

## **Ph.D. Syllabus**

### **PERIODONTOLOGY:**

#### **OBJECTIVES:**

The following objectives are laid out to achieve the goals of the course

##### **A) KNOWLEDGE:**

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

- Describe etiology, pathogenesis, diagnosis and management of common periodontal diseases with emphasis on Indian population
- Familiarize with the biochemical, microbiologic and immunologic genetic aspects of periodontal pathology
- Describe various preventive periodontal measures
- Describe various treatment modalities of periodontal disease from historical aspect to currently available ones
- Describe interrelationship between periodontal disease and various systemic conditions
- Describe periodontal hazards due to estrogenic causes and deleterious habits and prevention of it
- Identify rarities in periodontal disease and environmental/Emotional determinates in a given case
- Recognize conditions that may be outside the area of his/her Speciality/ competence and refer them to an appropriate Specialist
- Decide regarding non-surgical or surgical management of the case
- Update the student by attending courses, conferences and seminars relevant to periodontics or by self-learning process.
- Plan out/ carry out research activity both basic and clinical aspects with the aim of publishing his/her work in scientific journals
- Reach to the public to motivate and educate regarding periodontal disease, its prevention and consequences if not treated
- Plan out epidemiological survey to assess prevalence and incidence of early onset periodontitis and adult periodontitis in Indian population (Region wise)
- Shall develop knowledge, skill in the science and practice of Oral Implantology
- Shall develop teaching skill in the field of Periodontology and Oral Implantology
- Principals of Surgery and Medical Emergencies.
- To sensitize students about inter disciplinary approach towards the soft tissues of the oral cavity with the help of specialist from other departments.

##### **B) SKILLS:**

- Take a proper clinical history, thorough examination of intra oral, extra oral, medical history evaluation, advice essential diagnostic procedures and interpret them to come to a reasonable diagnosis
- Effective motivation and education regarding periodontal disease maintenance after the treatment
- Perform both non-surgical & education regarding periodontal disease, maintenance after the treatment
- Perform both non-surgical and surgical procedures independently
- Provide Basic Life Support Service (BLS) recognizes the need for advance life support and does the immediate need for that.
- Human values, ethical practice to communication abilities
- Adopt ethical principles in all aspects of treatment modalities; Professional honesty & integrity are to be fostered. Develop Communication skills to make awareness regarding periodontal disease Apply high moral and ethical standards while carrying out human or animal research, Be humble, accept the limitations in his/her knowledge and skill, and ask for help from colleagues when needed, Respect patients rights and privileges, including patients right to information and right to seek a second opinion.
- To learn the principal of lip repositioning and perio esthetics surgeries.

## **COURSE CONTENTS:**

### **PART-I:**

#### **APPLIED BASIC SCIENCES**

##### **APPLIED ANATOMY:**

1. Development of the Periodontium
2. Micro and Macro structural anatomy and biology of the periodontal tissues
3. Age changes in the periodontal tissues
4. Anatomy of the Periodontium
  - Macroscopic and microscopic anatomy
  - Blood supply of the Periodontium
  - Lymphatic system of the Periodontium
  - Nerves of the Periodontium
5. Temporomandibular joint, Maxillae and Mandible
6. Tongue, oropharynx
7. Muscles of mastication / Face
8. Blood Supply and Nerve Supply of Head & Neck and Lymphatics.
9. Spaces of Head & Neck

##### **PHYSIOLOGY:**

1. Blood
2. Respiratory system – knowledge of the respiratory diseases which are a cause of periodontal diseases (periodontal Medicine)
3. Cardiovascular system
  - a. Blood pressure
  - b. Normal ECG
  - c. Shock
4. Endocrinology – hormonal influences on Periodontium
5. Gastrointestinal system
  - a. Salivary secretion – composition, function & regulation
  - b. Reproductive physiology
  - c. Hormones – Actions and regulations, role in periodontal disease
  - d. Family planning methods
6. Nervous system
  - a. Pain pathways
  - b. Taste – Taste buds, primary taste sensation & pathways for sensation
7. Hemostasis

##### **BIOCHEMISTRY:**

1. Basics of carbohydrates, lipids, proteins, vitamins, enzymes and minerals
2. Diet and nutrition and periodontium
3. Biochemical tests and their significance
4. Calcium and phosphorus

##### **PATHOLOGY:**

1. Cell structure and metabolism
2. Inflammation and repair, necrosis and degeneration
3. Immunity and hypersensitivity
4. Circulatory disturbances – edema, hemorrhage, shock, thrombosis, embolism, infarction and hypertension
5. Disturbances of nutrition
6. Diabetes mellitus
7. Cellular growth and differentiation, regulation
8. Lab investigations

9. Blood

**MICROBIOLOGY:**

1. General bacteriology
  - a. Identification of bacteria
  - b. Culture media and methods
  - c. Sterilization and disinfection
2. Immunology and Infection
3. Systemic bacteriology with special emphasis on oral microbiology – staphylococci, genus actinomyces and other filamentous bacteria and actinobacillus actinomycetum comitans
4. Virology
  - a. General properties of viruses
  - b. Herpes, Hepatitis, virus, HIV virus
5. Mycology
  - a. Candidiasis
6. Applied microbiology
7. Diagnostic microbiology and immunology, hospital infections and management

**PHARMACOLOGY:**

1. General pharmacology
  - a. Definitions – Pharmacokinetics with clinical applications, routes of administration including local drug delivery in Periodontics
  - b. Adverse drug reactions and drug interactions
2. Detailed pharmacology of
  - a. Analgesics – opioid and nonopioid
  - b. Local anesthetics
  - c. Haematinics and coagulants, Anticoagulants
  - d. Vit D and Calcium preparations
  - e. Antidiabetics drugs
  - f. Steroids
  - g. Antibiotics
  - h. Antihypertensive
  - i. Immunosuppressive drugs and their effects on oral tissues
  - j. Antiepileptic drugs
3. Brief pharmacology, dental use and adverse effects of
  - a. General anesthetics
  - b. Antipsychotics
  - c. Antidepressants
  - d. Anxiolytic drugs
  - e. Sedatives
  - f. Antiepileptics
  - g. Antihypertensives
  - h. Antianginal drugs
  - i. Diuretics
  - j. Hormones
  - k. Pre-anesthetic medications
4. Drugs used in Bronchial asthma, cough
5. Drug therapy of
  - a. Emergencies
  - b. Seizures
  - c. Anaphylaxis
  - d. Bleeding
  - e. Shock
  - f. Diabetic ketoacidosis
  - g. Acute Addisonian crisis
6. Dental Pharmacology
  - a. Antiseptics
  - b. Astringents

- c. Sialogogues
  - d. Disclosing agents
  - e. Antiplaque agents
7. Fluoride pharmacology

### **BIOSTATISTICS:**

1. Introduction, definition and branches of biostatistics
2. Collection of data, sampling, types, bias and errors
3. Compiling data-graphs and charts
4. Measures of central tendency (mean, median and mode), standard deviation and variability
5. Tests of significance (chi square test, t-test and z-test)  
Null hypothesis

## **PART II**

### **PAPER 1**

#### **ETIOPATHOGENESIS:**

1. Classification of periodontal diseases and conditions
2. Epidemiology of gingival and periodontal diseases
3. Defense mechanisms of gingival
4. Periodontal microbiology
5. Basic concepts of inflammation and immunity
6. Microbial interactions with the host in periodontal diseases
7. Pathogenesis of plaque associated periodontal diseases
8. Dental calculus
9. Role of iatrogenic and other local factors
10. Genetic factors associated with periodontal diseases
11. Influence of systemic diseases and disorders of the periodontium
12. Role of environmental factors in the etiology of periodontal disease
13. Stress and periodontal diseases
14. Occlusion and periodontal diseases
15. Smoking and tobacco in the etiology of periodontal diseases
16. AIDS and periodontium
17. Periodontal medicine
18. Dentinal hypersensitivity

### **PAPER-II**

#### **CLINICAL AND THERAPEUTIC PERIODONTOLOGY AND ORAL IMPLANTOLOGY**

##### **Please note:**

Clinical periodontology includes gingival diseases, periodontal diseases, periodontal instrumentation, diagnosis, prognosis and treatment of periodontal diseases.

##### **(i) GINGIVAL DISEASES**

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

##### **(ii) PERIODONTAL DISEASES**

1. Periodontal pocket
2. Bone loss and patterns of bone destruction
3. Periodontal response to external forces

4. Masticatory system disorders
5. Chronic periodontitis
6. Aggressive periodontitis
7. Necrotising ulcerative periodontitis
8. Interdisciplinary approaches
  - Orthodontic
  - Endodontic

### **(iii) TREATMENT OF PERIODONTAL DISEASES**

- A. History, examination, diagnosis, prognosis and treatment planning
  1. Clinical diagnosis
  2. Radiographic and other aids in the diagnosis of periodontal diseases
  3. Advanced diagnostic techniques
  4. Risk assessment
  5. Determination of prognosis
  6. Treatment plan
  7. Rationale for periodontal treatment
  8. General principles of anti-infective therapy with special emphasis on infection control in periodontal practice
  9. Halitosis and its treatment
  10. Bruxism and its treatment
  
- B. Periodontal instrumentation
  1. Periodontal Instruments
  2. Principles of periodontal instrumentation
  
- C. Periodontal therapy
  1. Preparation of tooth surface
  2. Plaque control
  3. Anti microbial and other drugs used in periodontal therapy and wasting diseases of teeth
  4. Periodontal management of HIV infected patients
  5. Occlusal evaluation and therapy in the management of periodontal diseases
  6. Role of orthodontics as an adjunct to periodontal therapy
  7. Special emphasis on precautions and treatment for medically compromised patients
  8. Periodontal splints
  9. Management of dentinal hypersensitivity
  
- D. Periodontal surgical phase – special emphasis on drug prescription
  1. General principles of periodontal surgery
  2. Surgical anatomy of periodontium and related structures
  3. Gingival curettage
  4. Gingivectomy technique
  5. Treatment of gingival enlargements
  6. Periodontal flap
  7. Osseous surgery (resective and regenerative)
  8. Furcation; Problem and its management
  9. The periodontic – endodontic continuum
  10. Periodontic plastic and esthetic surgery
  11. Recent advances in surgical techniques
  
- E. Future directions and controversial questions in periodontal therapy
  1. Future directions for infection control
  2. Research directions in regenerative therapy
  3. Future directions in anti-inflammatory therapy
  4. Future directions in measurement of periodontal diseases
  
- F. Periodontal maintenance phase
  1. Supportive periodontal treatment

2. Results of periodontal treatment

**(iv) ORAL IMPLANTOLOGY**

1. Introduction and historical review
2. Biological, clinical and surgical aspects of dental implants
3. Diagnosis and treatment planning
4. Implant surgery
5. Prosthetic aspects of dental implants
6. Diagnosis and treatment of Peri implant complications
7. Special emphasis on plaque control measures in implant patients
8. Maintenance phase

**(v) MANAGEMENT OF MEDICAL EMERGENCIES IN PERIODONTAL PRACTICE**

Periodontology treatment should be practiced by various treatment plans and more number of patients to establish skill for diagnosis and treatment and after care with bio-mechanical, biological, bio-esthetics, bio-phonetics and all treatment should be carried out in more number for developing clinical skill.

**TEACHING / LEARNING ACTIVITIES:**

**The post graduate is expected to complete the following at the end of :**

S.No.	Year Wise	ACTIVITIES WORKS TO BE DONE
1.	<b>Module 1 (First Year)</b>	<p>Orientation to the PG program</p> <p><b>Pre-clinical work (4 months)</b></p> <p><b>a. Dental</b></p> <ol style="list-style-type: none"> <li>1. Practice of incisions and suturing techniques on the typhodont models.</li> <li>2. Fabrication of bite guards and splints.</li> <li>3. Occlusal adjustment on the casts mounted on the articulator</li> <li>4. X-ray techniques and interpretation.</li> <li>5. Local anaesthetic techniques.</li> <li>6. Identification of Common Periodontal Instruments.</li> <li>7. To learn science of Periodontal Instruments maintenance (Sharpening, Sterilization and Storage)</li> <li>8. Concept of Biological width</li> </ol> <p>a. Typhodont Exercise</p> <ol style="list-style-type: none"> <li>(i) Class II Filling with Band and Wedge Application</li> <li>(ii) Crown cuttings</li> </ol> <p><b>b. Medical</b></p> <ol style="list-style-type: none"> <li>1. Basic diagnostic microbiology and immunology, collection and handling of sample and culture techniques.</li> <li>2. Introduction to genetics, bioinformatics.</li> <li>3. Basic understanding of cell biology and immunological diseases.</li> </ol> <p><b>Clinical work</b></p> <ol style="list-style-type: none"> <li>1. Applied periodontal indices 10 cases</li> <li>2. Scaling and root planning:- with Proper written history               <ol style="list-style-type: none"> <li>a. Manual 20 Cases</li> <li>b. Ultrasonic 20 Cases</li> </ol> </li> <li>3. Observation / assessment of all periodontal procedures including implants</li> </ol>
2.	<b>Module 2 (First Year)</b>	<ol style="list-style-type: none"> <li>1. Interpretation of various bio-chemical investigations.</li> <li>2. Practical training and handling medical emergencies and basic life support devices.</li> <li>3. Basic biostatistics – Surveying and data analysis.</li> </ol>

		<b>Clinical</b> <ol style="list-style-type: none"> <li>1. Case history and treatment planning 10 cases</li> <li>2. Root planning 50 cases</li> <li>3. Observation / assessment of all periodontal procedures including implant.</li> <li>4. Selection of topic for Library dissertation and submission of Dissertation Synopsis.</li> </ol>
3.	<b>Module 3 (First Year)</b>	Minor surgical cases 20 cases (i) Gingival Depigmentation 3 Cases (ii) Gingival Curettage no limits (iii) ENAP 1 Case (iv) Gingivectomy/ Gingivoplasty 5 cases (v) Operculectomy 3 cases  Poster Presentation at the Speciality conference
4.	<b>Module 4 (Second Year)</b>	<b>Clinical work</b> <ol style="list-style-type: none"> <li>1. Case history and treatment planning 10 cases</li> <li>2. Occlusal adjustments 10 cases</li> <li>3. Perio splints 10 cases</li> <li>4. Local drug delivery techniques 5 cases</li> <li>5. Screening cases for dissertation</li> </ol>
5.	<b>Module 5 (Second Year)</b>	<ol style="list-style-type: none"> <li>1. Periodontal surgical procedures.             <ol style="list-style-type: none"> <li>a. Basic flap procedures 20 cases</li> <li>2. Periodontal plastic and esthetic 10 cases                 <ol style="list-style-type: none"> <li>a. Increasing width of attached gingival 5 cases</li> <li>b. Root coverage procedures / Papilla Preservation and Reconstruction 5 cases</li> <li>c. Crown lengthening procedures 5 cases</li> <li>d. Frenectomy 5 cases</li> <li>e. Vestibuloplasty 5 cases</li> </ol> </li> <li>3. Furcation treatment (Hemisection, Rootsection, Tunelling) 5 cases</li> <li>4. Surgical closure of diastema. 2 cases</li> </ol> </li> </ol>
6.	<b>Module 6 (Third Year)</b>	<ol style="list-style-type: none"> <li>1. Ridge augmentation procedures 5 cases</li> <li>2. Implants Placements and monitoring 5 cases</li> <li>3. Sinus lift procedures 2 cases</li> <li>4. Case selection, preparation and investigation of implants.</li> <li>5. Interdisciplinary Periodontics 2 each             <ol style="list-style-type: none"> <li>(i) Ortho – Perio</li> <li>(ii) Endo – Perio</li> <li>(iii) Restorative Perio</li> <li>(iv) Preprosthetic</li> <li>(v) Crown Prep</li> </ol> </li> <li>6. Osseous Surgery 2 each             <ol style="list-style-type: none"> <li>(i) Resective</li> <li>(ii) Regenerative</li> </ol> </li> <li>7. Scientific paper/ poster presentation at the conference.</li> </ol>
7.	<b>Module 7 (Third Year)</b>	<b>Clinical work</b> <ol style="list-style-type: none"> <li>1. Flap surgeries &amp; regenerative techniques 25 cases (using various grafts &amp; barrier membranes)</li> <li>2. Assistance / observation of advanced surgical procedure 5 each</li> <li>3. Micro Surgery 5 each</li> <li>4. Record maintenance &amp; follow-up of all treated cases including implants.</li> <li>5. Submission of dissertation – 6 months before completion of III year.</li> <li>6. Scientific paper presentation at conferences.</li> </ol>

8.	<b>Module 8 (Third Year)</b>	1. Refining of surgical skills. 2. Publication of an article in a scientific journal. 3. Preparation for final exams.
9.	<b>Module 9 (Third Year)</b>	1. Preparation for final exams. 2. University exam

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

**ASSESSMENT EXAMINATION:**

In addition to regular evaluation, log book etc., Assessment examination should be conducted after every 3 modules & progress of the student monitored.

**MONITORING LEARNING PROGRESS:**

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring is to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects.

**SCHEME OF EXAMINATION:**

**A. Theory:** Part-I: Basic Sciences Paper - **100 Marks**  
Part-II: Paper-I, Paper-II & Paper-III - **300 Marks** (100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows:

**Part-I :** Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics.

**Part-II**

**Paper I:** Normal Periodontal structure, Etiology & Pathogenesis of Periodontal diseases, epidemiology as related to Periodontics

**Paper II:** Periodontal diagnosis, therapy & Oral Implantology

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

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

**B. Practical / Clinical Examination : 200 Marks**

The clinical examination shall be of two days duration

**1<sup>st</sup> day**

Case discussion

- Long case - One
- Short case - One

Periodontal surgery – Periodontal Surgery on a previously prepared case after getting approval from the examiners

**2<sup>nd</sup> day**

Post-surgical review and discussion of the case treated on the 1<sup>st</sup> day

Presentation of dissertation & discussion

All the examiners shall participate in all the aspects of clinical examinations / Viva Voce



## Distribution of Marks for Clinical examination (recommended)

a) Long Case discussion	75		
b) 1 short case	25		
c) Periodontal surgery	1.	Anesthesia	10
	2.	Incision	20
	3.	Post Surgery Evaluation	25
	4.	Sutures	10
	5.	Pack (if any)	10
Post – operative review	25		
<b>Total</b>	<b>200</b>		

**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. Pedagogy Exercise : 20 marks***

A topic will be 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.