

PROSTHODONTICS

GOAL

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.

OBJECTIVES

a) KNOWLEDGE

At the end of M.D.S. course the. Student is expected to

1. To understand theoretical, Clinical, attitude, communicative skills and ability to conduct research with understanding of social, cultural, educational and environmental background of the society.
2. To understand applied basic and systemic medical science knowledge in general and particular to head and neck.
3. To provide Prosthodontic therapy for patients with competence and understanding of applied medical behavior and clinical sciences.

b) SKILLS

1. Acquire skills in working out appropriate decisions regarding presentation, treatment and referral to deliver comprehensive oral health care for patients.
2. Acquire skills for handling various Prosthodontic treatment modalities.

COURSE CONTENT

FIRST YEAR

I. Applied Anatomy of Head and Neck

1. General Human Anatomy.
2. Embryology.
3. Growth and Development.
4. Dental Anatomy.
5. Histology.
6. Anthropology and Evolution.
7. Applied Genetics and Heredity.
8. Cell Biology.

II. Applied Physiology and Nutrition

1. Endocrines.
2. Applied nutrition.
3. Applied biochemistry.
4. Applied pharmacology and therapeutics.
5. Applied pathology.
6. Applied microbiology.
7. Applied oral pathology.
8. Laboratory investigative procedures.

III. Biostatistics

1. Introduction to biostatistics

IV. Research methodology

V. Applied radiology

1. Roentgenographic techniques

VI. Applied dental materials

VII. Applied medicine, applied surgery and anesthesia

VIII. Selection of Topic for Library Dissertation

IX. Synopsis in main Dissertation

1. Identifying and selection of topic
2. Synopsis writing
3. Presentation of synopsis to the Department, Institute, review board and ethical committee.
4. Submission to University

X. Prosthodontic treatment for edentulous patients: -

1. Scope of Prosthodontics:- The Cranio Mandibular system and its functions, the reasons for loss of teeth and methods of restorations,
2. Complete Denture Prosthesis: - Definitions and terminology.
3. Infection control, cross infection barrier in clinic and laboratory.

4. Hospital and laboratory waste management.
5. Edentulous predicament, biological, biomechanics of the edentulous state and temporomandibular joint changes.
6. Effects of aging on edentulous patients.
7. Sequelae caused by wearing complete denture
8. Temporomandibular disorders in edentulous patients – epidemiology, etiology, pharmacotherapy, physical modalities, bio-behavioral modalities and management.
9. Nutrition care for the denture wearing patient.
10. Preparing patient for complete dentures, Diagnosis and treatment planning for edentulous patients –
 - a. History
 - b. Mental health – mental attitude, psychological changes and adaptability.
 - c. Intra oral health – mucous membrane, alveolar ridges, palate and vestibular sulcus and dental health.
11. Data collection and recording, visual observation, palpation, radiography, measurement of sulci or fossae, extra oral measurement in the vertical dimension of occlusion and diagnostic casts.
12. Specific observations – existing dentures, soft tissue and hard tissue health.
13. Biomechanical considerations
14. Interpretation of diagnostic findings and treatment planning.
15. Pre-prosthetic surgery
 - a. Non-surgical methods – rest for the denture supporting tissues, occlusal correction of the old prosthesis, nutrition, conditioning of the patients musculature.
 - b. Surgical methods - for frenular attachments and pendulous maxillary tuberosities, ridge augmentation, corrections of congenial deformities, discrepancies in jaw size, relief of pressure on the mental foramen, enlargement of denture bearing areas, vestibuloplasty and ridge augmentation.
16. Immediate Dentures.
17. Single denture.
18. Art of communication in the management of the edentulous predicament.
19. Materials prescribed in the management of edentulous patients
20. Articulators – Classification, selection, limitations, precision, accuracy and sensitivity, and functional activities of the lower member of the articulator and uses.
21. Fabrications of complete dentures – Complete denture impressions – muscles of facial expressions and anatomical landmarks, support,

retention, stability, aims and objectives Impression materials and techniques.

22. Developing an analogue/ substitute for the maxillary denture bearing area – anatomy of supporting structures
23. Developing an analogue/ substitute for the Mandibular denture bearing area – Mandible – anatomy of supporting structure
24. Mandibular movements, maxillo mandibular relation and concepts of occlusion and gnathology. Identification of shape and location of arch form
25. Selecting and arranging artificial teeth and occlusion for the edentulous patient
26. The try in
27. Speech considerations with complete dentures
28. Waxing contouring and processing the dentures their fit and insertion and after care

This is basic minimum requirement, however a student needs to know all the related aspects of the above mentioned topics.

APPROACH : Topics to be covered as didactic lectures and clinical discussions. Maintenance of records and clinical postings.

PRE-CLINICAL WORK TO BE COMPLETED DURING FIRST YEAR

I. Complete dentures

1. Arrangements in adjustable articulator for
 - a. Class I
 - b. Class II
 - c. Class III
 - d. Cross bite
2. Various face bow transfer to adjustable articulators
3. Processing of characterized anatomical denture

II. Removable partial denture

1. Design for Kennedy's classification (Survey, block out and design)
 - a. Class I
 - b. Class II
 - c. Class III
 - d. Class IV
2. Designing of various components of RPD
3. Wax pattern on refractory cast
 - a. Class I
 - b. Class II

- c. Class III
- d. Class IV
- 4. Casting and finishing of metal frameworks
- 5. Acrylisation on metal frameworks for
 - a. Class I
 - b. Class III with modification

III. Fixed Partial Denture

1. Preparation in ivory teeth/ natural teeth
 - a. Full Metal Crown
 - b. Full Ceramic Crown
 - c. Porcelain jacket crown
 - d. Acrylic jacket crown
 - e. Porcelain Fused to Metal crown
 - f. 3/4th (canine, premolar and central)
 - g. 7/8th posterior
 - h. Proximal half crown
 - i. Laminates
2. Preparation of different die system
3. Fabrication of wax pattern by drop wax build up technique
 - a. Wax in increments to produce wax coping over dies of tooth preparations on substructures
 - b. Wax additive technique
 - c. 3-unit wax pattern (maxillary and mandibular)
4. Pontic design in wax pattern
 - a. Ridge lap
 - b. Sanitary
 - c. Modified ridge lap
 - d. Modified sanitary
 - e. Spheroidal or conical
5. Fabrication of metal framework
 - a. Full metal bridge for posterior (3 units)
 - b. Coping for anterior (3 unit)
 - c. Full metal with acrylic facing
 - d. Full metal with ceramic facing
 - e. Adhesive bridge for anterior
 - f. Coping for metal margin ceramic crown
6. Fabrication of crowns
 - a. All ceramic crowns with characterization
 - b. Metal ceramic crowns with characterization
 - c. Full metal crown

CLINICAL PROCEDURES TO BE COMPLETED IN FIRST YEAR

1. Conventional complete dentures
2. Immediate complete denture
3. Single complete denture
4. Treatment partial denture

SECOND YEAR

I. Library Dissertation

Evaluation and satisfactory completion of library dissertation by the end of 18 months.

II. Over Dentures (tooth supported complete dentures) – Indications and treatment planning, advantages and disadvantages, selection of abutment teeth, loss of abutment teeth. Abutments with coping, non- coping and attachments, submerged vital roots and preparations of the retained teeth.

III. Fixed Prosthodontics:

Scope, definition, terminology, classification, principles, design, mechanical and biological considerations of components – Retainers, connectors and pontics,

1. **Diagnosis and treatment planning** – Patient's detail history - systemic and emotional health, clinical examinations – Extraoral and intraoral examination. Preparation of diagnostic cast, radiographic interpretation, aesthetics and endodontic considerations. Abutment selection – bone support, root proximities and inclinations, selections of abutments for cantilever, pier abutments, splinting, available tooth structures and crown morphology,
2. **Periodontal considerations** – Fixed prosthodontics for periodontally compromised dentitions, placement of margin for restorations and periodontal splinting.
 - a. **Biomechanical principle of tooth preparations** – Individual tooth preparations – Complete metal crowns, Porcelain fused to metal crowns, all porcelain restoration – Cerestore, Dicor, Inceram. Porcelain jacket crowns. Partial veneer, mesial half, radicular and telescopic crowns. Laminates and resin bonded bridges.
 - b. **Isolation and fluid control** – Rubber dam applications, tissue dilation – soft tissue management for cast restoration, impression materials and techniques.
 - c. **Resins, gold and gold alloys.**
 - d. **Restorations of endodontically treated teeth.**
 - e. **Stomatognathic dysfunction and managements.**
 - f. **Management of failed restorations.**

IV. Implant supported prosthesis

1. Implant supported prosthesis for partially edentulous patients – Science of Osseointegration, clinical protocol for treatment with implant supported over dentures, managing problems and complications, implant Prosthodontics for edentulous patients, current and future directions.
2. Clinical and laboratory protocol: Managing problems and complications.
 - a. Biological, clinical and surgical aspects of oral implants
 - b. Diagnosis and treatment planning

- c. Radiological interpretation for selection of fixtures
- d. Splints for guidance for surgical placement of fixtures
- e. Intra oral plastic surgery
- f. Guided bone and tissue generation consideration for implants fixture
- g. Occlusion for implants support prosthesis.
- h. Peri-implant tissue and management.
- i. Management of failed restoration.
- j. Work authorization

Commencement of Dissertation

V. Prosthodontic treatment for partially edentulous patients – Removable partial prosthodontics:-

1. Scope, definition and terminology, classification of partially edentulous arches – requirements of acceptable methods of classification, Kennedy's classification, Applegate's rules for applying the Kennedy classification.
2. Components of RPD –
 - a. Major connector – mandibular and maxillary, minor connectors, design, functions, form and location of major and minor connectors, tissue stops, finish lines, reaction of tissue to metallic coverage.
 - b. 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.
 - c. Direct retainer – Internal attachment, extracoronal direct retainer, the basic principles of clasp design, circumferential, bar, combination clasp and other type of retainers.
 - d. Indirect retainer – Denture rotation about an axis, factors influencing effectiveness of indirect retainers, forms of indirect retainers and direct-indirect retention.
 - e. Principles of removable partial denture design – biomechanical considerations and the factors influencing mouth preparations
 - f. 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.
3. Education of patient
4. Diagnosis and treatment planning
5. Design, treatment sequencing and mouth preparation
6. Surveying – Description of dental surveyor, purposes of surveyor procedure of survey, aims and objectives in surveying of diagnostic 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 – parallel, shaped and arbitrary blockouts.

7. 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.
8. Preparation of Abutment teeth
9. 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 and individual impression trays.
10. 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.
11. Laboratory procedure – Duplicating a stone cast, waxing of 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 cast 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.
12. Initial placement, adjustment and servicing of the removable partial denture
13. Relining and rebasing the removable partial denture and methods of reestablishing occlusion on a relined partial denture.
14. Repairs and additions to removable partial dentures
15. Removable partial denture considerations in maxillofacial prosthetics – Maxillofacial, intra oral and mandibular flange prosthesis, design considerations, obturators, speech aids, palatal lifts and augmentations, treatment planning, framework design for class I and II resection cases.
16. Management of failed restorations and work authorization.

This is basic minimum requirement, however a student needs to know all the related aspects of the above mentioned topics.

APPROACH : Topics to be covered as didactics lectures, clinical discussions and laboratory demonstrations.

CLINICAL PROCEDURES TO BE COMPLETED IN SECOND YEAR

1. Cast Partial Denture (All Partially edentulous situations)
2. Complete Dentures using semi adjustable articulators and facebows with balanced occlusion.
3. Rehabilitation of cleft palate patients with obturators
4. Fixed Partial dentures
 - a. Full metal Crowns and Bridges
 - b. Full ceramic Crowns
 - c. Acrylic jacket crown
 - d. Porcelain Jacket crown
 - e. 3/4th , 7/8th and proximal half crowns
 - f. Resin bonded bridges
5. Over Dentures

THIRD YEAR

I. MAXILLOFACIAL REHABILITATION

Prosthesis for post cancer patients, cleft lip and palate, lip and cheek support, laryngectomy aids, obstructive sleep apnoea, tongue prosthesis, esophageal, vaginal radiation carrier, burn and nasal stents.

Acquired defects of the mandible, hard and soft palate. Maxillectomy patients, facial defects, restoration of speech and velopharyngeal function, auditory inserts, trismus appliances, mouth controlled devices for assisting the handicapped, custom prosthesis for lagophthalmos of the eye and cranial implants.

II. OCCLUSION

Evaluation, Diagnosis and Treatment of Occlusal Problems:

Scope, definition, terminology, anatomical, physiological, neuro-muscular, psychological, considerations of teeth, muscles of mastication, temporomandibular joint, intra oral and extra oral and facial musculatures, functions of cranio mandibular system and occlusal therapy.

III. Dissertation completion and submission.

IV. Osseo integrated supported fixed prosthodontics – Osseo integrated supported and tooth supported fixed prosthodontics.

V. TMJ – Temporomandibular joint, definitions, and terminology:

Temporomandibular joint its anatomy, function, disorders, etiology, differential diagnosis and management.

This is basic minimum requirement, however a student needs to know all the related aspects of the above mentioned topics.

APPROACH : Topics to be covered as didactics lectures, and clinical discussions and laboratory demonstrations.

CLINICAL PROCEDURES TO BE COMPLETED IN THIRD YEAR

1. Clinical and laboratory practice continued from 2nd year
2. Implant Supported prosthesis - Clinical and Laboratory phases.
3. Maxillofacial Prosthesis for-
 - a. Eye
 - b. Ear
 - c. Nose
 - d. Finger
 - e. Hemimaxillectomy
 - f. Hemimandibulectomy
 - g. Guiding flange
4. Full mouth rehabilitation cases
5. Other Exercise
 - a. TMJ splints - Stabilization appliances, maxillary and mandibular repositioning appliances.
 - b. Anterior disclusion appliances
 - c. Chrome cobalt and acrylic resin stabilization appliances
 - d. Occlusal splint
 - e. Periodontal Splint

- Minimum Academic Requirements from 7 to 36 months

No	Work	Quota
1	Seminars	12
2	Journal Clubs	15
3	Scientific Poster Presentations	2
4	Scientific Paper Presentations	2
5	Scientific Paper Publications/Submission	1
6	Log Book Submission	3

At the end of M.D.S. course Post graduates students should complete following procedures.

SI. No.	Nature of work	Quota
1	Conventional Complete denture	25
2	Balanced Complete Denture	15
3	Immediate Complete Denture	5
4.	Single complete Denture	5
5.	Over Dentures	5
6	Provisional R.P.D.	10
7	Immediate R.P.D.	5
8.	Cast Partial Dentures	10
9	Crowns	10
10	Mary land bridges	5
11	Long span bridges	25

12	Full mouth rehabilitation	2
13	Post and core	14
14	Obturators	5
15	Guide flange prosthesis	5
16	Speech and palatal lift prosthesis	5
17	Ear, Nose, and Finger prosthesis	2
18	Hemimaxillectomy prosthesis	2
19	Hemimandibulectomy prosthesis	2
20	Implant supported prosthesis	2

SCHEME OF UNIVERSITY EXAMINATION

A. THEORY: 300 MARKS

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be follows:*

Paper I: Applied basic sciences

Paper II: Removable prosthodontics, Geriatric dentistry and Craniofacial prosthodontics.

Paper III: Fixed Prosthodontics and Implant Prosthodontics.

Paper IV: Essay

*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

Examination shall be for three days. If there are more than 6 candidates, it may be extended for one more day. Each candidate shall be examined for a minimum of three days, six hours per day including viva voce.

1. Presentation of treated patients and records during their 3 years training period: 25 marks

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|--|-----------|
| a. C.D. | - 1 mark |
| b. R.P.D. | - 2 marks |
| c. F.P.D. including single tooth and surface restoration | - 2 marks |
| d. I.S.P. | - 5 marks |
| e. Occlusal rehabilitation | - 5 marks |
| f. T.M.J | - 5 marks |
| g. Maxillofacial prosthesis | - 5 marks |

2. Scheme of practical examination and distribution of

I) C.D. prosthesis and insertion: 90 marks

- | | |
|--|------------|
| a. Discussion on treatment plan and patient review | - 10 marks |
| b. Tentative jaw relation records | - 5 marks |
| c. Face bow transfer | - 5 marks |
| d. Transferring it on articulators | - 5 marks |
| e. Extra oral tracing and securing centric and protrusive/
Lateral | - 25 marks |
| f. Transfer in an articulator | - 5 marks |
| g. Selection of teeth | - 5 marks |
| h. Arrangement of teeth | - 15 marks |
| i. Waxed up denture trial | - 10 marks |
| j. Fit, insertion and instruction of previously processed
Characterized, anatomic complete denture prosthesis | - 5 marks |
- All steps will include chair side, lab and viva voce

- II) Fixed Partial Denture** - **50 marks**
- a. Case discussion and selection of patients for F.P.D. - 5 marks
 - b. Abutment preparation isolation and fluid control - 25 marks
 - c. Gingival retraction and impressions - 10 marks
 - d. Cementation of provisional restoration - 10 marks

- III). Removable Partial Denture** - **35 marks**
- a. Surveying and designing of partial dentate cast - 10 marks
 - b. Discussion on components and material selection including occlusal scheme - 15 marks

C. VIVA VOCE: 100 MARKS

I). Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

II). Dissertations / Pedagogy Exercise: 20 marks

A topic is given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

Total (A + B + C) = 600