SYLLABUS FOR PH.D ENTRANCE

DEPARTMENT OF CONSERVATIVE DENTISTRY AND ENDODONTICS

Dental material science:

1. Physical and mechanical properties of dental materials and biocompatibility.
2. Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding – recent development , Dental Amalgam, Direct filling Gold, Casting alloys, Inlay wax, investment, casting procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.
3. Dental ceramics – recent advances, finishing and polishing materials.

Conservative dentistry

1. Occlusion as related to conservative dentistry, contact, contour, its significance. Separation of teeth, matrices used in conservative dentistry.
2. Dental caries – epidemiology, recent concept of etiological factors, pathophysiology, histopathology, diagnosis, caries activity tests, prevention of dental caries and management –recent methods.
3. Hand and rotary cutting instruments, development of rotary equipment, speed ranges, hazards.
4. Infection control procedures in conservative dentistry, isolation equipments etc.
5. Concepts in tooth preparation for amalgam, composite, GIC and restorative techniques, failures and management, Direct and indirect composite restorations, Indirect tooth colored restorations – ceramic, inlays and Onlays, veneers, recent advances in fabrication and materials,
6. Cast metal restorations, tooth preparation for Class II inlay, onlay full crown restorations. Tissue management, Impression procedures used for indirect restorations, Restorative techniques, direct and indirect methods of fabrication of restorations.
7. Management of non- carious lesion.
8. Hypersensitivity, theories, causes and management.

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9. Principles of esthetic-Color, Facial analysis, Principles of esthetic integration, Treatment planning in esthetic dentistry.

Endodontics

1. Rationale of endodontics
2. Dentin and pulp complex, Pulp and periapical pathology, Pathobiology of periapex.
3. Diagnostic procedure in Endodontics
4. Access cavity preparation – objectives and principles, Endodontic instruments and instrumentation, Working length determination / cleaning and shaping of root canal system and recent development in techniques of canal preparation, Root canal irrigants and intra canal medicaments used including non- surgical endodontics by calcium hydroxide, Single visit endodontics, current concepts and controversies
5. Obturating materials, various Obturation techniques and recent advances in Obturation of root canal.
6. Traumatic injuries and management – endodontic treatment for young Permanent teeth. Pediatric endodontics – treatment of immature apex.
7. Endodontic surgeries
8. Endodontic emergencies and management.
9. Lasers in Endodontics.
10. Failures in Endodontics

Dr. Rajesh Kshirsagar

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SYLLABUS FOR PH.D ENTRANCE

ORAL MEDICINE AND RADIOLOGY

A. Applied Anatomy and Physiology of the Maxillofacial region, including Embryology.

B. Pathology and Pharmacology related to orofacial diseases.

C. Radiology

1. Radiation physics
2. Radiation biology
3. Imaging of oral and maxillofacial structures, including accessories.
4. Quality assurance in maxillofacial radiology.
5. Oral malignancies and radiotherapy.

D. Oral medicine

1. Diseases affecting the hard tissues in maxillofacial region.
2. Diseases affecting the soft tissues in maxillofacial region.
3. Oral manifestations of various systemic diseases.
4. Laboratory investigations including modern diagnostic techniques for oral diseases.
5. Forensic odontology.
6. Management of medically compromised patients.

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Dr Amit Bhapushar.

Prof & HOD.

Oral Medicine & Radiology

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SYLLABUS FOR PH.D ENTRANCE

ORAL PATHOLOGY AND MICROBIOLOGY

1. **Applied Basic Sciences, General & Oral Anatomy, General Pathology & Microbiology, Physiology and Embryology:**

I. Oral Anatomy - Development & Anatomy of Head, Neck & Face
- Development & Anatomy of Teeth

II. General Pathology- Inflammation
- Spread of various infections
- Repair & Regeneration
- Neoplasia & Metastasis

III. Microbiology of various pathogenic microorganisms found in the oral cavity

III. Oral Embryology

IV. Physiology of Blood

V. Physiology of Speech & Deglutition

2. Laboratory techniques used as basic and advanced methods in histopathology and microbiology:

I. Basic Laboratory techniques – Biopsy & its processing
- Fine Needle Aspiration Cytology
- Exfoliative Cytology
- Chair-side methods of diagnosis
- Histochemistry
- Culture methods

II. Advanced Technique – Immunohistochemistry
- Polymerase Chain Reaction
- Immunoflourescence
- DNA probes
- Fluorescence In Situ Hybridization

III. Microbiology Technique – Aerobic microrganisms
- Anaerobic microorganisms

3. Oral pathology & microbiology:

- Developmental Defects of the Oral & Maxillofacial region
- Abnormalities of Teeth

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- Pulp and Periapical Diseases
- Periodontal Diseases
- Bacterial Infections
- Fungal & Protozoal Diseases
- Viral Infections
- Physical & Chemical Injuries
- Allergies & Immunologic Diseases
- Epithelial Pathology
- Salivary Gland Pathology
- Soft Tissue Tumors
- Hematologic Disorders
- Bone Pathology
- Odontogenic Cysts & Tumor
- Mucocutaneous Disorders
- Oral Manifestations of systemic Diseases
- Facial Pain & Neuromuscular Diseases
- Forensic Dentistry

4. Oral oncology:

- Carcinogenesis malignant neoplasm ass0ciated with the oral cavity
- Advances in Oral Oncology

5. Principles of proteomics & genomics

6. Stem cells & its significance

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Dean, Faculty of Dentistry

SYLLABUS FOR PH.D ENTRANCE

ORAL AND MAXILLOFACIAL SURGERY

1. Applied Basic Sciences:

The candidate should have a thorough knowledge both on theory and principles in general and particularly the basic medical subjects as relevant to the practice of maxillofacial surgery.

A. Anatomy:

Development of face , paranasal sinuses.
Surgical anatomy of scalp, temple and face, anatomy and its applied aspects of Triangles & deep structures of neck, cranial and facial bones & surrounding soft tissues
Cranial nerves

B. Physiology:

Blood - its composition hemostasis, blood dyscrasias, hemorrhage and its control,
Digestive system composition and functions of saliva, mastication, deglutition, digestion,

C. Biochemistry: General principles governing the biological principles of the body

D. General pathology:

Inflammation, repair and regeneration,
Shock types of shock, diagnosis, resuscitation, pharmacological support,
Neoplasm - classification of tumors,
Carcinogens and Carcinogenesis, grading and staging of tumors.

E. General microbiology:

Immunity,
Hepatitis B and its prophylaxis,
Knowledge of organisms commonly associated with diseases of oral cavity,

F. Oral pathology and microbiology:

Developmental disturbances of oral and paraoral structures,
Bacterial, viral, mycotic infection of oral cavity.
Cysts, odontogenic infection, benign & malignant neoplasms, salivary gland diseases,
Maxillary sinus diseases,

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G. Pharmacology and therapeutics:

General and local anesthetics,

Antibiotics

Analgesics

2. Oral and maxillofacial surgery:

- Informed consent/medico-legal issues.
- Concept of essential drugs and rational use of drugs.
- Principles of evidence based surgery
- Principles of surgery
- Medical emergencies
- Pre operative workup - Concept of fitness for surgery; basic medical work up;
- Post operative care- concept of recovery room care, airway management
- Wound management- Wound healing, factors influencing healing, basic surgical techniques
- Surgical Infections - Asepsis and antisepsis, rational use of antibiotics,
- Airway obstruction/management
- Anesthesia - stages of anesthesia, intravenous and regional anesthetics.
- Facial pain; facial palsy and nerve injuries.
- Pain control- acute and chronic pain,
- Clinical oral surgery - all aspects of dento alveolar surgery
- Pre-prosthetic surgery.
- Temporomandibular joint disorders - assessment and management.
- Reconstructive Oral and Maxillofacial Surgery - hard tissue and soft tissue reconstruction.
- Cyst and tumors of head and neck region and their management
- Neurological disorders -
- Maxillofacial trauma - basic principles, primary care, diagnosis and management
- Orthognathic surgery
- Laser surgery - The application of laser technology in the treatment of oral lesions
- Distraction osteogenesis in maxillofacial region.
- Cryosurgeries - Principles, the application of cryosurgery
- Cleft lip and palate surgery-diagnosis and treatment planning,
- Aesthetic facial surgery
- Craniofacial surgery & craniofacial anomalies.

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- Head and neck oncology - principles of head and neck oncology.
- Micro vascular surgery.
- Implantology - principles, surgical procedures for insertion of implants.

3. Allied specialties:

- General medicine: General assessment of the patient
- General surgery: Principles of general surgery,
- Neuro - surgery: Evaluation & management of a patient with head injury,
- Orthopedic: basic principles of orthopedic surgery,
- Anesthesia: Evaluation of patients for GA technique , knowledge of IV sedation

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SYLLABUS FOR PH.D ENTRANCE

ORTHODONTICS & DENTOFACIAL ORTHOPAEDICS

I. Applied Anatomy:

- Prenatal growth of head:

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

- postnatal growth of head:

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

- Bone growth:

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

- Assessment of growth and development:

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

- Muscles of mastication:

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

- Development of dentition and occlusion:

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

- Assessment of skeletal age.

  The carpal bones, carpal x - rays, cervical vertebrae

II. Physiology:

Endocrinology and its disorders

Calcium and its metabolism

Nutrition-metabolism and their disorders

Muscle physiology

Craniofacial biology

Bleeding Disorders

III. Applied dental materials, orthodontic wires, elastic etc.

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IV. Applied genetics and physical anthropology

V. Applied pharmacology

VI. Concepts of occlusion and esthetics

VII. Etiology and classification of malocclusion:

VIII. Dentofacial anomalies

IX. Child and adult psychology

X. Diagnostic procedures cephalometric and treatment planning in orthodontics.

XI. Clinical orthodontics:

Removable appliances, Myofunctional Orthodontics, Fixed appliances.

XII. Dentofacial orthopedics

XII. Cleft lip and palate rehabilitation

XIV. Biology of tooth movement

XV. Orthodontic / orthognathic surgery

XVI. Ortho - perio - prostho/restorative inter relationship

XVII. Preventive and interceptive orthodontics.

XVIII

- Anchorage considerations in Orthodontics.
- Temporomandibular Joint in Health and Disease.

XIX. Recent advances like

Use of implants
Lasers
Application of Finite Element Method(F.E.M)
Distraction Osteogenesis

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SYLLABUS FOR PH.D ENTRANCE

PAEDODONTICS & PREVENTIVE DENTISTRY

1. **Growth & development**: Prenatal and Postnatal development of cranium, face, jaws, teeth and supporting structures. Chornlogy of dental development and development of occlusion. Dimensional change in dental arches. Cephalometric evaluation of growth.

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

3. **Behavior management**: Non- pharmacological & pharmacological methods.

4. **Child abuse & dental neglect**.

5. **Conscious sedation, deep sedation & general anesthesia in pediatric dentistry**.

6. **Preventive paedodontics**

7. **Gingival & periodontal diseases in children**
   - Normal gingiva & Periodontium in Children .
   - Gingival & periodontal diseases – Etiology, Pathogenesis, Prevention, & Management.

8. **Pediatric operative dentistry**
   - Principle of Operative Dentistry.
   - Modifications required for cavity preparation in primary and young permanent teeth.
   - Restorations of decayed primary, young permanent and permanent teeth
   - Stainless steel, polycarbonate & Resin Crowns / Veneers & fibre post systems.

9. **Pediatric endodontics**

a. Primary Dentition: - Diagnosis of pulpal diseases and treatment.
b. Endodontic procedures in Young permanent teeth and permanent teeth.
c. Recent advances in Pediatric diagnosis and Endodontics.

10. **Traumatic injuries in children:**
    - Classification & Importance.
    - Sequalae & reaction of teeth to trauma.
    - Management of traumatized teeth with latest concepts.
    - Management of jaw fracture in children.

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11. Oral habits in children:

12. Dental care of children with special needs:

- Definition, Etiology, Classification, Behavioral, Clinical feature & Management of children with:
  - Physically handicapping conditions.
  - Mentally compromising conditions.
  - Medically compromising conditions.
  - Genetic disorders.

13. Oral manifestations of systemic conditions in children & their management.

14. Cariology:

- Definition , Aeitology & Pathogenesis
- Caries pattern in primary young permanent and permanent teeth in children.
- Rampant caries early childhood caries and extensive caries Definition aetiology, pathogenesis Clinical features Complications & Management
- Dietary modification & Diet counseling.
- Subjective & objective method of cares detection.

15. Paediatric oral medicine & clinical pathology: Recognition & Management of developmental dental anomalies, teething disorders, stomatological condition mucosal lesions, viral infection etc.

16. Preventive dentistry:

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

17. Fluorides:

- Historical background.
- Systematic & Topical fluorides.
- Mechanism of action.
- Toxicity & Management.
- Defluoridation techniques.

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SYLLABUS FOR PH.D ENTRANCE

PERIODONTOLOGY

1. **Applied Anatomy, Physiology, Biochemistry, Pathology and Microbiology**

2. **Pharmacology: Drugs relevant to Periodontal Health and Disease.**

3. **Etiopathogenesis of periodontal diseases**

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

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

6. **History, examination, diagnosis, prognosis and treatment planning for periodontal diseases.**

7. **Periodontal therapy – nonsurgical.**

8. **Periodontal surgical phase**
    1. Gingival curettage, Gingivectomy and Periodontal flap Surgery
    2. Osseous surgery (resective and regenerative)
    3. Furcation; Problem and its management
    4. The periodontic - endodontic continuum
    5. Perio-esthetics
    6. Recent advances in surgical techniques including Lasers.

9. **Future directions in periodontal diagnosis and therapy.**

10. **Supportive periodontal treatment**

Vishaltha.

DR. VISHALTHA PATIL

DEPT. OF PERIODONTOLOGY

11. Oral implantology with special emphasis on plaque control measures

12. Diagnosis and treatment of peri-implant complications

Dr. Rajesh Kshirsagar

Dean, Faculty of Dentistry

Vishakha.

DR. VISHAKHA PATIL

DEPT. OF PERIODONTOLOGY

SYLLABUS FOR PH.D ENTRANCE

DEPARTMENT OF PROSTHODONTICS

1. **Applied Anatomy, Physiology, Biochemistry, Pathology, Pharmacology.**

2. **Applied dental materials:** All materials used for Cranio-facial disorders; clinical treatments, laboratory material and associated technical considerations such as shelf life, storage, manipulation, etc. Sterilization and Waste management.

3. **Removable prosthodontics & implants**
   A. Prosthetic treatment for completely edentulous patients: complete denture, immediate complete denture, single complete denture, Overdenture, implant supported complete denture.
   B. Prosthetic treatment for partially edentulous patients: Cast partial dentures, precision attachments.

4. **Maxillofacial prosthodontics.**

5. **Occlusion in prosthodontics.**

6. **Fixed prosthodontics**
   A. Management of carious teeth
   B. Periodontal considerations
   C. Biomechanical principles of tooth preparations
   D. Isolation and fluid control
   E. Restorations of endodontically treated teeth
   F. Management of failed restorations

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7. **Implant prosthodontics**

8. **Temporo-mandibular joint dysfunction: etiology, diagnosis & treatment planning.**

9. **Esthetics and its relation to functions; smile design.**

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