DEPARTMENT OF PROSTHODONTICS

Academic & Infrastructure details:

The Advanced Specialty Education Program in Prosthodontics is designed to increase the knowledge base and clinical and laboratory skills of the student in all areas of prosthodontics. In addition to conventional fixed and removable prosthodontics, this program offers considerable experience in esthetic dentistry and implant prosthodontics (to include surgical placement), an introduction to maxillofacial prosthetics, and the diagnosis and treatment planning of patients with temporomandibular dysfunction (TMD).

Comprehensive treatment planning seminars with the students and faculty of other graduate programs are designed to prepare the student to interact with and coordinate the treatment of patients requiring advanced prosthodontic treatment.

Spread over an ample 14,226 sq.ft of floor space on the ground floor of Bhabha college of Dental Sciences, the department has well equipped Undergraduate and Postgraduate clinics and laboratory sections. Separate Dental Materials, Pre-clinical Prosthodontics and Phantom head laboratories, central casting and ceramic laboratory, each provided with central compressed air and gas facilities cater to the technical and pre-clinical /clinical learning needs of students enrolled in various academic years of the BDS course.

Undergraduate Clinic

This section has 34 dental chairs, which are dedicated to undergraduate clinical teaching. In this clinical facility, students gain patient management skills and are taught the importance of disease prevention, in addition to undertaking oral health rehabilitation under careful supervision of experienced clinical teachers.

Post Graduate Clinic

It has adequate infrastructure and essential facilities of international standard to cater the need of post graduate students including 6 dental chairs and three simulators for preclinical work. Intake for the post graduation in this specialty will be three students per year. In this three-year Advanced Specialty Education Program in Prosthodontics, students will be trained in all phases of oral rehabilitative procedures including implant placement. Master's degree candidates will be required to complete an investigative research project that will satisfy the requirements of the Master's degree program. Upon completion of the 3 years didactic training, all students will be eligible to appear for Final examination conducted by Madhya Pradesh medical science university, Jabalpur.

Post graduate Prosthodontic program has a reputation that attracts candidates worldwide. The faculty is concerned with the education of those dentists who wish to advance their skills in Prosthodontics to the highest possible standards.
Former graduates of this department have taken their place as leaders in dentistry both in India and abroad.

Seminars and continuing education activities that allow students to interact with world-renowned experts supplement the list of didactic courses. Academic experiences consist of seminars and case presentations conducted with other graduate programs and current literature reviews to keep students aware of the changing knowledge base in Prosthodontics.

The clinical portion of the graduate Prosthodontic program is based on the student's knowledge of the research literature and its influence on clinical decisions and spans the full range of Prosthodontics. Comprehensive dental care is administered in conjunction with other specialty disciplines, and students are extensively involved with all aspects of the rehabilitation.

Maxillofacial Prosthodontics

This program is designed to train the post graduates in the rehabilitation of patients with congenital or acquired head and neck defects. Resultant disabilities may range from minor cosmetic discrepancies to major functional compromises. Students will be exposed to an area of patient care requiring greater management skills and greater patient sensitivity. Working relationships in the hospital environment and the team approach to rehabilitative services with the other medical specialties will be emphasized. Areas of patient treatment will include acquired defects of the mandible and maxilla, palatopharyngeal function, radiation therapy, chemotherapy and occluso-facial defects.

Future expansion plan:
Access to state of the art instruments, machinery and techniques like CAD-CAM , all – ceramic restorations, and titanium casting.
### Research work:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Faculty Name &amp; Designation</th>
<th>Name of the Journal</th>
<th>Title of the Article</th>
<th>Category</th>
<th>Authorship</th>
<th>Year</th>
<th>Vol/page no</th>
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<tbody>
<tr>
<td>1.</td>
<td>Dr R G K Shet, Prof &amp; HOD</td>
<td>Journal of IDA, MP State.</td>
<td>Lasers Application in Prosthodontics: A review.</td>
<td>11</td>
<td>1st</td>
<td>Nov-Dec06</td>
<td>Pg19-22</td>
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<td></td>
<td></td>
<td>The Journal of Contemporary Dental Practice</td>
<td>The effect of fiber reinforcement on the dimensional changes of Poly methyl methacrylate resin after processing and after immersion in water: An invitro study.</td>
<td>1</td>
<td>2nd</td>
<td>July-Aug11</td>
<td>305-317</td>
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<td></td>
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<td>do</td>
<td>Saliva: A powerful diagnostic tool for Minimal Intervention dentistry.</td>
<td>1</td>
<td>2nd</td>
<td>Mar-Apr12</td>
<td>240-245</td>
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<td></td>
<td></td>
<td>Journal of International Oral health</td>
<td>Association of oral health related quality of life with dental anxiety and depression along with general health among people of Bhopal district, Madhya Pradesh.</td>
<td>1</td>
<td>1st</td>
<td>Nov-Dec13</td>
<td>01-08</td>
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<td>2.</td>
<td>Dr. Prashanth S Patil, Professor</td>
<td>Journal of Research and Advancement in Dentistry</td>
<td>Simplified Technique for Making Ocular Prosthesis: A Case Report</td>
<td>I</td>
<td>1st Author</td>
<td>2015;4:3:3</td>
<td>4-36</td>
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<tr>
<td>3.</td>
<td>Dr. Medha Bhuskute Professor</td>
<td>Journal of Indian Prosthodontic Society</td>
<td>“Use of Anterior Attachment of Lingual Frenum (AALF) as a pre-extraction record in determining the original vertical position of mandibular anterior teeth”,</td>
<td>I</td>
<td>1st author</td>
<td>2003;3:4:</td>
<td>47-49</td>
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**Note:** The table above lists the research works conducted by various faculty members along with details such as the name of the journal, title of the article, year, volume, and page numbers.
<table>
<thead>
<tr>
<th>Serial</th>
<th>Author/Institution</th>
<th>Journal/Title</th>
<th>Article Title</th>
<th>Volume/Issue/Year</th>
<th>Page Numbers</th>
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<tr>
<td>1</td>
<td>1st Author</td>
<td>Dental Dialogue</td>
<td>“Fabrication of closed hollow obturator for maxillary defect: An alternative investment method”</td>
<td>2005, Vol XXXI, Pg: 111</td>
<td></td>
<td>5</td>
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<tr>
<td>5</td>
<td>Dr. Geetika Babar, Lecturer</td>
<td>International journal of oral care &amp; research</td>
<td>Fracture resistance of teeth restored with various post designs and cemented with different cements: An In-vitro study</td>
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<td>5</td>
<td>Dr. Geetika Babar, Lecturer</td>
<td>International journal of oral care &amp; research</td>
<td>Different classification systems of complete denture patients based on mental attitude: A review</td>
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**Achievement:**

**Statistical Analysis of OPD per annum**

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<th>Serial</th>
<th>Procedures</th>
<th>Total no. Cases</th>
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<td>no.</td>
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<tr>
<td>1.</td>
<td>Complete denture</td>
<td>1078</td>
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<tr>
<td>2.</td>
<td>Removable partial denture</td>
<td>3032</td>
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<td>3.</td>
<td>Fixed part</td>
<td>2205</td>
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**SYLLABUS:**

**BDS:**

I year: dental materials theory & practical
Preclinical prosthodontics practical

II year:
dental materials theory & practical
Preclinical prosthodontics practical

III year: prosthodontics theory and clinics

IV year : prosthodontics theory and clinics

**Dental materials**

1. **Structure of Matter and Principles of Adhesion:**

   Change of state, inter-atomic primary bonds, inter-atomic secondary bonds, inter-atomic bond distance and bonding energy, thermal energy, crystalline structure, non-crystalline structures, diffusion, adhesion and bonding and adhesion to tooth structures.

2. **Important Physical Properties Applicable to Dental Materials:**

   Physical properties are based on laws of mechanics, acoustics, optics, thermodynamics, electricity, magnetism, radiation, atomic structure or nuclear phenomena. Hue, value, chroma and translucency, physical properties based on laws of optics, dealing with phenomena of light, vision and sight. Thermal conductivity & coefficient of thermal expansion are physical properties based on laws of thermodynamics. Stress, strain, proportional limit, elastic limit, yield strength, modulus of elasticity, flexibility, resilience, impact, impact strength, permanent deformation, strength, flexure strength fatigue, static fatigue, toughness, brittleness, ductility & malleability, hardness, abrasion resistance, relaxation, rheology, thixotropic, creep, static creep, dynamic creep, flow, colour, three dimensional colour– hue, values, chroma, Munsell system, metamerism, fluorescence, physical properties of tooth, stress during mastication.
3. **Biological Considerations in Use of Dental Materials:**

Materials used are with the knowledge of appreciation of certain biological considerations for use in oral cavity. Requirement of materials with biological compatibility. Classification of materials from the perspective of biological compatibility e.g. contact with soft tissues, affecting vitality of pulp, used for root canal fillings, affecting hard tissues of teeth, laboratory materials that could be accidentally inhaled or ingested during handling. Hazards associated with materials: pH-effecting pulp, polymers causing chemical irritation, mercury toxicity, etc. Microleakage, thermal changes, galvanism, toxic effect of materials. Biological evaluation for systemic toxicity, skin irritation, mutagenecity and carcinogenicity. Disinfection of dental materials for infection control.

4. **Gypsum & Gypsum Products:**


5. **Impression Materials Used in Dentistry:**

Impression plaster, Impression compound, Zinc oxide eugenol impression paste & bite registration paste including non-eugenol paste, Hydrocolloids, reversible and irreversible, Elastomeric impression materials. Polysulphide, condensation silicones, addition silicones, Polyether, Visible light cure polyether urethane dimethacrylate, Historical background & development of each impression material, Definition of impression, Purpose of making impression, Ideal properties required and application of material, Classification as per ADA specification, general & individual impression material. Application and their uses in different disciplines, Marketed as and their commercial names, Mode of supply & mode of application, bulk/wash impression. Composition, chemistry of setting, Control of setting time, Type of impression trays required, Adhesion to tray, manipulation, instruments & equipments required. Techniques of impression, storage of impression (Compatibility with cast and die material). Any recent advancements in material and mixing devices. Study of properties: Working time, setting time, flow, accuracy, strength, flexibility, tear strength, dimensional stability, compatibility with cast & die materials including electroplating. Biological properties: tissue reaction, Shelf life & storage of material. Infection control – disinfection, advantages & disadvantages of each material.

6. **Synthetic Resins Used in Dentistry:**

Historical background and development of material, Denture base materials and their classification and requirement. Classification of resins: Dental resins – requirements of dental resins, applications, polymerisation, polymerisation mechanism stages in
addition to polymerization, inhibition of polymerization, co-polymerization, molecular weight, crosslinking, plastixizers, Physical properties of polymers, polymer structures, types of resins.


7. Metal and Alloys:


Dental Casting Alloys: Historical background, desirable properties of casting alloys. Alternatives to cast metal technology: direct filling gold, amalgam, mercury free condensable intermetallic compound - an alternative to metal casting process. CAD-CAM process for metal & ceramic inlays - without need of impression of teeth or casting procedure, pure titanium, most biocompatible metal which are difficult to cast
can be made into crowns with the aid of CAD-CAM technology. Another method of making copings - by copy milling (without casting procedures). Classification of casting alloys: By function & description. Recent classification , High noble (HN), Noble (N) and predominantly base metal (PB). Alloys for crown & bridge, metal ceramic & removable partial denture. Composition, function, constituents and application of each alloy, both noble and base metal. Properties of alloys: Melting range, mechanical properties, hardness, elongation, modulus of elasticity, tarnish and corrosion. Casting shrinkage and compensation of casting shrinkage.


8. Dental Waxes including Inlay Casting Wax:


9. Dental Casting Investments:


10. Soldering, Brazing and Welding:


Wrought Base Metal Alloys: Applications and different alloys used mainly for orthodontics purpose (Stainless steel, Cobalt chromium nickel, Nickel titanium & Beta titanium).
Properties required for orthodontic wires, working range, springiness, stiffness, resilience, Formability, ductility, ease of joining, corrosion resistance, stability in oral environment, biocompatibility. Stainless steels: Description, type, composition & properties of each type. Sensitization & stabilization, Mechanical properties – strength, tensile, yield strength, KHN. Braided & twisted wires their need, Solders for stainless steel, Fluxes, Welding

1. Wrought cobalt chromium nickel alloys, composition, allocation, properties, heat treatment, physical properties.


3. Titanium alloys, application, composition, properties, welding, Corrosion resistance.

11. Dental Cements:

Definition & Ideal requirements: Cements: Silicate, Glass ionomer, metal modified glass ionomer, resin modified glass ionomer, zinc oxide eugenol, modified zinc oxide eugenol, zinc phosphate, zinc silico phosphate, zinc poly carboxylate, Cavity liners and cement bases, Varnishes Calcium hydroxide, Gutta percha

Application, classification (general and individual ), setting mechanism, mode of supply, Properties, factors affecting setting, special emphasis on critical procedures of manipulation and protection of cement, mode of adhesion, biomechanism of caries inhibition.

Agents for pulpal protection., Modifications and recent advances, Principles of cementation. Special emphasis on cavity liners and cement bases and luting agents.

12. Dental Ceramics:


Metal Ceramics (PFM): Alloys - Types and composition of alloys. Ceramic - Type and Composition. Metal Ceramic Bond- Nature of bond. Bonding using electro deposition, foil copings, bonded platinum foil, swaged gold alloy foil coping. Technical considerations for porcelain and porcelain fused metal restorations. Recent advances - all porcelain restorations, Manganese core, injection moulded, castable ceramics, glass infiltrated alumina core ceramic (In ceram), ceramic veners, inlays and onlays, and CAD - CAM ceramic. Chemical attack of ceramic by fluoride. Porcelain furnaces.

13. Abrasion & Polishing Agents:

Definition of abrasion and polishing. Need of abrasion and polishing. Types of abrasives: Finishing, polishing & cleaning. Types of abrasives: Diamond, Emery, aluminium oxides garnet, pumice, Kieselgurh, tripoli, rouge, tin oxide, chalk, chromic oxide, sand, carbides, diamond, zirconium silicate Zinc oxide Abrasive Action:


15. **Dental Implants : Evolution of dental implants, types and materials.**

16. **Mechanics of Cutting : Burs and points.** At the end of the course the student should have the knowledge about the composition, properties, manipulative techniques and their various commercial names. The student should also acquire skills to select and use the materials appropriately for laboratory and clinical use.

**MDS SYLLABUS:**

- # basic sciences classes
- # preclinical work
- # seminars
- # clinical/ journal club
- # clinical cases
- # U.G. teaching and practical demonstration
- # work shop/ conferences and paper presentation
- # CDE programs
- # camps
- # publications

**COURSE CONTENT:**

**Complete Dentures**

A. Applied Anatomy and Physiology
   a) Introduction
   b) Biomechanics of the edentulous state
c) Residual ridge resorption.
B. Communicating with resorption.
   a. Understanding the patient’s Mental attitude
   b. Instructing the patient
C. Diagnosis and treatment planning for patients
   a) With some teeth remaining.
   b) With no teeth remaining.
      ➢ Systemic status
      ➢ Local factor.
      ➢ The geriatric patient.
      ➢ Diagnostic procedures.
D. Articulators
E. Improving the patient’s denture foundation and ridge relation – an overview.
   a) Pre-operative examination.
   b) Initial hard tissue & soft tissue procedure.
   c) Secondary hard & soft tissue procedure.
   d) Implant procedure.
   e) Congenital deformities.
   f) Postoperative procedure.
F. Principles of Retention, Support and Stability
G. Impressions – detail.
   a) Muscles of facial expression.
   b) Biologic considerations for maxillary and mandibular impression including anatomical landmark and their interpretation.
   c) Impression objectives.
   d) Impression materials.
   e) Impression techniques.
   f) Maxillary and mandibular impression procedures.
      i. Preliminary impressions
      ii. Final impressions
   g) Laboratory procedures involved with impression making (Beading & Boxing, and cast preparation).
H. Record bases and occlusion rims-in detail.
   a) Materials & techniques
   b) Useful guidelines and ideal parameters.
   c) Recording and transferring bases and occlusal rims.
I. Biological consideration in jaw relation & jaw movements – craniomandibular relations.
   a) Mandibular movements.
   b) Maxillo – mandibular relation including vertical and horizontal jaw relations.
   c) Concept of occlusion – discuss in brief.
J. Relating the patient to the articulator.
   a) Face bow types & uses-discuss in brief.
   b) Face bow transfer procedure – discuss in brief.
K. Recording maxillo mandibular relation.
   a) Vertical relations.
   b) Centric relation records.
   c) Eccentric relation records.
   d) Lateral relation records.
L. Tooth selection and arrangement.
a) Anterior teeth.
b) Posterior teeth.
c) Esthetic and functional harmony.

M. Relating inclination of teeth to concept of occlusion – in brief.
   a) Neutrocentric concept.
   b) Balanced occlusal concept.

N. Trial dentures

O. Laboratory procedures.
   a) Wax contouring.
   b) Investing of dentures.
   c) Preparing of mold
   d) Preparing & packing acrylic resin.
   e) Processing of dentures.
   f) Recovery of dentures.
   g) Lab remount procedures.
   h) Recovery the complete denture from the cast.
   i) Finishing and polishing the complete denture.
   j) Plaster cast for clinical denture remount procedure.

P. Denture insertion.
   a) Insertion procedures.
   b) Clinical errors.
   c) Correcting occlusal disharmony
   d) Selective grinding procedures.

Q. Treating problems with associated denture use – discuss in brief (tabulation / flow-chart form)

R. Treating abused tissues – discuss in brief

S. Relining and rebasing of dentures – discuss in brief

T. Immediate complete dentures construction procedure-discuss in brief.

U. The single complete denture – discuss in brief

V. Overdentures – discuss in brief.

W. Dental implants in complete denture – discuss in brief.

Note: It is suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover.

1. Definition
2. Diagnosis (of the particular situation / patient selection / treatment planning)
3. Types / Classification
4. Materials
5. Methodology – Lab / Clinical
6. Advantages & disadvantages
7. Indications, contraindications
8. Maintenance Phase
9. Oral Implantology
10. Ethics

**Removable Partial Dentures**

1. Introduction: Terminologies and scope
2. Classification.
3. Examination, Diagnosis & Treatment planning & evaluation of diagnostic data.
   - Major connectors,
   - Minor connectors,
   - Rest and rest seats.
5. Components of a Removable Partial Denture.
   - Direct retainers,
   - Indirect retainers,
   - Tooth replacement.
7. Survey and design – in brief
   - Surveyors
   - Surveying.
   - Designing.
8. Mouth preparation and master cast.
9. Impression materials and procedures for removable partial dentures.
11. Laboratory procedures for framework construction-in brief
12. Fitting the framework-in brief
13. Try-in of the partial denture – in brief
14. Completion of the partial denture – in brief
15. Inserting the Removable Partial Denture – in brief
16. Postinsertion observations.
17. Temporary Acrylic Partial Dentures.
18. Immediate Removable Partial Denture.

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2. Diagnosis (of the particular situation / patient selection / treatment planning)
3. Types / Classification
4. Materials
5. Methodology – Lab / Clinical
6. Advantages & disadvantages
7. Indication, contraindication
8. Maintenance Phase

**Fixed Partial Dentures**

**Topics to be covered in detail:**

1. Introduction
2. Fundamentals of occlusion – in brief
3. Articulators – in brief
4. Treatment planning for single tooth restorations
5. Treatment planning for the replacement of missing teeth including selection and choice of abutment teeth.
6. Fixed partial denture configurations.
8. Preparations for full veneer crowns in detail.
9. Preparations for partial veneer crowns – in brief
10. Provisional Restorations
11. Fluid Control and Soft Tissue Management
12. Impressions
13. Working Casts and Dies
14. Wax Patterns
15. Pontics and Edentulous Ridges
16. Esthetic Considerations
17. Finishing and Cementation

Topics to be covered in brief -

1. Solder Joints and other Connectors
2. All – Ceramic Restorations
3. Metal – Ceramic Restorations
4. Preparations of intracoronal restorations.
5. Preparations for extensively damaged teeth.
6. Preparations for periodontally weakened teeth
7. The Functionally Generated Path Technique
8. Investing and Casting

Note: It is suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover-

1. Definition
2. Diagnosis (of the particular situation / patient selection / treatment planning)
3. Types / Classification
4. Materials
5. Methodology – Lab / Clinical
6. Advantages & disadvantages
7. Indications, contraindications
8. Maintenance Phase

RECOMMENDED BOOKS:

2. Boucher’s “Prosthodontic treatment for edentulous patients”
3. Essentials of complete denture prosthodontics by- Sheldon Winkler.
5. Mc Craken’s Removable partial prosthodontics

Removable partial prosthodontics by – Ernest L.Miller and Joseph E.Gra