

SYLLABUS OF PHD. IN DENTAL SCIENCES

1. Conservative Dentistry & Endodontics

Sr. No.	Topic
1	Dental Caries
2	Applied Dental materials
3	Biocompatibility
4	Pulp Dentin Complex
5	Occlusion in Restorative Dentistry
6	Developmental anomalies in Hard tissue
7	Minimal Invasive Dentistry
8	Geriatric Endodontics
9	Smear layer
10	Management of trauma

2. Oral Medicine & Radiology

1. Current trends in the diagnosis and management of oral pre-cancer and oral cancer
2. Molecular level studies for the pathogenesis of oral cancer and autoimmune conditions affecting the oral cavity
3. Investigations and active intervention of Temporomandibular Disorders
4. Applications of CBCT and Nuclear Imaging in the dental practice
5. Newer drug therapies for treatment of oral mucosal lesions
6. Active team work with the general radiologists and radiotherapists for radiotherapy management of head, neck and face malignancies
7. Role in environment protection regarding hazardous effects of the radiation, use of lead etc.
8. Application of advanced radiographic techniques in Forensic Medicine
9. Generation of new knowledge in Implant Dentistry

3. Oral Pathology & Microbiology

Sr. No.	Topic
1	Oral oncology with special emphasis on oral squamous cell carcinoma
2	Etiopathogenesis and diagnosis of oral lesions
3	Microbiology of oral lesions: Bacterial, Viral and Fungal infections
4	Mucocutaneous disorders
5	Developmental disturbances of oral and maxillofacial region
6	Syndromes associated with oral and maxillofacial region

4. Oral and Maxillofacial Surgery

Recent advances in radiology- RVG, Digital radiographs, CBCT, Dentascan, PET, SPECT.

1. Recent advances in anesthesiology- CCLAD, Ropivacaine, electronic dental anesthesia, alkalized local anesthesia, Hyaluronidase in local anesthesia, conscious sedation, Propofol, fiberoptic intubation, balanced anesthesia.
2. Recent advances in microbiology – immunology in oral infection, microbiology of oral cavity.
3. Embryology- development of head, neck and face and its implications.
4. Recent advances in pharmacology- newer antibiotics, principles of antibiotic therapy, newer analgesics, steroids, immunosuppressants, muscle relaxants.
5. Fluid and electrolyte balance.
6. Miscellaneous- genetics, biomaterial in oral and maxillofacial surgery, management of medically compromised patients, management of medical emergencies, syndromes associated with oral and maxillofacial region.



5. Orthodontics - Dentistry

1. cell biology and its relevance to orthodontic tooth movement
 - a) alveolar bone structure and function
 - b) mucogingival tissues
 - c) dentoalveolar response to loading
 - d) center of rotation, moment and resistance
 - e) conditions for periodontal health
 - f) experimental stress analysis in alveolar bone
 - g) iatrogenic changes
 - h) skeletal, craniofacial and oral biology and its relevance to craniofacial research
2. Genetics and developmental biology and its relevance to craniofacial anomalies.
3. Stem cells
4. Orofacial anomalies
 - a) Embryonic origins of dysmorphology
 - b) Fetal origins
 - c) Congenital syndrome
 - d) stomatognathic anomalies
 - e) risk assessment and prevention
 - f) General therapy timing, types and effectiveness
 - g) Familial characteristics and malocclusion patterns
3. cell signaling, and pharmacology as related to orthodontics.
 - a) Cause - effect clarification and evaluation
 - b) Preventive measures
 - c) Health risks and orthodontic risk assessment
4. biomaterials and bioengineering as related to orthodontics& dentofacial orthopedics
 - a) structure of solid materials
 - b) mechanical properties of solids
 - c) surface properties of solids
 - d) dispersive systems
 - e) Frictional phenomena
 - f) Alloying phenomena
 - g) heat treatment processes
 - h) steels
 - i) other low ferrous and non ferrous alloys
 - j) adhesion and bonding
 - k) design of joints
 - l) polymers
 - m) ceramics
 - n) luting agents
 - o) gypsum materials
 - p) biocompatibility of materials

6.Pedodontics - Dentistry

Sr. No.	Topics
1.	Child Psychology : <ul style="list-style-type: none">• Development & Classification of Behavior, personality, intelligence in children, theories of child psychology management.• Behaviour Management : Non-Pharmacological.• Child Abuse & Dental Neglect.• Conscious sedation, Pharmacological, Deep sedation & General anesthesia in pediatric Dentistry(Including Other Drugs, Synergic & Antagonistic Action Of Various Drugs Used In children)• Stage of Psychological child development, fear anxiety, apprehension & its.• Pharmacological Methods.
2.	Dental Caries : <ul style="list-style-type: none">• Historical background• Definition, Aetiology & Pathogenesis.• Caries pattern in primary, young permanent and permanent and extensive caries. Definition, Aetiology, pathogenesis, Clinical features Complication & Management.• Subjective & Objective methods of caries detections with emphasis on caries• Dietary Modifications & Diet Counseling.• Recent advances in the early diagnosis of dental caries.
3.	Preventive Pedodontics :
	<ul style="list-style-type: none">• Concept, chair side preventive measures for dental diseases, high-risk caries including rampant & extensive caries- Recognition, Features & preventive Management, Pit Fissures Sealants, Oral Hygiene measures, correlation of brushing with dental caries and periodontal disease.• Diet & Nutrition as related to dental caries Diet Counseling.
4.	Microbiology & Immunology as related to Old Disease in Children : <ul style="list-style-type: none">• Basic concepts, Immune system in human body, Auto Immune diseases.• Histopathology, Pathogenesis, Immunology of dental caries, Periodontal diseases, Tumors, Oral Mucosal Lesions etc.——
5.	Dental Material used in Pediatric Dentistry : <ul style="list-style-type: none">• Nano Technology• Recent advances in dental materials.• Chemo- mechanical caries removal.• Losses in Pediatric dentistry.——

6.	Pediatric Endodontics : <ul style="list-style-type: none"> • Primary Dentition: - Diagnosis of Pulpal diseases and their management – Pulp capping, pulpotomy, pulpectomy, (Materials & Methods), Controversies & recent concepts. • Young Permanent teeth and permanent teeth, pulp capping, Pulpotomy, Apexogenesis, Apexification, concepts, Techniques and materials used for different procedures • Prosthesis consideration in pediatric Dentistry. • Recent advances in pediatric diagnosis and Endodontics.
7.	Traumatic Injuries in Children : <ul style="list-style-type: none"> • Classification & Importance • Sequelae & reaction of teeth to trauma • Management of trauma. • Management of Traumatized teeth with latest concepts. • Management of Jaw fracture in children
8.	Space Maintenance : <ul style="list-style-type: none"> • Definition, Etiology • Classification. • Factors to be considered before giving a space maintainer. • Different space maintainers according to clinical situations. • Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits. • Management of oral habits in children • Space Analysis • Cephalometric
9.	Fluorides : <ul style="list-style-type: none"> • Historical background. • Systemic & topical fluorides. • Mechanism of action. • Toxicity & Management. • Defluoridation techniques.
10.	Management of handicapped child and management of patient with systemic condition : <ul style="list-style-type: none"> • Definition, Etiology & Classification , Behavioral ,clinical features, & Management of • Physically handicapping Conditions • Mentally compromising Conditions • Genetic disorders

11.	Hospital Dental Services for Children & the use of general Anesthesia : <ul style="list-style-type: none"> • Obtaining Hospital Staff Privileges • Indications for general anesthesia in the treatment of children • Psychologic effects of Hospitalization on children • Outpatient versus Inpatient surgery • Medical History and Physical Examination • Admission to the Hospital • Operating room Protocol • Properties of Inhalation General Anesthetics • Anesthetic Preperation of the child • Perioral cleaning, Draping, and Placement of Pharyngeal throat pack • Restorative dentistry in the Operating Room • Completion of the Procedure • Postanesthesia care unit • Postoperative care
12.	Growth of the Face & Dental Arches : <ul style="list-style-type: none"> • The Nature of Growth • Craniofacial Pattern • Growth and facial pattern • Growth and pattern of Occlusion • Growth and dental arch pattern • Summary
13.	Multi Disciplinary Team Approach to cleft lip & Palate Management : <ul style="list-style-type: none"> • Classification of Cleft Lip and Palate • Multidisciplinary cleft lip and palate team • General Responsibilities of team members • Multidisciplinary sequencing of treatment in clefts
14.	Cephalometrics & facial Esthetics : <ul style="list-style-type: none"> • Radiographic technique • Cephalometric tracing technique • Reference points for Lateral tracing • Reference Lines, Angles, And Planes • Interpretation of Measurements • Lateral cephalometric assessment • Frontal (Posteroanterior) cephalometric Assessment • Directions of Growth • Computerized cephalometric Diagnoses and treatment planning • Anteroposterior interarch discrepancies • Facial types • Vertical arch Discrepancies

	<ul style="list-style-type: none"> • Angle Classification of occlusion • Evaluation of facial Esthetics.
15.	Community Oral Health : <ul style="list-style-type: none"> • Children's oral Health & Dental care • The structure of dental public health in the United States and its role in children's oral health • Community oral health programs with an impact on children's oral health • Conclusions.

7. Periodontology - Dentistry

1. Recent developments in the field of molecular biology with respect to Periodontal Diagnosis
2. Current trends & concepts in classification of periodontal disease
3. Current concepts about genetics & periodontal disease
4. Recent understandings in Periodontal Medicine
5. Current Status of Local Drug Delivery
6. Current Concepts in Prescription of Anti Microbials for Periodontal Therapy
7. Advanced Radiographic Aids in the Periodontics.
8. Recent advances in Periodontal Flaps
9. Recent Advances in Regenerative Periodontal Therapy
10. Recent Advances in Periodontal Plastic Surgery
11. Recent Advances in Implant Site Management
12. Recent Advances in Implant Surgical Technique & Technology
13. Recent Advances in Laser Assisted Periodontal Procedures
14. Recent Advances in Stem Cell Therapy in Periodontics
15. Recent Advances in Gene Therapy

8. Prosthodontics - Dentistry

IMPRESSIONS techniques and materials:

- Digital impressions
- Touch scanners
- The Miratray® Implant Advanced Tray
- Accu-Dent trays
- The Massed Edentulous Impression Tray
- Pre-Impression Surface Optimizers
- Vinyl-polyether Hybrids

FIXED DENTAL PROSTHESIS:

- CAD-CAM IN FDP
- Titanium FDP
- Lumineers and conservative veneers
- Digital shade matching systems
- Advances in ceramics- Procera, In-Ceram Zirconia, Lava, or Everest systems including leucite, alumina, forsterite, zirconia, mica, hydroxyapatite, lithium disilicate, sandine, and spinel materials
- Advances in luting cements
- Contemporary concepts in resin bonded bridges
- Advances in post systems- Woven-Fibre Composite Materials / Polyethylene Fibre Materials, Chair Side Fabricated Post systems.

REMOVABLE PROSTHODONTICS:

- Titanium framework supported dentures including CAD-CAM frameworks
- NHC teeth

||

LASERS:

- Lasers in prosthodontics- hard and soft tissue lasers.

IMPLANT PROSTHODONTICS :

- **Investigative modalities-** CBCT, MRI, DEXA, ultra sound
- Three-dimensional imaging and computer-guided, dental-implant surgery
- Implant therapy using CAD-CAM technology- bar supported prosthesis eg. Cam StructSURE, 3i and Procera, Nobel Biocare
- Implant surface modifications
- Platform switching

- Immediate implant placement and loading concepts
- Advances in graft materials including Recombinant Human Bone Morphogenetic Protein 2
- Sinus lift procedures- direct and indirect
- Zygomatic implants with all on four concept
- Disk implants

MAXILLOFACIAL PROSTHODONTICS:

- Advances in biomaterials
- Advances in retention- implants in MFP
- Adhesives

ARTICULATORS:

- Digital articulators

9. Public Health Dentistry

1. Public Health

- Definition concepts and philosophy of dental health
- History of public health in and at international level
- Terminologies used in public health

2. HEALTH:

- Definition , concepts and philosophy of health
- Health indicators
- Community and its characteristics and relation to health

3. DISEASE:

- Definition, concepts
- Multifactorial causation, natural history, risk factors
- Disease control and eradication, evaluation and causation, infection of specific diseases
- Vaccines and immunization

4. GENERAL EPIDEMIOLOGY

- Definition and aims, general principles
- Multifactorial causation, natural history, risk factors

- Methods in epidemiology, descriptive analytical, experimental and classic epidemiology of specific diseases, uses of epidemiology
- Duties of epidemiologist
- General idea of method of investigating chronic diseases, mostly non – infectious nature, epidemic, endemic, and pandemic
- Ethical conversation in any study requirement
- New knowledge regarding ethical subjects
- Screening of diseases and standard procedures used

5. ENVIRONMENTAL HEALTH:

- Impact of important components of the environment of health
- Principles and methods of identification, evaluation and control of such health hazards
- Pollution of air, water soil, noise, food
- Water purification, international standards of water
- Domestic and industrial toxins, ionizing radiation
- Occupational hazards
- Waste disposal –various methods and sanitation

6. PUBLIC HEALTH EDUCATION:

- Definition, aims, principles of health education
- Health education, methods, models, contents ,planning health education programs

7. PUBLIC HEALTH PRACTICE AND ADMINISTRATION SYSTEM IN INDIA

8. ETHICS AND JURISPRUDENCE:

- Basic principles of law
- Contract laws- dentist –patient relationships & legal forms of practice
- Dental malpractice
- Person identification through dentistry
- Legal protection for practicing dentist
- Consumer protection act

9. NUTRITION IN PUBLIC HEALTH:

- Study of science of nutrition and its application to human problem
- Nutritional surveys and their evaluations
- Influence of nutrition and diet on general health and oral health, dental caries, periodontal disease and oral cancers
- Dietary constituents and carcinogenicity
- Guidelines for nutrition

10. BEHAVIORAL SCIENCES:

- Definition and introduction

- Sociology: social class, social group, family types, communities and social relationships, culture, its effect on oral health
- Psychology: definition, development of child psychology, anxiety, fear and phobia, intelligence, learning, motivation, personalities, fear, dentist- patient relationship modeling and experience.

11. HOSPITAL ADMINISTRATION:

- Departmental maintenance, organizational structures
- Types of practices
- Biomedical waste management

12. HEALTH CARE DELIVERY SYSTEM:

- International oral health care delivery systems- Review
- Central and state system in general and oral health care delivery system if any
- National and health policy
- National health programme
- Primary health care- concepts, oral health in PHC and its implications
- National and international health organizations
- Dentists Act 1928, dental council of India, ethics, Indian dental association
- Role of W.H.O. and Voluntary organizations in Health Care for the community

13. ORAL BIOLOGY AND GENETICS:

- A detailed study of cell structure
- Introduction to Genetics, Gene structure, DNA, RNA
- Genetic counseling, gene typing
- Genetic approaches in the study of oral disorders Genetic Engineering
– Answer to current health problems





(U/S 2(f) and 12B of the UGC Act 1956, NAAC Accredited)

DESH BHAGAT UNIVERSITY, MANDI GOBINDGARH

Faculty of Dental Sciences

Structure for Ph.D.

1. The Ph.D. Entrance Exam paper of 100 marks will be open to suitably qualified candidates.

2. The Ph.D. Entrance Exam Paper will consist of Two Parts

Part – A - Research Methodology (Common to All Faculties)

Part – B - Concerned Specialty (Faculty-wise)

3. The Ph.D. Entrance Exam Paper will consist of 50 multiple choice questions

(MCQs) out of which 20 MCQs will be based on syllabus of Research

Methodology and 30 MCQs will be based on syllabus of the concerned specialty

of the applicant. Each MCQ will be worth 2 marks and there will be no negative marking for a wrongly answered MCQ. Each MCQ will have four possible choices out of which correct choice will be indicated by the applicant to earn marks.

4. The time duration of the entrance examination will be one hour.

5. The syllabus for the entrance exam will be as under:

Part – A - Research Methodology:

An Introduction to Research Methodology, Defining the Research Problem,

Research Design, Sampling Design, Methods of Data Collection, Methods of

Investigation, Processing and Analysis of Data, Sampling Fundamentals, Testing

of Hypothesis, Interpretation and Report Writing, Role of Computer in Research

Part – B - Concerned Specialty

Syllabus for the concerned specialty of the applicant for the Ph.D. entrance

exam will be the same as detailed in the current Ordinances governing the

Post Graduate degree programmes of various faculties of Desh Bhagat

University Faculty of Dental Sciences, Mandi Gobindgarh

Course Code	Course	Duration	Theory (Max. Marks)		
			EXT	INT	Tot
MPhD-101	Research Methodology	3 hrs.	60	60	120
MPhD-159	Dental Science	3 hrs.	60	60	120
RPE	Research Publications and Ethics	3 hrs.	60	20	80
Total- 320					

