
# LIAQUAT UNIVERSITY OF MEDICAL & HEALTH SCIENCES

## Institute of Dentistry

# NAME OF PROGRAM

## PhD ORAL PATHOLOGY

# DURATION OF COURSE

## THREE YEARS

# ORAL PATHOLOGY AND MICROBIOLOGY

## Objectives:

- To train a postgraduate dental surgeon so as to ensure higher competence in both general and special pathology dealing with the nature of oral diseases, their causes, processes and effects.
- An oral pathologist is expected to perform routine histopathological evaluation of specimens relating to oral and perioral tissues, to carry out routine diagnostic procedures including hematological, cytological, microbiological, Immunological and ultra structural investigations.
- He/she is expected to have an understanding of current research methodology, collection and interpretation of data, ability to carry out research projects on clinical and or epidemiological aspects, a working knowledge on current databases, automated data retrieval systems, referencing and skill in writing scientific papers.
- He/she is expected to present scientific data pertaining to the field, in conferences both as poster and verbal presentations and ot take part in group discussions.

## Broad outline of theoretical, clinical and practical courses.

1. Study of principles of routine and special techniques used for histopathology including principles of histochemistry, Immunochemistry, applied and theoretical biochemical basis of histochemistry as related to oral pathology.
2. Advanced histological and histopathological study of dental and oral tissues including embryonic considerations, clinical considerations, biology, histology, Pathology, prognosis and management of oral oncology, Concepts of oral premalignancy
3. Study of special and applied pathology of oral tissues as well as relation of local pathologic and clinical findings to systemic conditions.
4. Oral microbiology and their relationship to various branches of dentistry.
5. Oral microbiology affecting hard and soft tissues. Study of clinical changes and their significance to dental and oral diseases as related to oral pathology
6. Forensic odontology
7. Inter institutional pOstings such as cancer hospital, dermatology clinics, regional HIV detection centers, sophisticated instrumentation centers for electron microscopy and other techniques.
8. Maintenance of records of all postgraduates activities.
9. Library assignment.
10. University Dissertation.

# PhD Advance Course (Oral Pathology) YEAR ONE

## A. Course contents

### Biostatistics and Research Methodology

- Basic principles of biostatistics and study as applied to dentistry and research
- Collection/organization of data/measurement scales presentation of data analysis.
- Measures of central tendency.
- Measures of variability.
- Sampling and planning of health survey.

- Probability, normal distribution and indicative statistics.
- Estimating population values.
- Tests of significance (parametric/non-parametric qualitative methods.)
- Analysis of variance
- Association, correlation and regression.

**Approach:**

- Workshop: IT, Synopsis Writing, Research Methodology & Plagiarism.
- Didactic lectures on biostatistics and discussion on research methodology by eminent researchers.
- Two - day P.G. orientation course including general approach PG course, library and main dissertation, journal club topic selection and presentation, seminars, clinicopathological meets, teaching methodology and use of audiovisual aids.

**1) Genetics:**

Introduction modes of inheritance, chromosomal anomalies of oral tissues and single genetic disorders.

**Approach:**

- To be covered as didactic lectures.
- Posting in department of anatomy for dissection of head, face and neci

**2) General Microbiology:**

- Definitions of various types of infections.
- Routes of infection and spread
- Sterilization, disinfection and antiseptics.
- Bacterial genetics.
- Physiology and growth of microorganisms.

**Approach:**

- To be covered as seminars and didactic lectures.
- Record book to be maintained.

**3) Basic Immunology**

- Basic principles of immunity, antigen and antibody reactions.
- Cell mediated immunity and Humoral immunity.
- Immunology of hypersensitivity.
- Immunological basis of the autoimmune phenomena.
- Immunodeficiency with relevance to opportunistic infections.
- Basic principles of transplantation and tumor immunity.

**Approach:**

To be covered as didactic lectures.

**4) Systemic microbiology/applied microbiology**

Morphology, classification, pathogenicity, mode of transmission, methods of pre collection and transport of specimen, for laboratory diagnosis, staining methods, comi culture media,. interpretation of laboratory reports and antibiotic sensitivity tests.

- Staphylococci
- Streptococci
- Corynebacterium diphtheria
- Mycobacteria
- Clostridia, bacteroides and fusobacteria © Actinomycetales
- Spirochetes

5) **Virology**:

**General properties:** structure, broad classification of viruses, pathogenesis, pathology of viral infections.

**Herpes virus:** list of viruses included, lesions produced, pathogenesis, latency principles and laboratory diagnosis.

**Hepatitis virus:** list of viruses, pathogenesis, and mode of infection, list of diagnostic tests, and their interpretations, methods of prevention and control.

**Human Immunodeficiency virus:** structure with relevance to laboratory diagnosis, type of infection, laboratory tests and their interpretation, universal precautions, specific precautions and recent trends in diagnosis and prophylaxis.

6) **Mycology:**

- General properties of fungi, classification bases on disease, superficial, subcutaneous, deep opportunistic infections.
- General principles of fungal infections, diagnosis rapiddiagnosis method of collection of sample and examination for fungi.

**Approach:**

- To he covered as seminars and didactic lectures
- Postings to the dept. of microbiology to familiarize with relevant diagnostic methods
- Record book to be maintained

7) **Basic histo techniques and microscopy:**

- Routine hematological tests and clinical signifiance of the same.
- Biopsy procedures for oral lesions. Processing of tissues for Paraffin lesions.
- Microtome and principles of microtomy.
- Routine stains, principles and theories of staining techniques 1icroscope, principles and theories of microscopy.
- Light microscopy and various other types including electron microscopy.
- Methods of tissue preparation for ground sections, decalcified sections.

**Approach:**

- Topics to be covered as seminars.
- Preparation of ground and decalcified sections, tissue processing, sectioning and staining.
- Record book to be maintained

**8) General Pathology:**

- Inflammation and chemical mediators, thrombosis, embolism, necrosis, repair, degeneration, shock, hemorrhage pathogenic mechanisms at molecular level and blood dyscrasias, Carcinogenesis and Neoplasia.

**Approach:**
To be covered as seminars and didactic lectures.

### Research Methodology Workshop

- **Collection/organization of data / measurement scales presentation of data analysis.**
- **Sampling and planning of health survey.**
- **Analysis of Variance**
- **Association, correlation and regression.**

# PhD Advance Course (Oral Pathology) YEAR TWO

**1) Oral pathology**

- Developmental defects of oral and maxillofacial region and abnormalities of teeth
- Dental caries (Introduction, Epidemiology, microbiology, cariogenic bacterial including properties, acid production in plaque, development of lesion, response of dentine - pulp unit, histopathology, root caries, sequelae and immunology).
- Pulpal and Periapical diseases
- Infections of oral and Para oral regions (bacterial, viral and fungal tnfection
- Non - neoplastic disorders of salivary glands
- Bone pathology
- Hematological disorders
- Physical and chemical injuries, allergic and Immunological diseases.
- Cysts of odontogenic origin
- Dermatologic diseases.
- Periodontal diseases
- Oral manifestations of systemic diseases
- Facial pain and neuromuscular disorders including TM) disorders
- Regressive alterations of teeth

**Clinical Pathology:**

- Laboratory investigations - Hematology, Microbiology and Urine analysis
- Postings to Clinical Pathology f0P relevant training
- Record book to be maintained.

**2) Oral Medicine**

- Diseases of Oral Mucosa
- Becterial
- Viral
- Oral Candidosis
- Vesiculo Bulbous lesions
- White lesions
- Premalignant lesions
- Oral Cancer
- Salivary glands diseases
- Facial pain
- Oral manifestation of skin diseases
- Oral manifestation systematic diseases
- Disorder of T.M.J

**3) Oral Microbiology and immunology**

- Normal Oral microbial flora
- , Defense mechanism of the oral cavity
- Microbiology and immunology of Dental caries and Periodontal diseases © Dental caries (Introduction, epidemiology, microbiology, cariogenic bacteria including properties, acid
- production in plaque, development of lesion, response of dentin-pulp unit, histopathology, root caries, sequelae and immunology)
- Tumor immunology
- Infections of Pulp and Periapical and periodontal tissues Oral sepsis and Bacterimia
- Microbial genetics
- Infections of oral and Para oral regions (bacterial, viral and fungal infections)

**Approach**
**To be covered as seminars**

**4) Specialized histotechniques and special stains:**

Special staining techniques for different tissues.
Immunohistochemistry
Preparation of frozen sections and cytological smears
**Approach:**
Training to be imparted in the department or in other institutions having the facility Record book to be maintained

**Recording of Case history and Clinico-pathological discussions:**
**Approach**
Posting to the department of Oral medicine, Diagnosis and Radiology and Oral and Maxillofacial surgery
Record of case histories to be maintained

**5) Oral oncology**

Detailed study including Pathogenesis, molecular and biochemical changes of tumor like lesions and premalignant lesions affecting the hard and soft tissues of oral and paraoral tissues
Tumour markers

**Approach**

- To be covered as seminars
- Posting to a Cancer center to familiarize with the pathological appearances, diagnosis,
- radio-diagnosis and treatment modalities.

## 6) Recent advances in Oral Pathology.

**Approach:** Update of knowledge in Oral Pathology through study of recent journals & Internet browsing. Journal Clubs & Group discussions

**4) Academic activities**

- Library assignment to be submitted at the end of 6 months
- Commencement of dissertation work
- Journal clubs and seminars to be presented by every PG student
- Clinico - pathological discussions once in a month by every PG student
- To attend interdepartmental meetings.
- Lecture and practical classes and slide discussions to be taken for II BDS
- students in oral and dental anatomy, dental histology and oral physiology.
- Year ending examination (theory and practical) to be conducted by the college.

- Non-neoplastic disorders of salivary glands.

- Bone pathology

- Physical and chemical injuries, allergic and Immunological diseases.

- Cysts of odontogenic origin

- Oral manifestations of systemic diseases

**Approach**

To he covered as seminars Slide discussions of the same Record book to be maintained

**Academic activities**

- Visit to center out Animal experimentation to familiarize with Laboratory techniques, upkeep and care of animals
- Completion of Dissertation work and submission of the same, six months before the Final Examination
- Study of Journals, Internet Browsing, and group discussions, to update knowledge in the recent advances in Oral Pathology
- Lecture and Practical demonstrations for third B.D.S students in Oral pathology and Microbiology
- Reporting of histopathology slides
- Journal clubs and Seminars to be presented by every post graduate students twice in a month
- Clinico-pathological discussions by every student once in a month
- To attend Interdepartmental meetings.

- Seminars
- Slide Discussion
- Log Book

Visit to center _____other departments in different hospitals

Academic activities _____ thesis

Monitoring learning progress: To evaluate students, by staff of the department

## Monitoring learning Progress

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