12) **Continuing Dental Education Programmes:** Each postgraduate department shall organize these programmes on regular basis involving the other institutions. The trainees shall also be encouraged to attend such programmes conducted elsewhere.
- 13) **Conferences / Workshops / Advanced Courses:** The trainees shall be encouraged not only to attend conference / workshops / advance courses but also to present atleast two papers at State / National speciality meeting during their training period.
- 14) **Rotation and Posting in Other Departments:** To bring in more integration between the speciality and allied fields each post graduate department shall workout a programme to rotate the trainees in related disciplines and Craniofacial and maxillofacial ward.
- 15) **Dissertation:** Trainees shall prepare a dissertation based on the clinical or laboratory experimental work or any other study conducted by them under the supervision of the post graduate guide.

I YEAR M.D.S.:-

- Theoretical exposure of all applied sciences of study.
- Clinical and non-clinical exercises involved in Prosthodontic therapy for assessment and acquiring higher competence.
- Commencement of Library Assignment within six months.
- Acquaintance with books, journals and referrals To acquire knowledge of list of published books, journal and website for the purpose of gaining knowledge and reference – in the fields of Prosthodontics including Crown & Bridge and Implantology.
- Acquire knowledge of instruments, equipment, and research tools in Prosthodontics.
- To acquire knowledge of Dental Material Science – Biological and Biomechanical, Bio-esthetics knowledge of using in laboratory and clinics including testing methods.
- Participation and presentation in Seminars, Didactics lectures.
- Evaluation – Internal Assessment Examinations on Applied Subjects.

II YEAR M.D.S.:-

- Acquiring confidence in obtaining various phases and techniques for providing Prosthodontic therapy.
- Acquiring confidence by clinical practice with sufficient number of patients requiring tooth and tooth surface restorations.
- Adequate number of complete denture prosthesis and techniques higher clinical approach by utilizing semi – adjustable articulators, face bow and graphic tracing.
- Understanding the use of the dental surveyor and its application in diagnosis and treatment plan in R.P.D.
- Adequate numbers of R.P.D. covering all clinical partially edentulous situations.
- Adequate number of Crowns, Inlays, Laminates F.P.D. covering all clinically, partially edentulous situation.

- Selection of cases and principles in treatment of edentulous patients, partial or complete by implant supported prosthesis.
- Treating single edentulous situation by implant support.
- Diagnosis and treatment planning.
- Ist stage and IInd stage implant surgery.
- Understanding the maxillofacial Prosthodontics.
- Treating craniofacial defects.
- Management of orofacial esthetics.
- Prosthetic management of T.M.J. disorders.
- Occlusal rehabilitation.
- Maintenance and management of filled restoration.
- Prosthodontic management of patients with psychogenic disorders.
- Practice of child and geriatric Prosthodontics.
- Participation and presentation in seminars, didactics lectures.
- Evaluation – Internal Assessment Examinations.

III YEAR M.D.S.:-

- Clinical and laboratory practice continued form IInd year.
- Occlusion equilibration procedures – fabrication of stabilizing splint for parafunctional disorders, occlusal disorders and T.M.J. 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 for craniofacial rehabilitation.

- Management of failures in all aspects of Prosthodontic treatment and after care.
- Team management for esthetics, T.M.J. disorders and Maxillofacial and Craniofacial Prosthodontics.
- Management of Prosthodontics emergencies, resuscitation.
- Candidate should complete the course by attending large number and variety of patients to master Prosthodontic therapy. This includes the practice management, examinations, treatment planning, communication with patients, clinical and laboratory techniques, materials and instrumentation requiring different aspects of Prosthodontic therapy, Tooth and Tooth surface restoration, Restoration of root treated teeth, splints for periodontal rehabilitations and fractured jaws, complete dentures, R.P.D. , F.P.D. Immediate dentures over dentures implant supported prosthesis, maxillofacial and body prosthesis, occlusal rehabilitation.
- Prosthetic management of T.M.J. disorders.
- Management of failed restorations.
- Complete and submit Library Assignment 6 months prior to examination.
- Candidates should acquire complete theoretical and clinical knowledge through seminars, symposium, workshops and reading.
- Participation and presentation in seminars, didactic lectures.
- Evaluation – Internal Assessment examinations three months before University Examinations.
- Dissertation should be submitted to the University three months before the commencement of theory examination.

SCHEME OF EXAMINATION :

A. THEORY :

The M.D.S. (PROSTHODONTICS) Written Examination shall consist of four papers out of which shall be pertaining to the Prosthodontics speciality, one in Applied Basic Sciences and one shall be an Essay. Each paper shall be of 3 hours duration.

Total marks for each paper will be 100. Distribution of topics for each paper will be as follows :

Paper – I : Applied Basic Sciences :-

Applied Anatomy, Embryology and Histology.
Applied Physiology and Biochemistry.
Applied Pathology and Microbiology.
Applied Pharmacology.
Applied Dental Anatomy & Histology.
Applied Oral Pathology and Microbiology.

Optional Subjects :-

Applied Chemistry including Metallurgy, Dental Materials including Metallurgy.

Paper - II :

Removable Prosthodontics and Maxillo facial Prosthodontics.

Paper – III :

Fixed Prosthodontics, Temporomandibular joint, Occlusion and Implant supported Prosthesis.

Paper – IV :

Recent Advances in Prosthodontics.

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.

B. Practical / Clinical Examination : 200 Marks.

Clinical and Practical and Viva-voce examination of not less than two days duration involving case studies, diagnosis and treatment planning and execution of commonly used Prosthodontics appliances and replacements.

Each candidate shall be examined as follows:-

- 1) Practical / Clinical Exercises.
- 2) Presentation and Discussion on Dissertation.
- 3) Viva-voce : 50 Marks.

All examiners will conduct Viva-voce jointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents.