AMRITA VISHWA VIDYAPEETHAM | School of Dentistry

BACHELOR OF DENTAL SURGERY

(B.DEN.SUR)

(As per the regulations of the Dental Council of India)

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BACHELOR OF DENTAL SURGERY PROGRAMME – General Considerations

The dental graduates during training in the institutions should acquire adequate knowledge, necessary skills and reasonable attitudes which are required for carrying out all activities appropriate to general dental practice involving the prevention, diagnosis and treatment of anomalies and diseases of the teeth, mouth, jaws and associated tissues. The graduate also should understand the concept of community oral health education and be able to participate in the rural health care delivery programmes existing in the country.

The undergraduate course involves organisation of teaching programmes year-wise. However, this course, as a whole, should demonstrate integration of the basic sciences, clinical dentistry and practical or the laboratory skills. The course should be designed and integrated in such a way to permit smooth progression from pre-clinical to clinical phase. Collaboration should be encouraged between teachers of basic sciences, dental sciences and clinical subjects.

The undergraduate dental course consists of three main components. The first component consists of subjectscommon to medicine and dentistry like anatomy, physiology, biochemistry and behavioural science, leading to pharmacology, pathology, microbiology and then on to general medicine and general surgery. The second component runs concurrently with the first and deals with special aspects of oral and dental tissues, oral biology and oral pathology. Finally, the third component based on the foundations of the first two, deals with the clinical and technical aspects of dentistry as is required for general dental practice.

The undergraduate dental training programme leading to B.D.S. degree shall be of five years duration. During this period, the students shall be required to engage in full time study at a dental college recognized or approved by the Dental Council of India. During the five years undergraduate course, the instruction in clinical subjects should be at least for three years

PROGRAM OUTCOMES – Bachelor of Dental Surgery Program

The dental graduates during training in the institutions should acquire adequate knowledge, necessary skills and reasonable attitudes which are required for carrying out all activities appropriate to general dental practice involving the prevention, diagnosis and treatment of anomalies and diseases of the teeth, mouth, jaws and associated tissues. The graduate also should understand the concept of community oral health education and be able to participate in the rural health care delivery programmes existing in the country.

The Program Outcomes of the Bachelor or Dental Surgery are dealt under three headings:
(a) Knowledge and understanding
(b) skills and
(c) Attitudes.

(A) OUTCOMESRELATED TO AQUIRING KNOWLEDGE AND UNDERSTANDING:

The graduate should acquire the following during the period of training.

1. Adequate knowledge of the scientific foundations on which dentistry is based and good understanding of various relevant scientific methods, principles of biological functions and be able to evaluate and analyse scientifically various established facts and data.
2. Adequate knowledge of the development, structure and function of the teeth, mouth and jaws and associated tissues both in health and disease and their relationship and effect on general state of health and also bearing on physical and social well-being of the patient.
3. Adequate knowledge of clinical disciplines and methods which provide a coherent picture of anomalies, lesions and diseases of the teeth, mouth and jaws and preventive diagnostic and therapeutic aspects of dentistry.
4. Adequate clinical experience required for general dental practice.
5. Adequate knowledge of the constitution, biological function and behaviour of persons in health and sickness as well as the influence of the natural and social environment on the state of health in so far as it affects dentistry.

(B) OUTCOMES RELATED TO AQUIRING SKILLS:

A graduate should be able to master and demonstrate the following skills necessary for practice of dentistry, by the end of the programme.

1. Able to diagnose and manage various common dental problems encountered in general dental practice keeping in mind the expectations and the right of the society to receive the best possible treatment available wherever possible.
2. Acquire the skill to prevent and manage complications if encountered while carrying out various surgical and other procedures.
3. Possess skill to carry out certain investigative procedures and ability to interpret laboratory findings.
4. Promote oral health and help prevent oral diseases where possible.
5. Competent in the control of pain and anxiety among the patients during dental treatment.

(C) OUTCOMES RELATED TO AQUIRING THE RIGHT ATTITUDE:

A graduate should develop during the training period the following attitudes.

1. Willing to apply the current knowledge of dentistry in the best interest of the patients and the community.
2. Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life.
3. Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community.
4. Willingness to participate in the CPED Programmes to update the knowledge and professional skill from time to time.
5. To help and participate in the implementation of the national oral health policy.

PROGRAM SPECIFIC OUTCOMES – Bachelor of Dental Surgery Program

- The basic medical and dental sciences comprise anatomy gross and microscopic, physiology, biochemistry, pharmacology, oral biology and science of dental materials. Subjects like behavioural sciences, which is useful to develop communication skills, should also be introduced in the first year itself and spread over the undergraduate course. An introduction to Public Health Dentistry & Preventive Dentistry also will be useful to develop the concept of commitment to community. The laboratory skills to be developed by the students like pre-clinical Prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral Implantology exercises and studying dental morphology also is a part of initial training. The instruction in the above medical and dental sciences shall be for two years duration. At the end of this period the student should be in a position to understand and comprehend in general the development, structure and function of the human body in both health and disease.
- The instruction in basic dental sciences should include theoretical and practical aspects of oral anatomy and physiology, to provide a detailed knowledge of the form and structure of teeth associated tissues and occlusal relationships.
- The study should also aim at development of a concept regarding physiological and biochemical processes relevant to oral cavity for better understanding of the changes which occur with the onset of disease in the oral cavity.The student should be made aware of the importance of various dental tissues in forensic investigation.
- The students should be introduced to clinics in the initial stage, preferably in the first year, as an observer to familiarise with clinical set-up and working. The period of instruction in the clinical subjects shall be not less than three years full time. During this, the student shall attend a dental hospital, general hospital, community camps and satellite clinics, in order to obtain

instruction and experience in the practice of dentistry. The main objective of training in clinical dental subjects is to produce a graduate able and competent to recognize or diagnose various dental and oral diseases, to undertake general dental treatment, advise on the provision of specialized treatment available and finally advise the patient on prevention. The student should also understand the relationship between oral and systemic diseases.

- The General Medicine and Surgery training should provide sufficient knowledge on human disease to enable the student to understand its manifestations as relevant to the practice of dentistry. This requires clinical teaching on patients and shall be carried out in in-patient and outpatient medical departments and specialist clinics.
- This clinical instruction should enable the student to understand and perhaps diagnose common systemic diseases which have relevance to dental practice, by adopting a systematic approach of history taking and clinical examination. The student should also realize the significance of various general and special investigations in the diagnosis of diseases. The ability to recognize physical and mental illness, dealing with emergencies, effective communication with patients, interaction with various professional colleges also become important aspects of this training.During the three years clinical course, the students should receive thorough instruction which involves history taking, diagnosis and treatment planning in all aspects of dentistry and should be competent on graduation to carry out all routine general procedures.
- In Oral & Maxillofacial Surgery and Oral Implantology, instruction should include the knowledge of various maxillofacial problems like injuries, infections and deformities of the jaws and associated structures. The clinical experience should include those procedures commonly undertaken in general practice like extraction of teeth, minor oral surgical procedure etc.
- In Conservative, Endodontics & Aesthetic Dentistry, Prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral Implantology and Periodontology and Oral Implantology students should be competent on graduation to carry out routine treatment like restorations of various kinds, endodontic

procedures, removable and fixed prosthodontics, concept of osseointegration and finally various kinds of periodontal therapy. In addition, students should be aware of their limitations on graduation, need to refer patients for consultant opinion and/or treatment and also the need for postgraduate and continuous education programmes.

- In Orthodontics & Dento Facial Orthopedics, students should carry out simple appliance therapy for patients. Students should also be able to appreciate the role of dentofacial growth in the development and treatment of malocclusion.
- In Paediatric Dentistry, the students should concentrate on clinical management, efficacy of preventive measures, treatment needs particularly for children with disabilities. In Oral Medicine and oral diagnosis, the student should receive instruction in various lesions, occurring in the oral cavity with particular reference to oral cancer.
- All students should receive instructions and gain practical experience in taking processing and interpretation of various types of intra and extra oral radiographs. They should be aware of the hazards of radiation and proper protective measures from radiation for the patient, operator and other staff.
- Instruction should be given in dental jurisprudence, legal and ethical obligations of dental practitioners and the constitution and functions of Dental Council of India.
- Infection and cross infection control assume significance in dental practice. The students should be made aware of the potential risk of transmission in the dental surgery, various infectious diseases particularly HIV and hepatitis. The students should be aware of their professional responsibility for the protection of the patients, themselves and their staff and the requirements of the health and safety regulations.
- In the recent times, the subjects of esthetic dentistry, oral implantology, behavioural sciences and forensic odontology have assumed great significance. Hence, the Council recommends that these four specialities should be incorporated into the undergraduate curriculum. The instruction and clinical training in aesthetic dentistry shall be carried out by the departments of Conservative, Endodontics & Aesthetic Dentistry and prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral

Implantology. Similarly, the instruction and clinical training in oral implantology shall be done by the departments of Oral & Maxillofacial Surgery, Prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral Implantology and Periodontology and Oral Implantology

CURRICULUM STRUCTURE - YEARWISE

Courses	Course Code	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Human Anatomy Including Embryology, Osteology and Histology	D1AEH	110	180	NA	290
General Human Physiology	D1PCB	120	60	NA	180
Biochemistry.	D1PCB	70	60	NA	130
Dental Anatomy Embryology, and Oral Histology	D1HOA	105	250	NA	355
Dental Materials (Part of Dental Materials Course of Second Year)	D1DMT	20	40	NA	60
Pre clinical Prosthodontics & Crown & Bridge (Part of Prosthodontics Course of Final Year)	D4PRO	-	100	NA	100
Total		**415**	**685**	NA	**1100**

FIRST YEAR – BDS PROGRAM: Teaching Hours

SECOND YEAR – BDS PROGRAM: Teaching Hours

Subject	Course Code	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General & Dental Pharmacology and therapeutics	D1GDP	70	20	NA	90
General Pathology	D1GPM	55	55	NA	110
Microbiology	D1GPM	65	50	NA	115
Dental Materials	D1DMT	60	200	NA	260
Oral Pathology and Oral Microbiology (Part of Third Year Oral Pathology)	D3OPT	25	50	NA	75

Pre Clinical Prosthodontics & Crown & Bridge (Part of Final year Prosthodontics)	D4PRO	25	200	NA	225
Pre Clinical Conservative Dentistry (Part of Final Year Conservative Dentistry)	D4CON	25	200	NA	225
Total		**325**	**775**	NA	**1100**

THIRD YEAR BDS PROGRAM: Teaching Hours

Subject		**Lecture Hours**	**Practical Hours**	**Clinical Hours**	**Total Hours**
General Medicine	D3GMD	60	NA	90	150
General Surgery	D3GSR	60	NA	90	150
Oral Pathology and Oral Microbiology	D3OPT	120	80		200
Oral Medicine and Radiology	D4OMR	20	NA	70	90
Paediatric and Preventive Dentistry	D4PED	20	NA	70	90
Orthodontics & Dentofacial Orthopaedics	D4ORT	20	NA	70	90
Periodontology	D4PER	30	NA	70	100
Oral & Maxillofacial Surgery.	D4OMF	20	NA	70	90
Conservative Dentistry & Endodontics.	D4CON	30	NA	70	100
Prosthodontics and Crown & Bridge	D4PRO	30	NA	70	100
Total		**410**	NA	**750**	**1160**

FINAL YEAR BDS PROGRAM: Teaching Hours

Subject		**Lecture Hours**	**Practical Hours**	**Clinical Hours**	**Total Hours**
Oral Medicine and Radiology	D4OMR	45	NA	130	175
Paediatric and Preventive Dentistry	D4PED	45	NA	130	175
Orthodontics & Dentofacial Orthopaedics	D4ORT	30	NA	130	160
Periodontology	D4PER	50	NA	130	180

Oral & Maxillofacial Surgery.	D4OMF	20	NA	90	110
Conservative Dentistry & Endodontics.	D4CON	30	NA	90	120
Prosthodontics and Crown & Bridge	D4PRO	30	NA	90	120
Public Health Dentistry	D4PHD	30	NA	90	120
Total		**280**	NA	**880**	**1160**

EVALUATION SCHEME AND GRADING SYSTEM

Evaluation is achieved by two processes

1. Formative or internal assessment
2. Summative or University examinations.

Formative evaluation is done through a series of tests and examinations conducted periodically by the Institution.

Summative evaluation is done by the University through examination conducted at the end of the specified course period.

II. METHODS OF EVALUATION:

Evaluation may be achieved by the following methods:

1. Written test
2. Practical Examination
3. Clinical examination
4. Viva voce

INTERNAL ASSESSMENT EXAMINATION

The continuing assessment examinations may be held frequently at least ***3*** times in a particular year and the average marks of best two of these examinations should be considered. 10% of the total marks in each subject for both theory, practical and clinical examination separately should be set aside for the internal assessment examinations.

SCHEME OF EXAMINATION:

The scheme of examination for B.D.S. Course shall be divided into 1st B.D.S. examination at the end of the first academic year, 2nd B.D.S. examination at the end of second year, 3rd B.D.S. examination at the end of third, 4th BDS at the end of 4th year. 240 days minimum teaching in each academic year is mandatory.

The examination shall be open to a candidate who satisfies the requirements of attendance, progress and other rules laid down by the University.

I B.D.S. Examination:

1. General anatomy including embryology and histology
2. General human physiology and biochemistry
3. Dental Anatomy, Embryology and Oral Histology

   Starting the Academic Year 2018-2019, the Practical and Viva-voce examinations in General Human Physiology and Biochemistry would be conducted on two separate, but consecutive days, in the presence of one Internal and one External Examiner for both the days.

   Any student, who does not clear the first BDS University Examination in all subjects within 3 years from the date of admission, shall be discharged from the Course.

Any candidate who fails in one subject in an Examination is permitted to go to the next higher class and appear for the subject and complete it successfully before he is permitted to appear for the next higher examination.

II B.D.S. Examination:

A candidate who has successfully completed the I B.D.S. examination and has undergone one year of II year BDS training fulfilling all academic requirements, can appear in the II year University Examination.

1. General pathology and Microbiology

2. General and dental pharmacology and therapeutics
3. Dental Materials
4. Pre Clinical Conservative – Only Practical and Viva Voce
5. Pre Clinical Orthodontics _ Only Practical and Viva Voce
6. Pre Clinical Prosthodontics – Only Practical and Viva Voce

To enter the Third year of BDS program, a candidate has to secure a pass in ALL the courses of II year BDS University Examinations. Failure to secure a pass in a II year Course will lead to detaining of the candidate until a pass is secured in the failed courses in the subsequent supplementary Examinations conducted by the University.

III B.D.S. Examination:

A candidate who has successfully completed the II B.D.S. examination and has undergone one year of III year BDS training fulfilling all academic requirements, can appear in the III year University Examination

1. General Medicine
2. General Surgery
3. Oral Pathology and Oral Microbiology

A candidate may carry one failed subject out of the above three, to the Final year, and secure a pass in that subject before the Final Year Regular University Examinations

IV B.D.S. Examination:

1. Oral Medicine and Radiology
2. Public Health Dentistry
3. Orthodontics & Dentofacial Orthopaedics
4. Periodontology
5. Paediatric & Preventive Dentistry
6. Conservative Dentistry and Endodontics
7. Oral and Maxillofacial Surgery
8. Prosthodontics and Crown & Bridge

WRITTEN EXAMINATION:

1. The written examination in each subject shall consist of one paper of three hours duration and shall have maximum marks of 70.
2. In the subjects of Physiology & Biochemistry and Pathology & Microbiology each paper will be divided into two parts, A and B of equal marks.
3. The question paper should contain different types of questions like essay, short answer and objective type / M.C.Q's.
4. The nature of questions set, should be aimed to evaluate students of different standards ranging from average to excellent.
5. The questions should cover as broad an area of the content of the course. The essay questions should be properly structured and the marks specifically allotted.

PRACTICAL AND CLINICAL EXAMINATION:

1. **Objective Structured Clinical Evaluation:**. The clinical and practical examination should provide a number of chances for the candidate to express one's skills. A number of examination stations with specific instructions to be provided. This can include clinical procedures, laboratory experiments, spotters etc. Evaluation must be made objective and structured. The method of objective structured clinical examinations should be followed. This will avoid examiner bias because both the examiner and the examinee are given specific instructions on what is to be observed at each station.

2. **Records/ Log Books:**The candidate should be given credit for records based on the scores obtained in the record. The marks obtained for the record in the first appearance can be carried over to the subsequent appearances if necessary.

3. **Scheme of clinical and practical examinations:** The specific scheme of clinical and practical examinations, the type of clinical procedures/ experiments to be performed and marks allotted for each are to be discussed and finalized by the Chairman and other examiners and it is to be published prior to the conduct of the examinations along with the

publication of the time table for the practical examinations. This scheme should be brought to the notice of the external examiner as and when the examiner reports. The practical and clinical examinations should be evaluated by two examiners of which one shall be an external examiner appointed from other universities preferably outside the State. Each candidate should be evaluated by each examiner independently and marks computed at the end of the examination.

4. **Viva Voce:**Viva voce is an excellent mode of assessment because it permits a fairly broad coverage and it can assess the problem solving capacity of the student. An assessment related to the affective domain is also possible through viva voce. It is desirable to conduct the viva voce independently by each examiner. In order to avoid vagueness and to maintain uniformity of standard and coverage, questions can be pre-formulated before administering them to each student. Twenty marks are exclusively allotted for viva voce and that can be divided equally amongst the examiners, i.e., 10 marks per examiner.

MARKS DISTRIBUTION IN EACH SUBJECT:

Each Course/ Subject shall have a maximum of 200 marks for the University Examination, the distribution of which shall be as follows:

Theory Written Examination	70
Theory Internal Marks	10
Viva Voce	20
THEORY TOTAL	**100**
Practical / Clinical Examination	90
Practical / Clinical Internal Marks	10
PRACTICAL / CLINICAL TOTAL	**100**
GRAND TOTAL FOR EACH COURSE	200

For Preclinical Prosthodontics, Conservative Dentistry & Orthodontics Examinations in II year BDS, the distribution of Marks shall be as follows:

Practical Examination	60
Practical Internal Marks	20
Viva Voce	20
Grand Total	**100**

Criteria for a pass:

Fifty percent of the total marks in any subject computed as aggregate for theory, i.e., written, viva voce and internal assessment and practicals including internal assessment, separately is essential for a pass in all years of study.

For declaration of pass in a subject, a candidate shall secure 50% marks in the University examination both in Theory and Practical/ Clinical examinations separately, as stipulated below:

- A candidate shall secure 50% marks in aggregate in University theory including Viva Voce and Internal assessment obtained in University written examination combined together.
- In the University Practical/ clinical examination, a candidate shall secure 50% of University practical marks and Internal Assessment combined together.
- In case of Pre clinical Orthodontics, Pre clinical Prosthodontics and Pre clinical Conservative Dentistry in II BDS, where there is no written examination, minimum for pass is 50% of marks in Practical and Viva voce combined together in University examination including Internal Assessment i.e. 50/100 marks.
- Successful candidates who obtain 65% of the total marks or more shall be declared to have passed the examination in First Class. Other successful candidates will be placed in Second Class. A candidate who obtains 75% and above is eligible for Distinction. Only those candidates who pass the whole examination in the first attempt will be eligible for distinction or class.
- First Class and Distinction etc. to be awarded by the University as per their respective rules.

COURSE DETAILS OF BDS PROGRAM: YEAR WISE

First Year BDS:
HUMAN ANATOMY, EMBRYOLOGY, HISTOLOGY & MEDICAL GENETICS
Course Code: D1AEH

The students should gain the knowledge and insight into, the functional anatomy of the normal human head and neck, functional histology and an appreciation of the genetic basis of inheritance and disease, and the embryological development of clinically important structures. So that relevant anatomical & scientific foundations are laid down for the clinical years of the BDS course.

COURSE OUTCOMES:

a) KNOWLEDGE & UNDERSTANDING:

At the end of the 1st year BDS course in Anatomical Sciences the undergraduate student is expected to:

1. Know the normal disposition of the structures in the body while clinically examining a patient and while conducting clinical procedures.
2. Know the anatomical basis of disease and injury.
3. Know the microscopic structure of the various tissues, a pre-requisite for understanding of the disease processes.
4. Know the nervous system to locate the site of lesions according to the sensory and or motor deficits encountered.
5. Have an idea about the basis of abnormal development, critical stages of development, effects of teratogens, genetic mutations and environmental hazards.
6. Know the sectional anatomy of head neck and brain to read the features in radiographs and pictures taken by modern imaging techniques.

7. Know the anatomy of cardio-pulmonary resuscitation.

b) SKILLS

1. To locate various structures of the body and to mark the topography of the living anatomy.
2. To identify various tissues under microscope.
3. To identify the features in radiographs and modern imaging techniques.
4. To detect various congenital abnormalities.

C) INTEGRATION

By emphasising on the relevant information and avoiding unwanted details, the anatomy taught integrally with other basic sciences & clinical subjects not only keeps the curiosity alive in the learner but also lays down the scientific foundation for making a better doctor, a benefit to the society.

The above outcomesmay be gained in a variety of ways:

1) Lectures & small group teaching
2) Demonstrations
3) Dissection of the human cadaver
4) Study of dissected specimens
5) Osteology
6) Surface anatomy on living individual
7) Study of radiographs & other modern imaging techniques.
8) Study of Histology slides.
9) Study of embryology models
10) Audio-visual aids

Throughout the course, particular emphasis is placed on the functional correlation, clinical application & on integration with teaching in other bio dental disciplines.

AN OUTLINE OF THE COURSE CONTENT:

1. General anatomy: Introduction of anatomical terms and brief outline of various systems of the body.
2. Regional anatomy of head & neck with osteology of bones of head & neck, with emphasis on topics of dental importance.
3. General disposition of thoracic, abdominal & pelvic organs.
4. The regional anatomy of the sites of intramuscular & intra vascular injections, & lumbar puncture.

5. General embryology & systemic embryology with respect to development of head & neck.
6. Histology of basic tissues and of the organs of gastroinstenstinal, respiratory, Endocrine, excretory systems & gonads.
7. Medical genetics.

Details of the Course Syllabus:

I.INTRODUCTION TO :

1. Anatomical terms.

2. Skin, superficial fascia & deep fascia

3. Cardiovascular system, portal system collateral circulation and arteries.

4. Lymphatic system, regional lymph nodes

5. Osteology - Including ossification & growth of bones

6. Myology – Including types of muscle tissue & innervation.

7. Syndesmology – Including classification of Joints.

8. Nervous system

II. HEAD & NECK:

01. Scalp, face & temple, lacrimal apparatus 02. Neck - Deep fascia of neck, posterior triangle, suboccipital triangle, anterior triangle, anterior median region of the neck, deep structures in the neck. 03.Cranial cavity - Meninges, parts of brain, ventricles of brain, dural venous sinuses, cranial nerves attached to the brain, pituitary gland. 04. Cranial nerves - III, IV, V, VI, VII, IX,XII in detail. 05. Orbital cavity – Muscles of the eye ball, supports of the eye ball, nerves and vessels in the orbit. 06. Parotid gland. 07. Temporo mandibular joint, muscles of mastication, infratemporal fossa, pterygo - palatine fossa. 08. Submandibular region 09. Walls of the nasal cavity, paranasal air sinuses 10. Palate 11. Oral cavity, Tongue 12. Pharynx (palatine tonsil and the auditory tube) Larynx. OSTEOLOGY – Foetal skull, adult skull, individual bones of the skull, hyoid bone and cervical vertebrae, 13. Human Brain: Anatomy, relations, histology and functions, the cranial nerves and the spinal cord.

* Cerebrum including sulci, gyri and functional areas

* Cerebellum

* Brainstem in detail, including sections at various levels and details of the cranial nerve nuclei.

The above topics to be allotted 10 extra theory hours and Dissection of human brain to be demonstratedduring the dissection laboratories through 5 extra hours apart from the existing teaching hours in the course.

III.THORAX : Demonstration on a dissected specimen of

1 Thoracic wall
2 Heart chambers
3 Coronary arteries
4 Pericardium
5 Lungs – surfaces ; pleural cavity
6 Diaphragm

IV. ABDOMEN : Demonstration on a dissected specimen of

1. Peritoneal cavity

2. Organs in the abdominal & pelvic cavity.

V. CLINICAL PROCEDURES :

a) Intramuscular injections: Demonstration on a dissected specimen and on a living person of the following sites of injection.
   1. Deltoid muscle and its relation to the axillary nerve and radial nerve.

   2. Gluteal region and the relation of the sciatic nerve.

   3. Vastus lateralis muscle.

b) Intravenous injections & venesection: Demonstration of veins in the dissected specimen and on a living person.

VI. EMBRYOLOGY :

Oogenesis, Spermatogenesis, Fertilisation, Placenta, Primitive streak, Neural crest, Bilaminar and trilaminar embryonic disc, Intra embryonic mesoderm - formation and fate, notochord formation & fate, Pharyngeal arches, pouches & clefts, Development of face, tongue, palate, thyroid gland, pituitary gland, salivary glands, and anomalies in their development, Tooth development in brief.

VII. HISTOLOGY :

The Cell:Basic tissues - Epithelium, Connective tissue including cartilage and bone, Muscle Tissue, Nervous tissue : Peripheral nerve, optic nerve, sensory ganglion, motor ganglion, Skin

Classification of Glands

Salivary glands (serous, mucous and mixed gland), Blood vessels, Lymphoid tissue Tooth, lip, tongue, hard palate, oesphagus, stomach, ,duodenum ,ileum, colon, vermiform appendix Liver, Pancreas, Lung, Trachea ,Epiglottis, Thyroid gland , para thyroid gland , supra renal gland and pituitary gland, Kidney, Ureter, Urninary bladder, Ovary and testis.

VIII. MEDICAL GENETICS :

Mitosis, meiosis, Chromosomes, gene structure, Mendelism, modes of inheritance

First Year BDS:
HUMAN PHYSIOLOGY

Course Code: D1PCB

The broad goal of the teaching undergraduate students in Human Physiology aims at providing the student comprehensive knowledge of the normal functions of the organ systems of the body to facilitate an understanding of the physiological basis of health and disease.

COURSE OUTCOME

a) KNOWLEDGE

At the end of the course, the student shall be able to:

1. Explain the normal functioning of all the organ systems and their interactions for well co-ordinated and total body function.
2. Assess the relative contribution of each organ system towards the maintenance of the milieu interior.
3. List the physiological principles underlying the pathogenesis and treatment of disease.

b) SKILLS

At the end of the course, the student shall be able to :

1. Conduct experiments designed for the study of physiological phenomena.
2. Interprete experimental and investigative data
3. Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

c) INTEGRATION

At the end of the integrated teaching the student shall acquire an integrated knowledge of organ structure and function and its regulatory mechanisms.

COURSE SYLLABUS

1. General Physiology

Homeostasis: Basic concept, Feed back mechanisms
Structure of cell membrane, transport across cell membrane
Membrane potentials

2. BLOOD:

Composition & functions of blood.
Specific gravity, Packed cell volume, factors affecting & methods of determination.
Plasma proteins - Types, concentration, functions & variations.
Erythrocyte - Morphology, functions & variations. Erythropoiesis & factors affecting erythropoiesis.
ESR- Methods of estimation, factors affecting, variations & significance.
Haemoglobin - Normal concentration, method of determination & variation in concentration.
Blood Indices - MCV, MCH, MCHC - definition, normal values, variation.
Anaemia - Definition, classification, life span of RBC's destruction of RBC's , formation & fate of bile pigments, Jaundice - types.
Leucocytes : Classification, number, percentage, distribution morphology, properties, functions & variation. Role of lymphocytes in immunity , leucopoiesis life span & fate of leucocytes.
Thromobocytes - Morphology, , number, variations, function & thrombopoiesis.

Haemostatsis - Role of vasoconstriction, platelet plug formation in haemostasis, coagulation factors, intrinsic & extrinsic pathways of coagulation, clot retraction.

Tests of haemostatic function, platelet count, clotting time, bleeding time, prothrombin time - normal values, method & variations. Anticoagulants - mechanism of action. Bleeding disorders.

Blood groups: ABO & Rh system, method of determination, importance,indications & dangers of blood transfusion, blood substitutes.

Blood volume: Normal values, variations.

Body fluids : distribution of total body water, intracellular & extracellular compartments, major anions & cations in intra and extra cellular fluid.

Tissue fluids & lymph : Formation of tissue fluid, composition, circulation & functions of lymph. Oedema - causes.

Functions of reticulo-endothelial system.

3. MUSCLE AND NERVE

Classification of nerves, structure of skeletal muscle - Molecular mechanism of muscle contraction, neuromuscular transmission. Properties of skeletal muscle. Structure and properties of cardiac muscle & smooth muscle.

4. DIGESTIVE SYSTEM :

Introduction to digestion : General structure of G.I. tract, Innervation.

Salivary glands: Structure of salivary glands, composition , regulation of secretion & functions of saliva.

Stomach: Composition and functions of gastric juice, mechanism and regulation of gastric secretion.

Exocrine Pancreas - Structure, composition of pancreatic juice, functions of each component, regulation of pancreatic secretion.

Liver : structure , composition of bile, functions of bile, regulation of secretion –

Gall bladder : structure, functions.

Small intestine - Composition, functions & regulation of secretion of intestinal juice.

Large intestine - Functions.

Motor functions of GIT: Mastication, deglutition, gastric filling & emptying, movements of small and large intestine, defecation.

5. EXCRETORY SYSTEM :

Structure & functions of kidney, functional unit of kidney & functions of different parts.
Juxta glomerular apparatus, renal blood flow.
Formation of Urine : Glomerular filteration rate - definition, determination , normal values, factors influencing G.F.R. Tubular reabsorption - Reabsorption of sodium, glucose, water & other substances. Tubular secretion - secretion of urea, hydrogen and other substances.
Mechanism of concentration & dilution of urine.
Role of kidney in the regulation of pH of the blood.
Micturition : anatomy & innervation of Urinary bladder, mechanism of miturition & abonrmalities.

6. BODY TEMPERATURE & FUNCTIONS OF SKIN

7. ENDOCRINOLOGY

General endocrinology - Enumeration of endocrine glands & hormones - General functions of endocrine system, chemistry, mechanism of secretion, transport, metabolism, regulation of secretion of hormones.
Hormones of anterior pituitary & their actions, hypothamic regulation of anterior pituitary function. Disorders of secretion of anterior pituitary hormones.
Posterior pituitary : Functions, regulation & disorders of secretion.
Thyroid: Histology, synthesis, secretion & transport of hormones, actions of hormones, regulation of secretion & disorders, Thyroid function tests.
Adrenal cortex & Medulla -synthesis, secretion, action, metabolism, regulation of secretion of hormones & disorders.
Other hormones - Angiotensin, A.N.F.

8. REPRODUCTION

Sex differentiation, Physiological anatomy of male and female sex organs,
Female reproductive system : Menstrual cycle, functions of ovary, actions of oestrogen & Progesterone, control of secretion of ovarian hormones, tests for ovulation, fertilisation, implantation, maternal changes during pregnancy, pregnancy tests & parturition.

Lactation, composition of milk, factors controlling lactation, milk ejection, reflex, Male reproductive system :spermatogenesis, semen and contraception.

9. CARDIO VASCULAR SYSTEM

Functional anatomy and innervation of heart Properties of cardiac muscle
Origin & propagation of cardiac impulse and heart block.
Electrocardiogram - Normal electrocardiogram. Two changes in ECG in myocardial infarction.
Cardiac cycle - Phases, Pressure changes in atria, ventricles & aorta.
Volume changes in ventricles. Jugular venous pulse, arterial pulse.
Heart sounds: Mention of murmurs.
Heart rate: Normal value, variation & regulation.
Cardiac output: Definition, normal values, one method of determination, variation, factors affecting heart rate and stroke volume.
Arterial blood pressure: Definition, normal values & variations,determinants, regulation & measurement of blood pressure.
Coronary circulation.
Cardio vascular homeostasis - Exercise & posture.

10. RESPIRATORY SYSTEM

Physiology of Respiration : External & internal respiration.
Functional anatomy of respiratory passage & lungs.
Respiratory movements: Muscles of respiration, Mechanism of inflation & deflation of lungs.
Intra pleural & intra pulmonary pressures & their changes during the phases of respiration.
Mechanics of breathing - surfactant, compliance & work of breathing.
Spirometry: Lung volumes & capacities definition, normal values, significance, factors affecting vital capacity, variations in vital capacity, FEV & its variations.
Pulmonary ventilation - alveolar ventilation & dead space – ventilation.
Composition of inspired air, alveolar air and expired air.
Exchange of gases: Diffusing capacity, factors affecting it.
Transport of Oxygen & carbon dioxide in the blood.
Regulation of respiration – neural & chemical.
Hypoxia, cyanosis, dyspnoea, periodic breathing.

Artificial respiration, pulmonary function tests.

11. CENTRAL NERVOUS SYSTEM

1. Organisation of central nervous system
2. Neuronal organisation at spinal cord level
3. Synapse receptors, reflexes, sensations and tracts
4. Physiology of pain
5. Functions of cerebellum, thalamus, hypothalamus and cerebral cortex.
6. Formation and functions of CSF
7. Autonomic nervous system

12. SPECIAL SENSES

Fundamental knowledge of vision, hearing, taste and smell.

First Year BDS: BIOCHEMISTRY

Course Code: D1PCB

The major aim is to provide a sound but crisp knowledge on the biochemical basis of the life processes relevant to the human system and to dental/medical practice. The contents should be organised to build on the already existing information available to the students in the pre-university stage and reorienting. A mere rehash should be avoided.

COURSE OUTCOMES:

At the end of the course the student would be able to acquire a useful core of information, which can be retained for a long time. The student:

Should know why amylase will not hydrolyse cellulose.
Should know why haemoglobin is globular and keratin is fibrous.
Should know more than 90 % of ATP is formed by this process.

Should know hydrochloric acid cannot break a peptide bond at room temperature.

Should know that excess intake of carbohydrate will not increase glycogen level in liver or muscle.

Should know the basis of increase of urea and creatinine in blood in renal insufficiency.

Should know why insulin level in circulation is normal in most cases of maturity onset diabetes.

Should know why about 10 g of ATP in the body at any given time meets all the energy needs.

Should know why the gum bleeds in scurvy.

Should know the basis of internal bleeding arising due to its deficiency.

Should know why it does not lead to increased cholesterol synthesis in starvation.

COURSE SYLLABUS & CONTENT

1. CHEMISTRY OF BIOORGANIC MOLECULES

Carbohydrates: Definition, biological importance and classification. Monosaccharides - Isomerism, anomerism. Sugar derivatives, Disaccharides. Polysaccharides. Structures of starch and glycogen.
Lipids : Definition, biological importance and classification. Fats and fatty acids. Introduction to compound lipids. Hydrophobic and hydrophilic groups. Cholesterol. Bile salts. Micelle. Bimolecular leaflet.
Proteins: Biological importance. Aminoacids: Classification. Introduction to peptides. Proteins : Simple and conjugated; globular and fibrous. Charge properties. Buffer action . Introduction to protein conformation . Denaturation.
Nucleic acids: Building units . Nucleotides. Outline structure of DNA and RNA.
High energy compounds: ATP , Phosphorylamidines, Thiolesters, Enol phosphates.

2. MACRONUTERIENTS AND DIGESTION

Energy needs: Basal metabolic rate. Dietary carbohydrates, fibres. Dietary lipids, essential fatty acids. Nitrogen balance. Essential amino acids. Protein quality and requirement (methods for evaluation of protein quality to be excluded). Protein calorie malnutrition. Balanced diet.Enzymatic hydrolysis of dietary carbohydrates. Mechanism of uptake of monosaccharides. Digestion and absorption of triacylglycerols. Enzymatic hydrolysis of dietary proteins and uptake of amino acids.

3. MICRONUTRIENTS

Vitamins: Definition, classification, daily requirement, sources and deficiency symptoms. Brief account of water-soluble vitamins with biochemical functions. Vitamins A functions including visual process. Vitamin D and its role in calcium metabolism. Vitamin E. Vitamin K and gamma carboxylation. Introduction to antivitamins and hypervitaminosis.Minerals :Classification, daily requirement. Calcium and phosphate: sources, uptake, excretion, function. Serum calcium regulation. Iron: sources, uptake and transport.Heme and nonheme iron functions; deficiency. Iodine: Brief introduction to thyroxine synthesis. General functions of thyroxine. Fluoride: function, deficiency and excess. Indications of role of other minerals.

4. ENERGY METABOLISM

Overview: Outlines of glycolysis, pyruvate oxidation and citric acid cycle. Beta oxidation of fatty acids. Electron transport chain and oxidative phosphyorylation. Ketone body formation and utilisation. Introduction to glycogenesis, glycogenolysis, fatty acid synthesis, lipogenesis and lipolysis. Gluconeogenesis. Lactate metabolism . Protein utilisation for energy. Glucogenic and ketogenic amino acids. Integration of metabolism.

5. SPECIAL ASPECTS OF METABOLISM

Importance of pentose phosphate pathway. Formation of glucuronic acid. Outlines of cholesterol synthesis and breakdown. Ammonia metabolism. Urea formation. Phosphocreatine formation. Transmethylation. Amines. Introduction to other functions of amino acids including one carbon transfer. Detoxication : Typical reactions. Examples of toxic compounds. Oxygen toxicity

6. BIOCHEMICAL GENETICS AND PROTEIN SYNTHESIS

Introduction to nucleotides; formation and degradation. DNA as genetic material. Introduction to replication and transcription. Forms and functions of RNA. Genetic code and mutation. Outline of translation process. Antimetabolites and antibiotics interfering in replication, transcription and translation. Introduction to cancer, viruses and oncogenes.

7. ENZYME AND METABOLIC REGULATION

Enzymes: Definition, classification, specificity and active site. Cofactors. Effect of pH, temperature and substrate concentration. Introduction to enzyme inhibitors, proenzymes and isoenzymes. Introduction to allosteric regulation, covalent modification and regulation by induction/repression.

Overview of hormones. Introduction to second messengers, cyclic AMP, calcium ion, inositol triphosphate. Mechanism of action of steroid hormones, epinephrine, glucagon and insulin in brief. Acid base regulation. Electrolyte balance.

8. STRUCTURAL COMPONENTS AND BLOOD PROTEINS

Connective tissue: Collagen and elastin. Glycosaminoglycans. Bone structure. Structure of membranes. Membrane associated processes in brief. Exocytosis and endocytosis. Introduction to cytoskeleton. Myofibril and muscle contraction in brief.Haemoglobin: functions. Introduction to heme synthesis and degradation. Plasma proteins: classification and separation. Functions of albumin. A brief account of immunoglobulins. Plasma lipoproteins: Formation, function and turnover.

9. MEDICAL BIOCHEMISTRY

Regulation of blood glucose. Diabetes mellitus and related disorders. Evaluation of glycemic status. Hyperthyroidism and hypothyroidism: Biochemical evaluation. Hyperlipoproteinemias and atherosclerosis, Approaches to treatment. Jaundice: Classification and evaluation. Liver function tests: Plasma protein pattern, serum enzymes levels. Brief introduction to kidney function tests and gastric function tests. Acid base imbalance. Electrolyte imbalance: evaluation. Gout. Examples of genetic disorders including lysosomal storage disorders, glycogen storage disorders, glucose 6- phosphate dehydrogenase deficiency, hemoglobinopathies, inborn errors of amino acid metabolism and muscular dystrophy (one or two examples with biochemical basis will be adequate). Serum enzymes in diagnosis.

First Year BDS: **DENTAL ANATOMY, EMBRYOLOGY AND ORAL HISTOLOGY**

Course Code: D1PCB

COURSE OUTCOMES:

After a course on Dental Anatomy including Embryology and Oral Histology,

1. The student shall know the normal development, morphology, structure & functions of oral tissues & variations in different pathological/non-pathological states.
2. The student should understand the histological basis of various dental treatment procedures and physiologic ageing process in the dental tissues.
3. The students must know the basic knowledge of various research methodologies.

4. The student should acquire basic skills in:
   - Carving of crowns of permanent teeth in wax.
   - Microscopic study of Oral tissues.
   - Identification of Deciduous & Permanent teeth.
   - Age estimation by patterns of teeth eruption from plaster casts of different age groups.

COURSE SYLLABUS & CONTENT

I. TOOTH MORPHOLOGY

1. Introduction to tooth morphology:
   Human dentition, types of teeth, & functions, Palmer's & Binomial notation systems, tooth surfaces, their junctions - line angles & point angles, definition of terms used in dental morphology, geometric concepts in tooth morphology, contact areas & embrasures - Clinical significance.
2. Morphology of permanent teeth :
   Description of individual teeth, along with their endodontic anatomy & including a note on their chronology of development, differences between similar class of teeth & identification of individual teeth.
   Variations & Anomalies commonly seen in individual teeth.
3. Morphology of Deciduous teeth :
   Generalized differences between Deciduous & Permanent teeth.
   Description of individual deciduous teeth, including their chronology of development, endodontic anatomy, differences between similar class of teeth & identification of individual teeth.
4. Occlusion :

Definition, factors influencing occlusion - basal bone, arch, individual teeth, external & internal forces & sequence of eruption.

Inclination of individual teeth - compensatory curves.

Centric relation & Centric occlusion - protrusive, retrusive & lateral occlusion.

Clinical significance of normal occlusion.

Introduction to & Classification of Malocclusion.

II. ORAL EMBRYOLOGY

1. Brief review of development of face, jaws, lip, palate & tongue, with applied aspects.
2. Development of teeth :

   Epithelial mesenchymal interaction, detailed study of different stages of development of crown, root & supporting tissues of tooth & detailed study of formation of calcified tissues.

   Applied aspects of disorders in development of teeth.
3. Eruption of deciduous & Permanent teeth :

   Mechanisms in tooth eruption, different theories & histology of eruption, formation of dentogingival junction, role of gubernacular cord in eruption of permanent teeth. Clinical or Applied aspects of disorders of eruption.
4. Shedding of teeth :

Factors & mechanisms of shedding of deciduous teeth.Complications of shedding.

III. ORAL HISTOLOGY

1. Detailed microscopic study of Enamel, Dentine, Cementum & Pulp tissue. Age changes & Applied aspects (Clinical and forensic significance) of histological considerations - Fluoride applications, transparent dentine, dentine hypersensitivity, reaction of pulp tissue to varying insults to exposed dentine ; Pulp calcifications & Hypercementosis.

2. Detailed microscopic study of Periodontal ligament & alveolar bone, age changes, histological changes in periodontal ligament & bone in normal & orthodontic tooth movement, applied aspects of alveolar bone resorption.
3. Detailed microscopic study of Oral Mucosa, variation in structure in relation to functional requirements, mechanisms of keratinization, clinical parts of gingiva, Dentogingival & Mucocutaneous junctions & lingual papillae. Age changes & clinical considerations.
4. Salivary Glands :
   Detailed microscopic study of acini & ductal system.
   Age changes& clinical considerations.
5. TM Joint :
   Review of basic anatomical aspects & microscopic study & clinical considerations.
6. Maxillary Sinus :
   Microscopic study, anatomical variations, functions & clinical relevance of maxillary sinus in dental practice.
7. Processing of Hard & soft tissues for microscopic study :
   Ground sections, decalcified sections & routine staining procedures.
8. Basic histochemical staining patterns of oral tissues.

IV. ORAL PHYSIOLOGY

1. Saliva :
   Composition of saliva - variations, formation of saliva & mechanisms of secretion, salivary reflexes, brief review of secretomotor pathway, functions, role of saliva in dental caries & applied aspects of hyper & hypo salivation.
2. Mastication :
   Masticatory force & its measurement - need for mastication, peculiarities of masticatory muscles, masticatory cycle, masticatory reflexes & neural control of mastication.
3. Deglutition :
   Review of the steps in deglutition, swallowing in infants, neural control of deglutition & dysphagia.
4. Calcium, Phosphorous & fluoride metabolism :
   Source, requirements, absorption, distribution, functions & excretion, clinical considerations, hypo & hypercalcemia & hyper & hypo phosphatemia & fluorosis.
5. Theories of Mineralization :
   Definition, mechanisms, theories & their drawbacks.

Applied aspects of physiology of mineralization, pathological considerations - calculus formation.

6. Physiology of Taste :
   Innervation of taste buds & taste pathway, physiologic basis of taste sensation, age changes & applied aspects - taste disorders.
7. Physiology of Speech :
   Review of basic anatomy of larynx & vocal cords.
   Voice production, resonators, production of vowels & different consonants - Role of palate, teeth & tongue.
   Effects of dental prosthesis & appliances on speech & basic speech disorders.

Second Year BDS: **GENERAL AND DENTAL PHARAMACOLOGY & THERAPEUTICS**

Course Code: D1GDP

The broad goal of teaching under graduate students in pharmacology is to inculcate rational and scientific basis of therapeutics keeping in view of dental curriculum and Profession.

COURSE OUTCOMES

At the end of the course the student shall be able to:

- Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs in general and in dentistry in particular.
- List the indications, contraindications; interactions, and adverse reactions of commonly used drugs with reason.
- Tailor the use of appropriate drugs in disease with consideration to its cost, efficacy, safety for individual and mass therapy needs.
- Indicate special care in prescribing common and essential drugs in special medical situations such as pregnancy, lactation, old age, renal, hepatic damage and immuno compromised patients.
- Integrate the rational drug therapy in clinical pharmacology.
- Indicate the principles underlying the concepts of “Essential drugs”.
- Prescribe drugs for common dental and medical ailments.

- To appreciate adverse reactions and drug interactions of commonly used drugs.
- Observe experiments designed for study of effects of drugs.
- Critically evaluate drug formulations and be able to interpret the clinical pharmacology of marketed preparations commonly used in dentistry.

COURSE SYLLABUS & CONTENT

GENERAL PHARMACOLOGY:

1. General principles of pharmacology; sources and nature of drugs dosage forms; prescription writing; pharmacokinetics (absorption, distribution, metabolism and excretion of drugs), mode of action of drugs, combined effects of drugs, receptor mechanism of drug action, factors modifying drug response, adverse drug reactions; drug interactions, Implications of General Principles in clinical dentistry.
2. CNS drugs; General anaesthetics, hypnotics, analgescis psychotropic drugs, anti – epileptics, muscle relaxants, local anaesthetics, Implications of these drugs in clinical dentistry.
3. Autonomic drugs; sympathomimetics, antiadrenergic drugs parasympathomimetics and parasympatholytics, Implications of Autonomic drugs in clinical dentistry.
4. Cardiovascular drugs; Cardiac stimulants ; antihypertensive drugs, vasopressor agents, treatment of shock, Antianginal agents and diuretics, Implications of these drugs in clinical dentistry.
   Histamine, antihistamines, prostaglandins, leukotrienes and bronchodilators,
5. Drugs acting on blood : coagulants and anticoagulants, hematinics, Implications of these drugs in clinical dentistry.
6. G.I.T. Drugs, Purgatives, anti-diarrhoeal, antacids, anti-emetics, Implications of these drugs in clinical dentistry.
7. Endocrines; Emphasis on treatment of diabetes and glucocorticoids, thyroid and antithyroid agents, drugs affecting calcium balance and anabolic steroids, Implications of these drugs in clinical dentistry.
8. Chemotherapy: Antimicrobial agents (against bacteria, anaerobic infections, fungi, virus and broad spectrum). Infection management in dentistry. Phamacotherapy of Tuberculosis, leprosy and chemotherapy of malignancy in general. Implications of Chemotherapy in clinical dentistry.
9. Vitamins : Water soluble vitamins, Vit. D, Vit.K. and Vit. E, Implications of Vitamins in clinical dentistry.

10. Pharmacotherapy of emergencies in dental office and emergency drugs tray Implications of Pharmacotherapy in clinical dentistry.
11. Chelating agents – BAL,EDTA and desferrioxamine,

DENTAL PHARMACOLOGY

1. Anti - septics, astringents, obtundents, mummifying agents, bleaching agents, styptics, disclosing agents, dentifrices, mouth washes, caries and fluorides.
2. Pharmacotherapy of common oral conditions in dentistry.

Practicals and Demonstrations :

To familiarise the student with the methodology: prescription writing and dispensing. Rationale of drug combinations of marketed drugs.

Second Year BDS: **GENERAL PATHOLOGY**

Course Code: D1GPM

COURSE OUTCOMES

At the end of the course the student should be competent to:

1. Apply the scientific study of disease processes, which result in morphological and functional alterations in cells, tissues and organs to the study of pathology and the practice of dentistry.
2. To demonstrate and apply basic facts, concepts and theories in the field of Pathology.
3. To recognize and analyze pathological changes at macroscopically and microscopical levels and explain their observations in terms of disease processes.
4. To Integrate knowledge from the basic sciences, clinical medicine and dentistry in the study of Pathology.
5. To demonstrate understanding of the capabilities and limitations of morphological Pathology in its contribution to medicine, dentistry and biological research.

6. To demonstrate ability to consult resource materials outside lectures, laboratory and tutorial classes.

COURSE SYLLABUS &CONTENT

A. General Pathology –

1. Introduction to Pathology, Terminologies, The cell in health, The normal cell structure, The cellular functions
2. Etiology and Pathogenesis of Disease

Cell InjuryTypes – congenital, Acquired, Mainly Acquired causes of disease

(Hypoxic injury, chemical injury, physical injury, immunological injury)

3. Degenerations – Amyloidosis, Fatty change, Cloudy swelling Hyaline change, mucoid degeneration
4. Cell death & Necrosis, Apoptosis - Def, causes, features and types of necrosis

Gangrene - Dry, wet, gas

Pathological Calcifications-(Dystrophic and metastatic)

5. Inflammation

- Definition, causes types, and features, Acute inflammation

a. The vascular response
b. The cellular response
c. Chemical mediators
d. The inflammatory cells
e. Fate

- Chronic inflammation

Granulomatous inflammation

6. Healing – Regeneration, Repair

a. Mechanisms
b. Healing by primary intention
c. Healing by secondary intention
d. Fracture healing
e. Factors influencing healing process
f. Complications

7. Tuberculosis

- Epidemiology
- Pathogenesis (Formation of tubercle)
- Pathological features of Primary and secondary TB
- Complications and Fate

8. Syphilis
   - Epidemiology
   - Types and stages of syphilis
   - Pathological features
   - Diagnostic criterias
   - Oral lesions
9. Typhoid
   - Epidemiology
   - Pathogenesis
   - Pathological features
   - Diagnostic criterias
10. Thrombosis
   - Definition, Pathophysiology
   - Formation, complications & Fate of a thrombus
11. Embolism
   - Definition
   - Types
   - Effects
12. Ischaemia and Infraction
   - Definition, etiology, types
   - Infraction of various organs
13. Derangements of body fluids
   - Oedema – pathogenesis
     Different types
14. Disorders of circulation
   - Hyperaemia
   - Shock
15. Nutritional Disorders
   - Common Vitamin Deficiencies
16. Immunological mechanisms in disease
   - Humoral & cellular immunity
   - Hypersensitivity & autoimmunity
17. AIDS and Hepatitis.
18. Hypertension
   - Definition, classification
   - Pathophysiology
   - Effects in various organs
19. Diabetes Mellitus
   - Def, Classification, Pathogenesis, Pathology in different organs

20. Adaptive disorders of growth
    - Atrophy & Hypertrophy, Hyperplasia, Metaplasia and Dysplasia
21. General Aspects of neoplasia
    a. Definition, terminology, classification
    b. Differences between benign and malignant neoplasms
    c. The neoplastic cell
    d. Metastasis
    e. Etiology and pathogenesis of neoplasia, Carcinogenesis
    f. Tumour biology
    g. Oncogenes and anti-oncogenes
    h. Diagnosis
    i. Precancerous lesions
    j. Common specific tumours, Sq papilloma & Ca, Basal cell Ca, Adenoma & Adenoma, Fibroma & Fibrosarcoma, Lipoma and liposarcoma

    B. Systemic Pathology –

22 AnaemiasIron Deficiency anaemia, Megaloblastic anaemia

23.Leukaemias
    - Acute and chronic leukaemias, Diagnosis and clinical features
24. Diseases of Lymph nodes
    - Hodgkin's disease, Non Hodgkins lymphoma, Metastatic carcinoma
25. Diseases of oral cavity
    - Lichen planus, Stomatitis, Leukoplakia, Sq cell Ca, Dental caries, Dentigerious cyst, Ameloblastoma
26. Diseases of salivary glands
    - Normal structure, Sialadenitis, Tumours
27. Common diseases of Bones
    - Osteomyelitis, Metabolic bone diseases, Bone Tumours, Osteosarcoma, Osteoclastoma, Giant cell Tumour, Ewing's sarcoma, Fibrous dysplasia, Aneurysmal bone cyst
28.Diseases of Cardiovascular system
    - Cardiac failure
    - Congenital heart disease – ASD, VSD,PDA, Fallot's Tetrology
    - Infective Endocarditis, Atherosclerosis, Ischaemic heart Disease
29. Haemorrhagic Disorders

    Coagulation cascade

    Coagulation disorders
    - Platelet function
    - Platelet disorders

Second Year BDS: **MICROBIOLOGY**

Course Code: D1GPM

To introduce the students to the exciting world of microbes. To make the students aware of various branches of microbiology, importance, significance and contribution of each branch to mankind and other fields of medicine.

COURSE OUTCOMES

A. KNOWLEDGE AND UNDERSTANDING

At the end of the Microbiology course the student is expected to:

1. Understand the basics of various branches of microbiology and able to apply the knowledge relevantly.
2. Apply the knowledge gained in related medical subjects like General Medicine and General Surgery and Dental subjects like Oral Pathology, Community Dentistry, Periodontics, Oral Surgery, Pedodontics, Conservative Dentistry and Oral medicine in higher classes.
3. Understand and practice various methods of Sterilisation and disinfection in dental clinics.
4. Have a sound understanding of various infectious diseases and lesions in the oral cavity.

A. SKILLS

1. Student should have acquired the skill to diagnose, differentiate various oral lesions caused by microorganisms.
2. Should be able to select, collect and transport clinical specimens to the laboratory.
3. Should be able to carry out proper aseptic procedures in the dental clinic.

COURSE SYLLABUS & CONTENTS

A. GENERAL MICROBIOLOGY:

1. History, Introduction, Scope, Aims and Objectives.
2. Morphology and Physiology of bacteria.
3. Detail account of Sterlisation and Disinfection.
4. Brief account of Culture media and Culture techniques.
5. Basic knowledge of selection, collection, transport, processing of clinical

Specimens and identification of bacteria.

6. Bacterial Genetics and Drug Resistance in bacteria.

B. IMMUNOLOGY:

1. Infection - Definition, Classification, Source, Mode of transmission and types of Infectious disease.
2. Immunity
3. Structure and functions of Immune system
4. The Complement System
5. Antigen
6. Immunoglobulins - Antibodies - General structure and the role played in defence mechanism of the body.
7. Immune response
8. Antigen - Antibody reactions - with reference to clinical utility.
9. Immuno deficiency disorders - a brief knowledge of various types of immuno deficiency disorders - A sound knowledge of immuno deficiency disorders relevant to dentistry.
10. Hypersensitivity reactions
11. Autoimmune disorders - Basic knowledge of various types - sound knowledge of autoimmune disorders of oral cavity and related structures.
12. Immunology of Transplantation and Malignancy
13. Immuno-haematology

C. SYSTEMATIC BACTERIOLOGY:

1. Pyogenic cocci - Staphylococcus, Streptococcus, Pneumococcus, Gonococcus, Meningococcus – brief account of each coccus - detailed account of mode of spread, laboratory diagnosis, Chemo therapy and prevention - Detailed account of Cariogenic Streptococci.
2. Corynebacterium diphtheriae - mode of spread, important clinical feature, Laboratory diagnosis, Chemotherapy and Active immunisation.
3. Mycobacteria - Tuberculosis and Leprosy
4. Clostridium - Gas gangrene, food poisoning and tetanus.
5. Non-sporing Anaerobes - in brief about classification and morphology, in detail about dental pathogens - mechanism of disease production and prevention.
6. Spirochaetes - Treponema pallidum - detailed account of Oral Lesions of syphilis, Borrelia vincentii.
7. Actinomycetes.

D. VIROLOGY:

1. Introduction
2. General properties, cultivation, host - virus interaction with special reference to Interferon.
3. Brief account of Laboratory diagnosis, Chemotherapy and immuno prophylaxis in general.
4. A few viruses of relevance to dentistry.

- Herpes Virus
- Hepatitis B Virus - brief about other types
- Human Immunodeficiency Virus (HIV)
- Mumps Virus
- Brief - Measles and Rubella Virus
    - Bacteriophage - structure and Significance

E. MYCOLOGY

1. Brief Introduction
2. Candidiasis - in detail
3. Briefly on oral lesions of systemic mycoses.

F. PARASITOLOGY:

1. Brief introduction - protozoans and helminths
2. Brief knowledge about the mode of transmission and prevention of commonly seen parasitic infection in the region.

Second Year BDS: **DENTAL MATERIALS**

Course Code: D1DMT

The science of Dental Material has undergone tremendous changes over the years. Continued research has led to new material systems and changing concepts in the dental field. Interlinked with various specialised branches of chemistry, practically all engineering applied sciences and biological characteristics, the science of dental material emerged as a basic sciences in itself with its own values and principles.

COURSE OUTCOMES

At the end of the course, the student is expected**:**

To understand the evolution and development of science of dental material.
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.
To explain purpose of course in dental materials to personnel concerned with the profession of the dentistry. Knowledge of physical and chemical properties. Knowledge of biomechanical requirements of particular restorative procedure. Search for newer and better materials which may answer our requirements with greater satisfaction.
To understand and evaluate the claims made by manufactures of dental materials
To exercise his/her best skills through knowledge of properties of different types of materials.
To understand the allergic or toxic reactions of dental materials on oral tissues and methods to manage them.

COURSE SYLLABUS & CONTENT

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.
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, metamersim, fluorescence, physical properties of tooth, stress during mastication

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 perspective of biological compatibility. eg. contact with soft tissues, affecting vitality of pulp, used for root canal fillings, affecting hard tissues of teeth, laboratory materials that could be accidentally be 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.

GYPSUM & GYPSUM PRODUCTS.

Gypsum – its origin, chemical formula, Products manufactured from gypsum.

Dental plaster, Dental stone, Die stone, high strength, high expansion stone.

Application and manufacturing procedure of each, macroscopic and microscopic structure of each . Supplied as and Commercial names.

Chemistry of setting, setting reaction, theories of setting, gauging water, Microscopic structure of set material.

Setting time: working time and setting time, Measurement of setting time and factors controlling setting time. Setting expansion, Hygroscopic setting expansion – factors affecting each

Strength :wet strength, dry strength, factors affecting strength, tensile strength

Slurry – need and use.Care of cast.

ADA classification of gypsum products

Description of impression plaster and dental investment

Manipulation including recent methods or advanced methods.

Disinfection : infection control, liquids, sprays, radiation

Method of use of disinfectants

Storage of material – shelf life

IMPRESSION MATERIALS USED IN DENTISTRY

Impression plaster, Impression compound, Zinc oxide eugenol impression paste & bite registration paste incl., 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 incl., electroplating Biological properties: tissue reaction , Shelf life & storage of material, Infection control – disinfection, Advantages & disadvantages of each material.

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 polymerisation, inhibition of polymerisation, co polymerization, molecular weight, crosslinking, plastixizers, Physical properties of polymers, polymer structures types of resins.

ACRYLIC RESINS:

Mode of polymerisation: Heat activated, Chemically activated, Light activated, Mode of supply, application, composition, polymerisation reaction of each. Technical considerations: Methods of manipulation for each type of resin. Physical properties of denture base resin. Miscellaneous resins & techniques: Repair resins, Relining and rebasing. Short term and long-term soft-liners, temporary crown and bridge resins, Resin impression trays, Tray materials, Resin teeth, materials in maxillofacial prosthesis, Denture cleansers, Infection control in detail, Biological properties and allergic reactions.

RESTORATIVE RESINS:

Historical background, Resin based restorative materials, Unfilled & filled, Composite restorative materials, Mode of supply, Composition, Polymerisation

mechanisms: Chemically activated, Light activated, Dual cure: Degree of conversion, Polymerisation shrinkage Classification of Composites: Application, composition and properties of each Composites of posterior teeth, Prosthodontics resins for veneering. Biocompatibility – microleakage, pulpal reaction, pulpal protection Manipulation of composites: Techniques of insertion of Chemically activated, light activated, dual cure Polymerisation, Finishing and polishing of restoration, Repair of composites Direct bonding Bonding: Need for bonding, Acid - etch technique, Enamel bonding, Dentin bonding agents. Mode of bonding, Bond strength, Sandwich technique its indication and procedure. Extended application for composites: Resins for restoring eroded teeth, Pit and fissure sealing, Resin inlays system – Indirect & direct, Core build up, Orthodontic applications.

METAL AND ALLOYS:

Structure and behaviour of metals, Solidification of metals, mechanism of crystallisation amorphous & crystalline. Classification of alloys, Solid solutions, Constitutes or equilibrium phase diagrams:Electric alloys, Physical properties, Peritectic alloys, Solid state reaction other binary systems: Metallography & Heat treatment. Tarnish and corrosion. Definition: causes of corrosion, protection against corrosion., Corrosion of dental restorations, clinical significance of galvanic current.

Dental Amalgam.History, Definition of dental amalgam, application, Alloy classification, manufacture of alloy powder composition - available as.

Amalgamation: setting reaction & resulting structure , properties , Microleakage

Dimensional stability, Strength, Creep, Clinical performance

Manipulation: Selection of alloy, proportioning, mechanism of trituration, condensation, carving & finishing. Effect of dimensional changes, Marginal deterioration., Repair of amalgam, mercury toxicity, mercury hygiene.

DIRECT FILLING GOLD:

Properties of pure gold, mode of adhesion of gold for restoration forms of direct filling gold for using as restorative material

Classification : Gold Foil, Electrolytic precipitate, powdered gold.

Manipulation: Removal of surface impurities and compaction of direct filling gold.

Physical properties of compacted gold, Clinical performance.

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 bio compatible 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, 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. Biocompatability - Handling hazards & precautions of base metal alloys, casting investments used. Heat treatment : Softening & hardening heat treatment. Recycling of metals. Titanium alloys & their application , properties & advantages. Technical considerations In casting . Heat source, furnaces.

DENTAL WAXES INCLUDING INLAY CASTING WAX

Introduction and importance of waxes. Sources of natural waxes and their chemical nature.

Classification of Waxes:

Properties: melting range, thermal expansion, mechanical properties, flow & residual stresses, ductility. Dental Wax: Inlay wax: Mode of supply : Classification & composition, Ideal requirements: Properties of inlay wax: Flow, thermal properties Wax distortion & its causes.

Manipulation of inlay wax: Instruments & equipment required, including electrically heated instruments metal tips and thermostatically controlled wax baths.

Other waxes: Applications, mode of supply & properties.

Casting Wax, Base plate wax, Processing wax, Boxing wax, Utility wax, Sticky wax, Impression wax for corrective impressions, Bite registration wax.

DENTAL CASTING INVESTMENTS.

Definition, requirements, classification

Gypsum bonded - classification. Phosphate bonded, Silica bonded

Mode of Supply: Composition, application , setting mechanism, setting time & factors controlling.

Expansions :Setting expansion, Hygroscopic Setting expansion, & thermal expansion : factors affecting. Properties : Strength, porosity, and fineness & storage. Technical considerations: For Casting procedure, Preparation of die, Wax pattern, spruing, investing, control of shrinkage compensation, wax burnout, and heating the invested ring, casting. Casting machines, source of heat for melting the alloy. Defects in casting.

SOLDERING, BRAZING AND WELDING

Need of joining dental appliances, Terms & Definition

Solders: Definition, ideal requirement, types of solders – Soft & hard and their fusion temperature, application. Mode of supply of solders, Composition and selection, Properties. Tarnish & corrosion resistance mechanical properties, microstructure of soldered joint. Fluxes & Anti fluxes: Definition, Function, Types, commonly used fluxes & their selection Technique of Soldering & Brazing : free hand soldering and investment, steps and procedure. Welding,: Definition, application, requirements, procedure, weld decay - causes and how to avoid it. Laser welding.

WROUGHT BASE METAL ALLOYS

Applications and different alloys used mainly for orthodontics purpose

1. Stainless steel
2. Cobalt chromium nickel
3. Nickel titanium
4. Beta titanium

Properties required for orthodontic wires, working range, springiness, stiffness, resilience, Formability, ductility, ease of joining, corrosion resistance, stability in oral environment, bio compatibility

Stainless steels: Description, type, composition & properties of each type. Sensitisation & stabilisation , 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
2. Nickel – Titanium alloys, shape, memory & super elastic
3. Titanium alloys, application, composition, properties, welding, Corrosion resistance

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, biomechansim 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.

DENTAL CERAMICS

Historical background & General applications.

Dental ceramics : definition, classification, application, mode of supply, manufacturing procedure, methods of strengthening. Properties of fused ceramic: Strength and factors affecting, modulus of elasticity, surface hardness, wear resistance, thermal properties, specific gravity, chemical stability, esthetic properties, biocompatability, technical considerations.

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.

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 :
Desirable characteristics of an abrasive, Rate of abrasion, Size of particle, pressure and speed.
Grading of abrasive & polishing agents. Binder, Polishing materials & procedures used. Technical consideration - Material and procedure used for abrasion and polishin Electrolytic polishing and burnishing.

DIE AND COUNTER DIE MATERIALS INCLUDING ELECTROFORMING
AND ELECTROPOLISHING.
DENTAL IMPLANTS : Evolution of dental implants, types and materials.
MECHANICS OF CUTTING : Burs and points.

Thrid Year BDS: **ORAL PATHOLOGY & MICROBIOLOGY**

Course Code: D3OPT

COURSE OUTCOMES:

At the end of Oral Pathology & Oral Microbiology course, the student should be able to comprehend -

1. The different types of pathological processes, that involve the oral cavity.
2. The manifestations of common diseases, their diagnosis & correlation with clinical pathological processes.
3. An understanding of the oral manifestations of systemic diseases should help in correlating with the systemic physical signs & laboratory findings.

4. The student should understand the underlying biological principles governing treatment of oral diseases.
5. The principles of certain basic aspects of Forensic Odontology.

SKILLS:

1. Microscopic study of common lesions affecting oral tissues through microscopic slides & projection slides.
2. Study of the disease process by surgical specimens.
3. Study of teeth anomalies/polymorphisms through tooth specimens & plaster casts.
4. Microscopic study of plaque pathogens.
5. Study of haematological preparations (blood films) of anaemias & leukemias.
6. Basic exercises in Forensic Odontology such as histological methods of age estimation and appearance of teeth in injuries.

COURSE SYLLABUS & CONTENT:

INTRODUCTION:

A bird's eye view of the different pathological processes involving the oral cavity & oral cavity involvement in systemic diseases to be brought out. Interrelationship between General Medicine & General Surgery & Oral pathology to be emphasized.

Developmental disturbances of teeth, jaws and soft tissues of oral & para-oral region :

Introduction to developmental disturbances - Hereditary, Familial mutation, Hormonal etc. causes to be highlighted.

Developmental disturbances of teeth - Etiopathogenesis, clinical features, radiological features & histopathological features as appropriate :-

The size, shape, number, structure & eruption of teeth & clinical significance of the anomalies to be emphasized.

Forensic Odontology.

Developmental disturbances of jaws - size & shape of the jaws.

Developmental disturbances of oral & paraoral soft tissues - lip & palate - clefts, tongue, gingiva, mouth, salivary glands & face.

Dental Caries :

Etiopathogenesis, microbiology, clinical features, diagnosis, histopathology, immunology, prevention of dental caries & its sequelae.

Pulp & Periapical Pathology & Osteomyelitis.

Etiopathogenesis & interrelationship, clinical features, microbiology, histopathology & radiological features (as appropriate) of pulp & periapical lesions & osteomyelitis.

Sequelae of periapical abscess - summary of space infections, systemic complications & significance.

Periodontal Diseases :

Etiopathogenesis, microbiology, clinical features, histopathology & radiological features (as appropriate) of gingivitis, gingival enlargements & periodontitis. Basic immunological mechanisms of periodontal disease to be highlighted.

Microbial infections of oral soft tissues :

Microbiology, defence mechanisms including immunological aspects, oral manifestations, histopathology and laboratory diagnosis of common bacterial, viral & fungal infections namely :-

Bacterial : Tuberculosis, Syphilis, ANUG & its complications - Cancrum Oris.

Viral : Herpes Simplex, Varicella zoster, Measles, Mumps & HIV infection.

Fungal : Candidal infection. Apthous Ulcers.

Common non- inflammatory diseases involving the jaws :

Etiopathogenesis, clinical features, radiological & laboratory values in diagnosis of :

Fibrous dysplasia, Cherubism, Osteogenesis Imperfecta, Paget's disease, Cleidocranial dysplasia, Rickets, Achondroplasia, Marfan's syndrome & Down's syndrome.

Diseases of TM Joint :

Ankylosis, summary of different types of arthritis & other developmental malformations, traumatic injuries & myofascial pain dysfunction syndrome.

Cysts of the Oral & Paraoral region :

Classification, etiopathogenesis, clinical features, histopathology, laboratory &radiological features (as appropriate) of Odontogenic cysts, Non-Odontogenic cysts, Pseudocysts of jaws & soft tissue cysts of oral & paraoral region.

Tumours of the Oral Cavity :

Classification of Odontogenic, Non-Odontogenic & Salivary Gland Tumours. Etiopathogenesis, clinical features, histopathology, radiological features & laboratory diagnosis (as appropriate) of the following common tumours :-

a) Odontogenic - all lesions.

b) Non-odontogenic

- Benign Epithelial - Papilloma, Keratoacanthoma & Nevi.
- Benign Mesenchymal - Fibroma, Aggressive fibrous lesions, Lipoma, Haemangioma,Lymphangioma, Neurofibroma, Schwannoma, Chondroma, Osteoma & Tori.
- Malignant Epithelial - Basal Cell Carcinoma, Verrucous Carcinoma, Squamous Cell carcinoma & Malignant Melanoma.
- Malignant Mesenchymal - Fibrosarcoma, Osteosarcoma, Giant cell tumour, Chondrosarcoma, Angiosarcoma, Kaposi's sarcoma, Lymphomas , Ewing's sarcoma & Other Reticuloendothelial tumours.

c) Salivary Gland

- Benign Epithelial neoplasms - Pleomorphic Adenoma, Warthin's tumour, & Oncocytoma.
- Malignant Epithelial neoplasms - Adenoid Cystic Carcinoma, Mucoepidermoid Carcinoma, Acinic Cell Carcinoma & Adenocarcinomas.

d) Tumours of Disputed Origin - Congenital Epulis & Granular Cell Myoblastoma.

e) Metastatic tumours - Tumors metastasizing to & from oral cavity & the routes of metastasis.

Traumatic, Reactive & Regressive lesions of Oral Cavity :

Pyogenic & Giant cell granuloma, exostoses Fibrous Hyperplasia, Traumatic Ulcer & Traumatic Neuroma.

Attrition, Abrasion, Erosion, Bruxism, Hypercementosis, Dentinal changes, Pulp calcifications & Resorption of teeth.

Radiation effects of oral cavity, summary of Physical & Chemical injuries including allergic reactions of the oral cavity.

Healing of Oral wounds & complications - Dry socket.

Non neoplastic Salivary Gland Diseases :

Sialolithiasis, Sialosis, Sialadenitis, Xerostomia & Ptyalism.

Systemic Diseases involving Oral cavity :

Brief review & oral manifestations, diagnosis & significance of common Blood, Nutritional, Hormonal & Metabolic diseases of Oral cavity.

Mucocutaneous Lesions :

Etiopathogenesis, clinical features & histopathology of the following common lesions.

Lichen Planus, Lupus Erythematosus, Pemphigus & Pemphigoid lesions, Erythema Multiforme, Psoriasis, Scleroderma, Ectodermal Dysplasia, Epidermolysis bullosa & White sponge nevus..

Diseases of the Nerves :

Facial neuralgias - Trigeminal & Glossopharyngeal. VII nerve paralysis, Causalgia.

Psychogenic facial pain & Burning mouth syndrome.

Pigmentation of Oral & Paraoral region & Discolouration of teeth :

causes & clinical manifestations.

Diseases of Maxillary Sinus :

Traumatic injuries to sinus, Sinusitis, Cysts & Tumours involving antrum.

ORAL PRECANCER – CANCER; Epidemiology, aetiology, clinical and histopatholotgical features, TNM classification. Recent advances in diagnosis, management and prevention.

b) Biopsy : Types of biopsy, value of biopsy, cytology, histo chemistry & frozen sections in diagnosis of oral diseases.

Principles of Basic Forensic Odontology (Pre-clinical Forensic Odontology):

Introduction, definition, aims & scope.

Sex and ethnic (racial) differences in tooth morphology and histological age estimation

Determination of sex & blood groups from buccal mucosa / saliva.

Dental DNA methods

Bite marks, rugae patterns & lip prints.

Dental importance of poisons and corrosives.

Overview of forensic medicine and toxicology

Third Year BDS: **GENERAL MEDICINE**

Course Code: D3GMD

COURSE OUTCOMES:

At the end of the course, the Dental student must be:

- Able to record the arterial pulse, blood pressure and be capable of suspecting by sight and superficial examination of the body – diseases of the heart, lungs, kidneys, blood etc.
- capable of handling medical emergencies encountered in dental practice.
- Have knowledge of Special precautions/ contraindication of anaesthesia and various dental procedures in different systemic diseases.
- Acquire knowledge about Oral manifestations of systemic diseases.
- Able to take history, do general physical examination (including build, nourishment, pulse, BP, respiration, clubbing, cyanosis, jaundice, lymphadenopathy, oral cavity) and be able to examine CVS, RS and abdomen and facial nerve.
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COURSE SYLLABUS& CONTENT

1. Aims of medicine Definitions of signs, symptoms, diagnosis, differential diagnosis treatment & prognosis.
2. Infections.

Enteric fever, AIDS, herpes simplex, herpes zoster, syphilis diphtheria.

3. G.I.T.

Stomatitis, gingival hyperplasia, dysphagia, acid peptic disease, jaundice, acute and chronic hepatitis, cirrhosis of liver ascites.

4. CVS

Acute rheumatic fever rheumatic valvular heart disease, hypertension, ischemic heart disease, infective endocarditis, common arrhythmias, congenital heart disease, congestive cardiac failure.

5. RS

Pneumonia, COPD, Pulmonary TB, Bronehial asthma

6. Hematology
Anemias, bleeding & clotting disorders, leukemias, lymphomas, agranulocytosis, splenomegaly, oral manifestations of hematologic disorders, generalized Lymphadenopathy.
7. Renal System
Acute nephritis, Nephrotic syndrome
8, Nutrition
Avitaminosis
9. CNS -
Facial palsy, facial pain including trigeminal neuralgia, epilepsy, headache including migraine.
10. Endocrines
Diabetes Mellitus Acromegaly, Hypothyroidism, Thyrotoxicosis, Calcium metabolism and parathyroids.
11. Critical care
Syncope, cardiac arrest, CPR, shock

Third Year BDS: **GENERAL SURGERY**

Course Code: D3GSR

COURSE OUTCOMES

At the end of the Course, the student must be able to:

- To acquaint with various diseases, which may require surgical expertise
- To train the student to analyze the history and be able to do a thorough physical examination of the patient.

- Have a good theoretical knowledge of various ailments
- Be practically trained to differentiate benign and malignant diseases
- Be able to decide which patient requires further evaluation.

COURSE SYLLABUS & CONTENT

1. HISTORY OF SURGERY:
   The development of surgery as a speciality over the years, will give the students an opportunity to know the contributions made by various scientists, teachers and investigators. It will also enable the student to understand the relations of various specialities in the practice of modern surgery.
2. GENERAL PRINCIPLES OF SURGERY:
   Introduction to various aspects of surgical principles as related to orodental diseases. Classification of diseases in general. This will help the student to understand the various diseases, their relevance to routine dental practice.
3. WOUNDS:
   Their classification, wound healing, repair, treatment of wounds, medico-legal aspects of accidental wounds and complications of wounds.
4. INFLAMMATION:
   Of soft and hard tissues. Causes of inflammation, varieties, treatment and sequelae.
5. INFECTIONS:
   Acute and chronic abscess skin infections, cellulitis, carbuncle, and erysepelas. Specific infections such as tetanus, gangrene, syphilis, gonorrhoea, tuberculosis, Actinomycosis, Vincents angina, cancrum oris. Pyaemia, toxaemia and septicaemia.

6. TRANSMISSABLE VIRAL INFECTIONS:
   HIV and Hepatitis B with special reference to their prevention and precautions to be taken in treating patients in a carrier state.
7. SHOCK AND HAEMORRHAGE:
   Classification, causes, clinical features and management of various types of shock. Syncope, Circulatory collapse. Haemorrhage – different types, causes, clinical features and management. Blood groups, blood transfusion, precautions and complications of blood and their products. Hemophilias, their transmission, clinical features and management especially in relation to minor dental procedures.

8. TUMOURS, ULCERS, CYSTS, SINUS AND FISTULAE:
   Classification, clinical examination and treatment principles in various types of benign and malignant tumours, ulcers, cysts, sinus and fistulae.
9. DISEASES OF LYMPHATIC SYSTEM:
   Especially those occurring in head and neck region. Special emphasis on identifying diseases such as tubercular infection, lymphomas, leukaemias, metastatic lymph node diseases.
10. DISEASES OF THE ORAL CAVITY:
    Infective and malignant diseases of the oral cavity and oropharynx including salivary glands with special emphasis on preventive aspects of premalignant and malignant diseases of the oral cavity.
11. DISEASES OF LARYNX, NASOPHARYNX:
    Infections and tumours affecting these sites. Indications, procedure and complications of tracheostmy.
12. NERVOUS SYSTEM:
    Surgical problems associated with nervous system with special reference to the principles of peripheral nerve injuries, their regeneration and principles of treatment. Detailed description of afflictions of facial nerve and its management. Trigeminal neuralgia, its presentation and treatment.
13. FRACTURES:
    General principles of fractures, clinical presentation and treatment with additional reference to newer methods of fracture treatment. Special emphasis on fracture healing and rehabilitation.

14. PRINCIPLES OF OPERATIVE SURGERY:
    Principles as applicable to minor surgical procedures including detailed description of asepsis, antiseptics, sterilisation, principles of anaesthesia and principles of tissue replacement. Knowledge of sutures, drains, diathermy, cryosurgery and use of Laser in surgery.

15. ANOMOLIES OF DEVELOPMENT OF FACE:
    Surgical anatomy and development of face. Cleft lip and cleft palate—principles of management.
16. DISEASES OF THYROID AND PARATHYROID:
    Surgical anatomy, pathogenesis, clinical features and management of dysfunction of thyroid and parathyroid glands. Malignant diseases of the thyroid—classification, clinical features and management.
17. SWELLINGS OF THE JAW:

Differential diagnosis and management of different types of swellings of the jaw.

18. BIOPSY:

Different types of biopsies routinely used in surgical practice.

Skills to be developed by the end of teaching is to examine a routine swelling, ulcer and other related diseases and to perform minor surgical procedures such as draining an abscess, taking a biopsy etc.

FINAL Year BDS: **ORAL MEDICINE & RADIOLOGY**

Course Code: D4OMR

COURSE OUTCOMES

At the end of the course, the student is expected:

- To diagnose the common disorders of Orofacial region by clinical examination and with the help of such investigations as may be required and medical management of oro-facial disorders with drugs and physical agents.
- To understand the importance, role, use and techniques of radiographs/digital radiograph and other imaging methods in diagnosis.
- To gain knowledge about the principles of the clinical and radiographic aspects of Forensic Odontology.

COURSE SYLLABUS & CONTENT

ORAL MEDICINE AND DIAGNOSTIC AIDS

SECTION (A) – DIAGNOSTIC METHODS.

(1) Definition and importance of Diagnosis and various types of diagnosis
(2) Method of clinical examinations.
(a) General Physical examination by inspection.
(b) Oro-facial region by inspection, palpation and other means
(c) To train the students about the importance, role, use of saliva and techniques of diagnosis of saliva as part of oral disease
(d) Examination of lesions like swellings, ulcers, erosions, sinus, fistula, growths, pigmented lesions, white and red patches

(e) Examination of lymph nodes
(f) Forensic examination – Procedures for post-mortem dental examination; maintaining dental records and their use in dental practice and post-mortem identification; jurisprudence and ethics.
(3) Investigations
(a) Biopsy and exfoliative cytology
(b) Hematological, Microbiological and other tests and investigations necessary for diagnosis and prognosis

SECTION (B) – DIAGNOSIS, DIFFERENTIAL DIAGNOSIS

(1) Teeth: Developmental abnormalities, causes of destruction of teeth and their sequelae and discoloration of teeth

(2) Diseases of bone and Osteodystrophies: Development disorders: Anomalies, Exostosis and tori, infantile cortical hyperostosis, osteogenisis imperfecta, Marfans syndrome, osteopetrosis. Inflamation – Injury, infection and sperad of infection,fascial space infections, osteoradionecrosis.
Metabolic disorders – Histiocytosis
Endocrine – Acro-megaly and hyperparathyroidism
Miscellaneous – Paget's disease, Mono and polyostotic fibrous dysplasia, Cherubism.

(3) Temparomandibular joint: Developmental abnormalities of the condyle. Rheumatoid arthritis, Osteoarthritis, Sub-luxation and luxation.

(4) Common cysts and Tumors:
CYSTS: Cysts of soft tissue: Mucocele and Ranula
Cysts of bone: Odontogenic and nonodontogenic.

TUMORS: Soft Tissue:

Epithelial: Papilloma, Carcinoma, Melanoma

Connective tissue: Fibroma, Lipoma, Fibrosarcoma

Vascular: Haemangioma, Lymphangioma

Nerve Tissue: Neurofibroma, Traumatic Neuroma, Neurofibromatosis

Salivary Glands: Pleomorphic adenoma, Adenocarcinoma, Warthin's Tumor, Adenoid cystic carcinoma.

Hard Tissue:

Non Odontogenic: Osteoma, Osteosarcoma, Osteoclastoma, Chondroma, Chandrosarcoma, Central giant cell rumor, and Central haemangioma

Odontogenic: Enameloma, Ameloblastoma, Calcifying Epithelial Odontogenic tumor, Adenomatoid Odontogenic tumor, Periapical cemental dysphasia and odontomas

(5) Periodontal diseases: Gingival hyperplasia, gingivitis, periodontitis, pyogenic granuloma
(6) Granulomatous diseases: Tuberculosis, Sarcoidosis, Midline lethal granuloma, Crohn's Disease and Histiocytosis X
(7) Miscellaneous Disorders: Burkitt lymphoma, sturge – Weber syndrome, CREST syndrome, rendu-osler-weber disease

SECTION (C): ORAL MEDICINE AND THERAPEUTICS.

Detail study including the eiology, pathogenesis, clinical features, investigations, differential diagnosis, management and prevention:

(1) Infections of oral and paraoral structures:
Bacterial: Streptococcal, tuberculosis, syphillis, vincents, leprosy, actinomycosis, diphtheria and tetanus

Fungal: Candida albicans

Virus: Herpes simplex, herpes zoster, ramsay hunt syndrome, measles, herpangina, mumps, infectious mononucleosis, AIDS and hepatitis-B

(2) Important common mucosal lesions:
White lesions: Chemical burns, leukodema, leukoplakia, fordyce spots, stomatitis nicotina palatinus, white sponge nevus, candidiasis, lichenplanus, discoid lupus erythematosis

Veiculo-bullous lesions: Herpes simplex, herpes zoster, herpangina, bullous lichen planus, pemphigus, cicatricial pemphigoid erythema multiforme.

Ulcers: Acute and chronic ulcers

Pigmented lesions: Exogenous and endogenous

Red lesions: Erythroplakia, stomatitis venenata and medicamentosa, erosive lesions and denture sore mouth.

(3) Cervico-facial lymphadenopathy
(4) Facial pain:

(i) Organic pain: Pain arising from the diseases of orofacial tissues like teeth, pulp, gingival, periodontal tissue, mucosa, tongue, muscles, blood vessels, lymph tissue, bone, paranasal sinus, salivary glands etc.,

(ii) Pain arising due to C.N.S. diseases:

(a) Pain due to intracranial and extracranial involvement of cranial nerves. (Multiple sclerosis, cerebrovascular diseases, trotter's syndrome etc.)

(b) Neuralgic pain due to unknown causes: Trigeminal neuralgia, glossopharyngeal neuralgia, sphenopalatine ganglion neuralgia, periodic migrainous neuralgia and atypical facial pain

(iii) Referred pain: Pain arising from distant tissues like heart, spine etc.,

(5) Altered sensations: Cacogeusia, halitosis

(6) Tongue in local and systemic disorders: (Aglossia, ankyloglossia, bifid tongue, fissured tongue, scrotal tongue, macroglossia, microglossia, geographic tongue, median rhomboid glossitis, depapillation of tongue, hairy tongue, atrophic tongue, reactive lymphoid hyperplasia, glossodynia, glossopyrosis, ulcers, white and red patches etc.)

(7) Oral manifestations of:

(i) Metabolic disordeers:

(a) Porphyria

(b) Haemochromatosis

(c) Histocytosis X diseases

(ii) Endocrine disorders:

(a) Pituitary: Gigantism, acromegaly, hypopitutarism

(b) Adrenal cortex: Addison's disease (Hypofuntion)
Cushing's syndrome (Hyperfunction)

(c) Parathyroid glands: Hyperparathyroidism.

(d) Thyroid gland: (Hypothyroidism) Cretinism, myxedema

(e) Pancreas: Diabetes

(iii) Nutritional deficiency: Vitamins: riboflavin, nicotinic acid, folic acid Vitamin
B12, Vitamin C (Scurvy)

(iv) Blood disorders:

(a) Red blood cell diseases
Deficiency anemias: (Iron deficiency, plummer – vinson syndrome, pernicious anemia)
Haemolytic anemias: (Thalassemia, sickle cell anemia, erythroblastosis fetalis)

Aplastic anemia
Polycythemia

(b) White Blood cell diseases
Neutropenia, cyclic neutropenia, agranulocytosis, infectious mononeucleosis and leukemias

(c) Haemorrhagic disorders:
Thrombocytopenia, purpura, hemophillia, Christmas disease and von Willebrand's disease

(8) Disease of salivary glands:
(i) Development disturbances: Aplasia, atresia and aberration
(ii) Functional disturbances:Xerostomia, ptyalism
(iii) Inflammatory conditions: Nonspecific sialadenitis, mumps, sarcoidosis Heerdfort's syndrome (Uveoparotid fever), Necrotising sialometaplasia
(iv) Cysts and tumors: Mucocele, ranula, pleomorphic adenoma, mucoepidermoid carcinoma
(v) Miscellaneous: Sialolithiasis, Sjogren's syndrome, Mikuliez's disease and sialosis

(9) Dermatological diseases with oral manifestations:
(a) Ectodermal dysplasia (b) Hyperkeratosis palmarplantaris with periodont0opathy (c) Scleroderma (d) Lichen planus including Grinspan's syndrome (e) Luplus erythematosus (f) Pemphigus (g) Erythema multiforme (h) Psoriasis

(10) Immunological diseases with oral manifestations
(a) Leukemia (b) Lymphomas (c) Multiple myeloma (d) AIDS clinical manifestations, opportunistic infections, neoplasms (e) Thrombcytopenia (f) Lupus erythematosus (g) Scleroderma (h) dermatomyositis (I) Submucous fibrosis (j) Rheumatoid arthritis (k) Recurrent oral ulcerations including Behcet's syndrome and Reiter's syndrome

(11) Allergy: Local allergic reactions, anaphylaxis, serum sickness (local and systemic allergic manifestations to food drugs and chemicals)

(12) Foci of oral infection and their ill effects on general health

(13) Management of dental problems in medically compromised persons:
(i) Physiological changes: Puberty, pregnancy and menopause
(ii) The patients suffering with cardiac, respiratory, liver, kidney and bleeding disorders, hypertension, diabetes and AIDS. Post-irradiated patients.

(14) Precancerous lesions and conditions

(15) Nerve and muscle diseases:

(i) Nerves: (a) Neuropraxia (b) Neurotemesis (c) Neuritis (d) Facial nerve paralysis including Bell's palsy, Heerfordt's syndrome, Melkerson Rosenthal syndrome and Ramsay hunt syndrome (e) Neuroma (f) Neurofibromatosis (g) Frey'syndrome

(ii) Muscles: (a) Myositis ossificans (b) Myofascial pain dysfunction syndrome (c) Trismus

(16) Forensic odontology:

(a) Medicolegal aspects of orofacial injuries

(b) Identification of bite marks

(c) Determination of age and sex

(d) Identification of cadavers by dental appliances, Restorations and tissue remnants

(17) Therapeutics: General therapeutic measures – drugs commonly used in oral medicine viz., antibiotics, chemotherapeutic agents, anti-inflammatory and analgesic drugs, astringents, mouth washes, styptics, demelucents, local surface anaesthetic, sialogogues, anti-sialogogues and drugs used in the treatment of malignancy

ORAL RADIOLOGY

(1) Scope of the subject and history of origin

(2) Physics of radiation: (a) Nature and types of radiations (b) Source of radiations (c) Production of X-rays (d) Properties of X-rays (e) Compton effect (f) Photoelectric effect (g) Radiation measuring units

(3) Biological effects of radiation

(4) Radiation safety and protection measures

(5) Principles of image production

(6) Radiographic techniques:

(i) Intra-Oral: (a) Periapical radiographs (Bisecting and parallel technics) (b) Bite wing radiographs (c) Occlusal radiographs

(ii) Extra-oral: (a) Lateral projections of skull and jaw bones and paranasal sinuses (c) Cephalograms (d) Orthopantamograph (e) Projections of temporomandibular joint and condyle of mandible (f) Projections for Zygomatic arches

(iii) Specialised techniques: (a) Sialography (b) Xeroradiography (c) Tomography

(7) Factors in production of good radiographs:

(a) K.V.P. and mA.of X-ray machine (b) Filters (c) Collimations (d) Intensifying screens (e) Grids (f) X-ray films (g) Exposure time (h) Techniques (i) Dark room (j) Developer and fixer solutions (k) Film processing

(8) Radiographic normal anatomical landmarks
(9) Faculty radiographs and artefacts in radiographs
(10) Interpretation of radiographs in various abnormalities of teeth, bones and other orofacial tissues
(11) Principles of radiotherapy of oro-facial malignancies and complications of radiotherapy
(12) Contrast radiography and basic knowledge of radio-active isotopes
(13) Radiography in Forensic Odontology - Radiographic age estimation and post-mortem radiographic methods

FINAL Year BDS: **PAEDIATRIC & PREVENTIVE DENTISTRY**

Course Code: D4PED

COURSE OUTCOMES

At the end of the course the student shall:

- Be able to understand the growth and development of orofacial structures including dentition
- Acquire knowledge and skill to handle paediatric dental patients
- Develop the skill to diagnose dental problems in paediatric patients
- Gain expertise in imparting treatment to paediatric patients with dental problems
- Have basic knowledge about child psychology and its application in managing dental paediatric patients

Course Syllabus & Contents

1. INTRODUCTION TO PEDODONTICS & PREVENTIVE DENTISTRY.
   - Definition, Scope, Objectives and Importance.
2. GROWTH & DEVELOPMENT:
   - Importance of study of growth and development in Pedodontics.
   - Prenatal and Postnatal factors in growth & development.
   - Theories of growth & development.
   - Development of maxilla and mandible and related age changes.

3. DEVELOPMENT OF OCCLUSION FROM BIRTH THROUGH ADOLESCENCE.
   - Study of variations and abnormalities.
4. DENTAL ANATOMY AND HISTOLOGY:
   - Development of teeth and associated structures.
   - Eruption and shedding of teeth.
   - Teething disorders and their management.
   - Chronology of eruption of teeth.
   - Differences between deciduous and permanent teeth.
   - Development of dentition from birth to adolescence.
   - Importance of first permanent molar.
5. DENTAL RADIOLOGY RELATED TO PEDODONTICS.
6. ORAL SURGICAL PROCEDURES IN CHILDREN.
   - Indications and contraindications of extractions of primary and permanent teeth in children.
   - Knowledge of Local and General Anesthesia.
   - Minor surgical procedures in children.
7. DENTAL CARIES:
   - Historical background.
   - Definition, aetiology & 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
   - Role of diet and nutrition in Dental Caries.
   - Dietary modifications & Diet counseling.
   - Caries activity, tests, caries prediction, caries susceptibility & their clinical application.
8. GINGIVAL & PERIODONTAL DISEASES IN CHILDREN.
   - Normal gingiva & periodontium in children.
   - Definition, aetiology & Pathogenesis.
   - Prevention & Management of gingival & Periodontal diseases.
9. CHILD PSYCHOLOGY:
   - Definition.
   - Theories of child psychology.
   - Psychological development of children with age.
   - Principles of psychological growth & development while managing child patient.
   - Dental fear and its management.
   - Factors affecting child’s reaction to dental treatment.

10. BEHAVIOUR MANAGEMENT:
    - Definitions.
    - Types of behaviour encountered in the dental clinic.
    - Non-pharmacological & pharmacological methods of Behaviour Management.
11. PEDIATRIC OPERATIVE DENTISTRY:
    - Principles of Pediatric Operative Dentistry.
    - Modifications required for cavity preparation in primary and young permanent teeth.
    - Various Isolation Techniques.
    - Restorations of decayed primary, young permanent and permanent teeth in children using various restorative materials like Glass Ionomer, Composites & Silver Amalgam. Stainless steel, Polycarbonate & Resin Crowns.
12. PEDIATRIC ENDODONTICS
    - Principles & Diagnosis.
    - Classification of Pulpal Pathology in primary, young permanent & permanent teeth.
    - Management of Pulpally involved primary, young permanent & permanent teeth.
        - Pulp capping – direct & indirect.
        - Pulpotomy
        - Pulpectomy
        - Apexogenesis
        - Apexification
    - Obturation Techniques & material used for primary, young permanent & Permanent teeth in children.
13. TRAUMATIC INJURIES IN CHILDREN:
    - Classifications & Importance.
    - Sequelae & reaction of teeth to trauma.
    - Management of Traumatized teeth.
14. PREVENTIVE & INTERCEPTIVE ORTHODONTICS:
    - Definitions.
    - Problems encountered during primary and mixed dentition phases & their management.
    - Serial extractions.
    - Space management.
15. ORAL HABITS IN CHILDREN:
    - Definition, Aetiology & Classification.

- Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits.
- Management of oral habits in children.

16. DENTAL CARE OF CHILDREN WITH SPECIAL NEEDS:
    - Definition, Aetiology, Classification, Behavioural and Clinical features & Management of children with:
        - Physically handicapping conditions.
        - Mentally compromising conditions.
        - Medically compromising conditions.
        - Genetic disorders.
17. CONGENITAL ABNORMALITIES IN CHILDREN:
    - Definition, Classification, Clinical features & Management.
18. DENTAL EMERGENCIES IN CHILDREN & THEIR MANAGEMENT.
19. DENTAL MATERIALS USED IN PEDIATRIC DENTISTRY.
20. PREVENTIVE DENTISTRY:
    - Definition.
    - Principles & Scope.
    - Types of prevention.
    - Different preventive measures used in Pediatric Dentistry including pit and fissure sealants and caries vaccine.
21. DENTAL HEALTH EDUCATION & SCHOOL DENTAL HEALTH PROGRAMMES.
22. FLUORIDES:
    - Historical background.
    - Systemic & Topical fluorides.
    - Mechanism of action.
    - Toxicity & Management.
    - Defluoridation techniques.
23. CASE HISTORY RECORDING:
    - Outline of principles of examination, diagnosis & treatment planning.
24. SETTING UP OF PEDODONTIC CLINIC.

FINAL Year BDS: **ORTHODONTICS & DENTOFACIAL ORTHOPAEDICS**

Course Code: D4ORT

COURSE OUTCOMES

At the end of the course the student must be**:**

- Able to diagnose, analyse and treat common orthodontic problems by preventive, interceptive and corrective orthodontic procedures.
- Able to fabricate basic appliances in orthodontic procedures

COURSE SYLLABUS & CONTENT

1. Introduction, Definition, Historical Background, Aims And Objectives Of Orthodontics And Need For Orthodontics Care.
2. Growth And Development: In General
   a. Definition
   b. Growth spurts and Differential growth
   c. Factors influencing growth and Development
   d. Methods of measuring growth
   e. Growth theories (Genetic, Sicher's, Scott's, Moss's,Petrovics, Multifactorial)
   f. Genetic and epigenetic factors in growth
   g. Cephalocaudal gradient in growth.
3. Morphologic Development Of Craniofacial Structures
   a. Methods of bone growth
   b. Prenatal growth of craniofacial structures
   c. Postnatal growth and development of: cranial base, maxilla, mandible, dental
   arches and occlusion.
4. Functional Development Of Dental Arches And Occlusioin
   a. Factors influencing functional development of dental arches and occlusion.
   b. Forces of occlusion
   c. Wolfe's law of transformation of bone
   d. Trajectories of forces
5. Clinical Application Of Growth And Development
6. Malocclusion - In General
   a. Concept of normal occlusion

b. Definition of malocclusion

c. Description of different types of dental, skeletal and functional malocclusion.

7. Classification of Malocclusion

Principle, description, advantages and disadvantages of classification of malocclusion by Angle's, Simon's, Lischer's and Ackerman and Proffitt's.

8. Normal And Abnormal Function Of Stomatognathic System

9. Etiology Of Malocclusion

a. Definition, importance, classification, local and general etiological factors.

b. Etiology of following different types of malocclusion:

1) Midline diastema

2) Spacing

3) Crowding

4) Cross-Bite: Anterior/Posterior

5) Class III Malocclusion

6) Class II Malocclusion

7) Deep Bite

8) Open bite

10. Diagnosis And Diagnostic Aids

a. Definition, Importance and classification of diagnostic aids

b. Importance of case history and clinical examination in orthodontics

c. Study Models: - Importance and uses - Preparation and preservation of study models

d. Importance of intraoral X-rays in orthodontics

e. Panoramic radiographs: - Principles, Advantages, disad vantages and uses

f. Cephalometrics: Its advantages, disadvantages

1. Definition

2. Description and use of cephalostat

3. Description and uses of anatomical landmarks lines and angles used in cephalometric analysis

4. Analysis- Steiner's, Down's, Tweed's, Ricket's-E- line

g. Electromyography and its uses in orthodontics

h. Wrist X-rays and its importance in othodontics

11. General Principles In Orthodontic Treatment Planning Of Dental And Skeletal Malocclusions

12. Anchorage In Orthodontics - Definition, Classification, Types and Stability Of Anchorage
13. Biomechanical Principles In Orthodontic Tooth Movement
    a. Different types of tooth movements
    b. Tissue response to orthodontic force application
    c. Age factor in orthodontic tooth movement
14. Preventive Orthodontics
    a. Definition
    b. Different procedures undertaken in preventive orthodontics and their limitations.
15. Interceptive Orthodontics
    a. Definition
    b. Different procedures undertaken in interceptive orthodontics
    c. Serial extractions: Definition, indications, contra-indication, technique, advantages and disadvantages.
    d. Role of muscle exercises as an interceptive procedure
16. Corrective Orthodontics
    a. Definition, factors to be considered during treatment planning.
    b. Model analysis: Pont's, Ashley Howe's, Bolton, Careys, Moyer's Mixed Dentition Analysis
    c. Methods of gaining space in the arch:- Indications, relative merits and demerits of proximal stripping, arch expansion and extractions
    d. Extractions in Orthdodontics - indications and selection of teeth for extraction.
17. Orthodontic Appliances: General
    a. Requisites for orthodontic appliances
    b. Classification, indications of Removable and Functional Appliances
    c. Methods of force application
    d. Materials used in construction of various orthodontic appliances - uses of stainless steel, technical considerations in curing of acrylic, Principles of welding and soldering, fluxes and antifluxes.
    e. Preliminary knowledge of acid etching and direct bonding.
18. Ethics

REMOVABLE ORTHODONTIC APPLIANCES

1) Components of removable appliances

2) Different types of clasps and their uses
3) Different types of labial bows and their uses
4) Different types of springs and their uses
5) Expansion appliances in orthodontics:
   i) Principles
   ii) Indications for arch expansion
   iii) Description of expansion appliances and different types of expansion devices and their uses.
   iv) Rapid maxillary expansion

FIXED ORTHODONTIC APPLIANCES

1. Definition, Indications & Contraindications
2. Component parts and their uses
3. Basic principles of different techniques: Edgewise, Begg's, straight wire.

EXTRAORAL APPLIANCES

1. Headgears
2. chincup
3. reverse pull headgears

MYOFUNCTIONAL APPLIANCES

1. Definition and principles
2. Muscle exercises and their uses in orthodontics
3. Functional appliances:
   i) Activator, Oral screens, Frankels function regulator, bionator twin blocks, lip bumper
   ii) Inclined planes - upper and lower

18. Orthodontic Management Of Cleft Lip And Palate
19. Principles Of Surgical Orthodontics
    Brief knowledge of correction of:
    a. Mandibular Prognathism and Retrognathism
    b. Maxillary Prognathism and Retrognathism
    c. Anterior open bite and deep bite
    d. Cross bite

20. Principle, Differential Diagnosis & Methods Of Treatment Of:

1. Midline diastema
2. Cross bite
3. Open bite
4. Deep bite
5. Spacing
6. Crowding
7. Class II - Division 1, Division 2
8. Class III Malocclusion - True and Psuedo Class III

21. Retention And Relapse

Definition, Need for retention, Causes of relapse, Methods of retention, Different types of retention devices, Duration of retention, Theories of retention.

FINAL Year BDS: **PUBLIC HEALTH DENTISTRY**

Course Code: D4PHD

COURSE OUTCOMES

At the conclusion of the course the student shall:

- Have a knowledge of the basis of public health, preventive dentistry, public health problems in India,
- Nutrition, Environment and their role in health, basics of dental statistics, epidemiological methods,
- National oral health policy with emphasis on oral health policy.
- Understand the community aspects of dentistry
- To take up leadership role in solving community oral health programme
- Exercises:
- Acquire skill of identifying health problems affecting the society, conducting health surveys, conducting health education classes and deciding health strategies. Students should develop a positive attitude towards the problems of the society and must take responsibilities in providing health.
- Able to communicate the needs of the community efficiently, inform the society of all the recent methodologies in preventing oral disease

COURSE SYLLABUS & CONTENTS

1. Introduction to Dentistry: Definition of Dentistry, History of dentistry, Scope, aims and objectives of Dentistry.
2. Public Health:
    i. Health & Disease: - Concepts, Philosophy, Definition and Characteristics
    ii. Public Health: - Definition & Concepts, History of public health
    iii. General Epidemiology: - Definition, objectives, methods
    iv. Environmental Health: - Concepts, principles, protection, sources, purification environmental sanitation of water disposal of waste sanitation, then role in mass disorder
    v. Health Education: - Definition, concepts, principles, methods, and health education aids
    vi. Public Health Administration: - Priority, establishment, manpower, private practice management, hospital management.
    vii. Ethics and Jurisprudence: Professional liabilities, negligence, malpractice, consents, evidence, contracts, and methods of identification in forensic dentistry.
    viii. Nutrition in oral diseases
    ix. Behavioral science: Definition of sociology, anthropology and psychology and their in dental practice and community.
    x. Health care delivery system: Center and state, oral health policy, primary health care, national programmes, health organizations.

Dental Public Health:

1. Definition and difference between community and clinical health.
2. Epidemiology of dental diseases-dental caries, periodontal diseases, malocclusion, dental fluorosis and oral cancer.
3. Survey procedures: Planning, implementation and evaluation, WHO oral health survey methods 1997, indices for dental diseases.
4. Delivery of dental care: Dental auxiliaries, operational and non-operational, incremental and comprehensive health care, school dental health.
5. Payments of dental care: Methods of payments and dental insurance, government plans
6. Preventive Dentistry- definition, Levels, role of individual , community and profession, fluorides in dentistry, plaque control programmes.

Research Methodology and Dental Statistics

1. Health Information: - Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes
2. Research Methodology: -Definition, types of research, designing a written protocol

3. Bio-Statistics: - Introduction, collection of data, presentation of data, Measures of Central tendency, measures of dispersion, Tests of significance, Sampling and sampling techniques-types, errors, bias, blind trails and calibration.

Practice Management

1. Place and locality
2. Premises & layout
3. Selection of equipments
4. Maintenance of records/accounts/audit.

Dentist Act 1948 with amendment.

Dental Council of India and State Dental Councils

Composition and responsibilities.

Indian Dental Association

Head Office, State, local and branches.

FINAL Year BDS: **PERIODONTOLOGY**

Course Code: D4PER

COURSE OUTCOMES

- The student shall acquire the skill to perform dental scaling ,diagnostic tests of periodontal diseases; to use the instruments for periodontal therapy and maintenance of the same.
- The student shall develop attitude to impart the preventive measures namely, the prevention of periodontal diseases and prevention of the progress of the disease.
- The student shall also develop an attitude to perform the treatment with full aseptic precautions; shall develop an attitude to prevent iatrogenic diseases;
- Counsel patients to conserve the tooth to the maximum possible time by maintaining periodontal health and to refer the patients who require specialist's care.

COURSE SYLLABUS & CONTENTS

1. Introduction: Definition of Periodontology, Periodontics, Periodontia, Brief historical background, Scope of Periodontics
2. Development of perio-dontal tissues, micro-structural anatomy and biology of periodontal tissues in detail Gingiva. Junctional epithelium in detail, Epithelial-Mesenchymal interaction,Periodontal, ligament Cementum, Alveolar bone.
3. Defensive mechanisms in the oral cavity: Role of-Epithelium,Gingival fluid, Saliva and other defensive mechanisms in the oral environment.
4. Age changes in periodontal structures and their significance in Geriatric dentistry — Age changes in teeth and periodontal structures and their association with periodontal diseases
5. Classification of periodontal diseases — Need for classification, Scientific basis of classification
   Classification of gingival and periodontal diseases as described in World Workshop1989
   Gingivitis:Plaque associated,ANUG,steroid hormone influenced, Medication influenced, Desquamative gingivitis, other forms of gingivitis as in nutritional deficiency, bacterial and viral infections etc.

   Periodontitis:
   Adult periodontitis, Rapidly progressive periodontitis A&B, Juvenile periodontitis(localized, generalized, and post-juvenile),
   Prepubertal periodontitis,
   Refractory periodontitis
6. Gingival diseases — Localized and generalized gingivitis, Papillary, marginal and diffuse gingivitis
   Etiology, pathogenesis, clinical signs, symptoms and management of
   i) Plaque associated gingivitis
   ii) Systemically aggravated gingivitis(sex hormones, drugs and systemic diseases)
   iii) ANUG
   iv) Desquamative gingivitis-Gingivitis associated with lichen planus, pemphigoid, pemphigus,

		and other vesiculobullous lesions v) Allergic gingivitis vi) Infective gingivitis-Herpetic, bacterial and candidial vii) Pericoronitis viii) Gingival enlargement (classification and differential diagnosis)
7	Epidemiology of periodontal diseases	- Definition of index, incidence, prevalence,epidemiology,endemic, epidemic, and pandemic - Classification of indices(Irreversible and reversible) - Deficiencies of earlier indices used in Periodontics - Detailed understanding of Silness &Loe Plaque Index,Loe&Silness Gingival Index, CPITN &CPI. - Prevalence of periodontal diseases in India and other countries. - Public health significance(All these topics are covered at length under community dentistry. Hence, the topics may be discussed briefly. However, questions may be asked from the topics for examination
8.	Extension of inflammation from gingiva	Mechanism of spread of inflammation from gingival area to deeper periodontal structures Factors that modify the spread
9.	Pocket	Definition, signs and symptoms, classification, pathogenesis, histopathology, root surface changes and contents of the pocket
10.	Etiology	- Dental Plaque (Biofilm) - Definition, New concept of biofilm - Types, composition, bacterial colonization, growth,maturation &disclosing agents - Role of dental plaque in periodontal diseases - Plaque microorganisms in detail and bacteria associated with periodontal diseases - Plaque retentive factors - Materia alba - Food debris - Calculus

- Definition
- Types, composition, attachment, theories of formation
- Role of calculus in disease

Food Impaction

- Definition
- Types, Etiology
- Hirschfelds' classification
- Signs ,symptoms &sequelae of treatment

Trauma from occlusion

- Definition, Types
- Histopathological changes
- Role in periodontal disease
- Measures of management in brief

Habits

- Their periodontal significance
- Bruxism &parafunctional habits, tongue thrusting ,lip biting, occupational habits

IATROGENIC FACTORS

Conservative Dentistry

- Restorations
- Contact point, marginal ridge, surface roughness, overhanging restorations, interface between restoration and teeth

Prosthodontics

- Interrelationship
- Bridges and other prosthesis, pontics(types) ,surface contour, relationships of margins to the periodontium, Gingival protection theory, muscle action theory& theory of access to oral hygiene.

Orthodontics

- Interrelationship, removable appliances &fixed appliances
- Retention of plaque, bacterial changes

Systemic diseases

- Diabetes, sex hormones, nutrition(Vit.C &proteins)
- AIDS & periodontium
- Hemorrhagic diseases, Leukemia, clotting factor

		disorders,PMN disorders
11.	Risk factors	Definition. Risk factors for periodontal diseases
12.	Host response	- Mechanism of initiation and progression of periodontal diseases - Basic concepts about cells, Mast cells, neutrophils, macrophages, lymphocytes, immunoglobulins, complement system, immune mechanisms & cytokines in brief - Stages in gingivitis-Initial, early, established & advanced - Periodontal disease activity, continuous paradigm, random burst & asynchronous multiple burst hypothesis
13.	Periodontitis	- Etiology ,histopathology, clinical signs & symptoms, diagnosis and treatment of adult periodontitis - Periodontal abscess; definition, classification, pathogenesis, differential diagnosis and treatment - Furcation involvement, Glickmans' classification, prognosis and management - Rapidly progressive periodontitis - Juvenile periodontitis: Localized and generalized - Post-juvenile periodontitis - Periodontitis associated with systemic diseases - Refractory periodontitis
14.	Diagnosis	- Routine procedures, methods of probing, types of probes,(According to case history) - Halitosis: Etiology and treatment. Mention advanced diagnostic aids and their role in brief.
15.	Prognosis	- Definition, types, purpose and factors to be taken into consideration
16.	Treatment plan	- Factors to be considered
17.	Periodontal therapy	A. General principles of periodontal therapy. Phase I,II, III, IV therapy. Definition of periodontal regeneration, repair, new attachment and reattachment. B. Plaque control

		i. Mechanical tooth brushes, interdental cleaning aids, dentifrices ii. Chemical; classification and mechanism of action of each & pocket irrigation
18.	Pocket eradication procedures	- Scaling and root planing: - Indications - Aims & objectives - Healing following root planning - Hand instruments, sonic, ultrasonic &piezo-electric scalers - Curettage &present concepts - Definition - Indications - Aims &objectives - Procedures & healing response - Flap surgery - Definition - Types of flaps, Design of flaps, papilla preservation - Indications & contraindications - Armamentarium - Surgical procedure & healing response
9.	Osseous Surgery	Osseous defects in periodontal disease - Definition - Classification - Surgery: resective, additive osseous surgery (osseous grafts with classification of grafts) - Healing responses - Other regenerative procedures; root conditioning - Guided tissue regeneration
20.	Mucogingival surgery &periodontal plastic surgeries	Definition Mucogingival problems: etiology, classification of gingival recession (P.D.Miller Jr. and Sullivan and Atkins) Indications & objectives Gingival extension procedures: lateral pedicle graft,

		frenectomy, frenotomy Crown lengthening procedures Periodontal microsurgery in brief
21.	Splints	- Periodontal splints - Purpose & classification - Principles of splinting
22.	Hypersensitivity	Causes, Theories & management
23.	Implants	Definition, types, scope &biomaterials used. Periodontal considerations: such as implant-bone interface, implant-gingiva interface, implant failure, peri-implantitis & management
24.	Maintenance phase (SPT)	- Aims, objectives, and principles - Importance - Procedures - Maintenance of implants
25.	Pharmaco-therapy	- Periodontal dressings - Antibiotics & anti-inflammatory drugs - Local drug delivery systems
26.	Periodontal management of medically compromised patients	Topics concerning periodontal management of medically compromised patients
27.	Inter-disciplinary care	- Pulpo-periodontal involvement - Routes of spread of infection - Simons' classification - Management
28.	Systemic effects of periodontal diseases in brief	Cardiovascular diseases, Low birth weight babies etc.
29.	Infection control protocol	Sterilization and various aseptic procedures

FINAL Year BDS: **CONSERVATIVE DENTISTRY & ENDODONTICS**

Course Code: D4CON

COURSE OUTCOMES

The graduate should acquire the following knowledge during the period of training.

- To diagnose and treat simple restorative work for teeth.
- To gain knowledge about aesthetic restorative material and to translate the same to patients needs.
- To gain the knowledge about endodontic treatment on the basis of scientific foundation.
- To carry out simple endodontic treatment.
- To carry out simple luxation of tooth and its treatment and to provide emergency endodontic treatment.
- Learn the skills to use medium and high speed hand pieces to carry out restorative work.
- Acquire the skills to use and familiarise endodontic instruments and materials needed for carrying out simple endodontic treatment.
- To achieve the skills to translate patients esthetic needs along with function.
- to motivate the patient for proper dental treatment at the same time proper maintenance of oral hygiene should be emphasise which will help to maintain the restorative work and prevent future damage.

COURSE SYLLABUS & CONTENTS

INTRODUCTION :
Definition aims objectives of Conservative Dentistry scope and future of Conservative Dentistry.

1. Nomenclature Of Dentition:
   Tooth numbering systems A.D.A. Zsigmondy Palmer and F.D.I. systems.
2. Principles Of Cavity Preparation :
   Steps and nomenclature of cavity preparation classification of cavities, nomenclature of floors angles of cavities.
3. Dental Caries :

Aetiology, classification clinical features, morphological features, microscopic features, clinical diagnosis and sequel of dental caries.

4. Treatment Planning For Operative Dentistry:
   Detailed clinical examination , radiographic examination, tooth vitality tests, diagnosis and treatment planning, preparation of the case sheet.
5. Gnathological Concepts Of Restoration:
   Physiology of occlusion, normal occlusion, Ideal occlusion, mandibular movements and occlusal analysis. Occlusal rehabilitation and restoration.
6. Aramamentarium For Cavity Preparation:
   General classification of operative instruments, Hand cutting instruments design formula and sharpening of instruments. Rotary cutting instruments dental bur, mechanism of cutting, evaluation of hand piece and speed current concepts of rotary cutting procedures. Sterilisation and maintenance of instruments. Basic instrument tray set up.
7. Control of Operating Filed:
   Light source sterilisation field of operation control of moisture, rubber dam in detail, cotton rolls and anti sialogogues.
8. Amalgam Restoration :
   Indication contraindication, physical and mechanical properties, clinical behaviour. Cavity preparation for Class I , II, V and III. Step wise procedure for cavity preparation and restoration. Failure of amalgam restoration.
9. Pulp Protection :
   Liners, varnishes and bases, Zinc phosphate, zinc polycarboxylate, zinc oxide eugenol and glass ionomer cements.
10. Anterior Restorations :
    Selection of cases, selection of material, step wise procedures for using restorations , silicate (theory only) glass ionomers, composites, including sand witch restorations and bevels of the same with a note on status of the dentine bonding agents.
11. Direct Filling Gold Restorations :
    Types of direct filling gold indications and limitations of cohesive gold. Annealing of gold foil cavity preparation and condensation of gold foils.
12. Preventive Measures In Restorative Practice :
    Plaque Control, Pitand fissure sealants dietary measures restorative procedure and periodontal health. Contact and contour of teeth and restorations matrices tooth separation and wedges.
13. Temporisation or Interim Restoration.

14. Pin Amalgam Restoration Indication Contra Indication :
    Advantages disadvantages of each types of pin methods of placement use of auto matrix. Failure of pin amalgam restoration.
15. Management Of Deep Carious Lesions Indirect And Direct Pulp Capping.
16. Non Carious Destruction's Tooth Structures Diagnosis and Clinical Management
17. Hyper Sensitive Dentine And Its Management.
18. Cast Restorations
    Indications, contra indications, advantages and disadvantages and materials used for same Class II and Class I cavity preparation for inlays fabrication of wax pattern spurring inverting and casting procedures & casting defects.
19. Die Materials And Preparation Of Dies.
20. Gingival Tissue Management For Cast Restoration And Impression Procedures
21. Recent Cavity Modification Amalgam Restoration.
22. Differences between Amalgam And Inlay Cavity preparation with note on all the types of Bewels used for Cast Restoration.
23. Control Of Pain During Operative Procedures.
24. Treatment Planning For Operative Dentistry Detailed Clinical Examination Radiographic Examination
25. Vitality Tests, Diagnosis And Treatment Planning And Preparation Of Case Sheet.
26. Applied Dental Materials.
    1. Biological Considerations.
       Evaluation, clinical application and adverse effects of the following materials. Dental cements, Zinc oxide euginol cements zinc phosphate cements, polycarboxylates glass ionomer cements, silicate cement calcium hydroxides varnishes.
    2. Dental amalgam, technical considerations mercury toxicity mercury hygiene.
    3. Composite, Dentine bonding agents, chemical and light curing composites
    4. Rubber base Imp. Materials
    5. Nobel metal alloys & non noble metal alloys
    6. Investment and die materials
    7. Inlay casting waxes

8. Dental porcelain
9. Aesthetic Dentistry

27. Endodontics: introduction definition scope and future of endodontics
28. Clinical diagnostic methods
29. Emergency endodontic procedures
30. Pulpal diseases causes, types and treatment .
31. Periapical diseases: acute periapical abscess, acute periodontal abscess phoenix abscess, chronic alveolar abscess granuloma cysts condensing osteitis, external resorption.
32. Vital pulp therapy: indirect and direct pulp capping pulpotomy different types and medicaments used.
33. Apexogenesis and apexification or problems of open apex.
34. Rationale of endodontic treatment case selection indication and contraindications for root canal treatments.
35. Principles of root canal treatment mouth preparation root canal instruments, hand instruments, power driven instruments, standardisation color coding principle of using endodontic instruments. Sterilisation of root canal instruments and materials rubber dam application.
36. Anatomy of the pulp cavity: root canals apical foramen. Anomalies of pulp cavities access cavity preparation of anterior and premolar teeth.
37. Preparation of root canal space . Determination of working length, cleaning and shaping of root canals, irrigating solution chemical aids to instrumentation.
38. Disinfection of root canal space intracanal medicaments, poly antibiotic paste ross mans paste, mummifying agents. Out line of root canal treatment, bacteriological examinations, culture methods.
39. Problems during cleaning and shaping of root canal spaces. Perforation and its management. Broken instruments and its management, management of single and double curved root canals.
40. Methods of cleaning and shaping like step back crown down and conventional methods.
41. Obturation of the root canal system. Requirements of an ideal root canal filling material obturation methods using gutta percha healing after endodontic treatment. Failures in endodontics.
42. Root canal sealers. Ideal properties classification. Manipulation of root canal sealers.

43. post endodontic restoration fabrication and components of post core preparation.
44. smear layer and its importance in endodontics and conservative treatment.
45. discoloured teeth and its management. Bleaching agents, vital and non vital bleaching methods.
46. traumatised teeth classification of fractured teeth. Management of fractured tooth and root. Luxated teeth and its management.
47. endodontic surgeries indication contraindications, pre operative preparation. Pre medication surgical instruments and techniques apicectomy, retrograde filling, post operative sequale trephination hemisection, techniques of tooth reimplantation (both intentional and accidental) endodontic implants.
48. root resorption.
49. emergency endodontic procedures.
50. lasers in conservative endodontics (introduction only) practice management
51. professional association dentist act 1948 and its amendment 1993.
52. duties towards the govt. Like payments of professional tax, income tax.
53. financial management of practice
54. dental material and basic equipment management.
55. Ethics

Commencing the Academic year 2018-2019, for the Final BDS PracticalExaminations in Conservative Dentistry & Endodontics, the students, apartfrom being tested on their skill and efficiency to prepare a Class II Cavity preparation on a carious tooth for amalgam restoration, may also be given the option of being tested for his/her skill and efficiency in preparing cavities on carious teeth for composite restorations as well as root canal treatment of anterior teeth on extracted or typhodont teeth upto the stage of master cone preparation, for the Clinical examination of patient cases.

FINAL Year BDS: **ORAL AND MAXILLOFACIAL SURGERY**

Course Code: D4OMF

COURSE OUTCOMES

To produce a graduate who is competent in performing extraction of teeth under both local and general anaesthesia, prevent and manage related complications, acquire a reasonable knowledge and understanding of the various diseases, injuries, infections occurring in the Oral & Maxillofacial region and offer solutions to such of those common conditions and has an exposure in to the in-patient management of maxillofacial problems.

At the end of the course and the clinical training the graduate is expected to -

- Able to apply the knowledge gained in the related medical subjects like pathology, microbiology and general medicine in the management of patients with oral surgical problem.
- Able to diagnose, manage and treat (understand the principles of treatment of) patients with oral surgical problems.
- Knowledge of range of surgical treatments.
- Ability to decide the requirement of a patient to have oral surgical specialist opinion or treatment.
- Understand the principles of in-patient management.
- Understanding of the management of major oral surgical procedures and principles involved in patient management.
- Should know ethical issues and communication ability.
- A graduate should have acquired the skill to examine any patient with an oral surgical problem in an orderly manner. Be able to understand requisition of various clinical and laboratory investigations and is capable of formulating differential diagnosis.
- Should be competent in the extraction of teeth under both local and general anaesthesia.
- Should be able to carry out certain minor oral surgical procedures under L.A. like frenectomy, alveolar procedures & biopsy etc.
- Ability to assess, prevent and manage various complications during and after surgery.

- Able to provide primary care and manage medical emergencies in the dental office.
- Understanding of the management of major oral surgical problems and principles involved in inpatient management.

COURSE SYLLABUS & CONTENTS

1. Introduction, definition, scope, aims and objectives.
2. Diagnosis in oral surgery:
   (A) History taking
   (B) Clinical examination
   (C) Investigations.
3. Principles of infection control and cross-infection control with particular reference to HIV/AIDS and Hepatitis.
4. Principles of Oral Surgery -
   a) Asepsis: Definition, measures to prevent introduction of infection during surgery.
      1. Preparation of the patient
      2. Measures to be taken by operator
      3. Sterilisation of instruments - various methods of sterilisation etc.
      4. Surgery set up.

   b) Painless Surgery:
      1. Pre-anaesthetic considerations. Pre-medication: purpose, drugs used
      2. Anaesthetic considerations -
         a) Local b) Local with IV sedations
      3. Use of general anaesthetic

   c) Access:
      Intra-oral: Mucoperiosteal flaps, principles, commonly used intra oral incisions.
      Bone Removal: Methods of bone removal.
      Use of Burs: Advantages & precautions
      Bone cutting instruments: Principles of using chisel & osteotome.
      Extra-oral: Skin incisions - principles, various extra-oral incision to expose facial skeleton.
         a) Submandibular
         b) Pre auricular
         c) Incision to expose maxilla & orbit
         d) Bicoronal incision

   d) Control of haemorrhage during surgery

Normal Haemostasis
Local measures available to control bleeding
Hypotensive anaesthesia etc.

e) Drainage & Debridement
Purpose of drainage in surgical wounds
Types of drains used
Debridement: purpose, soft tissue & bone debridement.

f) Closure of wounds
Suturing: Principles, suture material, classification, body response to various
materials etc.

g) Post operative care
Post operative instructions
Physiology of cold and heat
Control of pain - analgesics
Control of infection - antibiotics
Control of swelling - anti-inflammatory drugs
Long term post operative follow up - significance.

5. Exodontia: General considerations
Ideal Extraction.
Indications for extraction of teeth
Extractions in medically compromised patients.
Methods of extraction -
(a) Forceps or intra-alveolar or closed method.
Principles, types of movement, force etc.
(b) Trans-alveolar, surgical or open method, Indications, surgical procedure.
Dental elevators: uses, classification, principles in the use of elevators, commonly
used elevators.
Complications of Exodontia -
Complications during exodontia
Common to both maxilla and mandible.
Post-operative complications -
Prevention and management of complications.

6. Impacted teeth:
Incidence, definition, aetiology.
(a) Impacted mandibular third molar.

Classification, reasons for removal,
Assessment - both clinical & radiological
Surgical procedures for removal.
Complications during and after removal,
Prevention and management.

(b) Maxillary third molar,
Indications for removal, classification,
Surgical procedure for removal.

(c) Impacted maxillary canine
Reasons for canine impaction,
Localization, indications for removal,
Methods of management, labial and palatal approach,
Surgical exposure, transplantation, removal etc.

7. Pre-prosthetic Surgery:
Definition, classification of procedures

(a) Corrective procedures: Alveoloplasty,
Reduction of maxillary tuberosities,
Frenectomies and removal of tori.

(b) Ridge extension or Sulcus extension procedures
Indications and various surgical procedures

(c) Ridge augmentation and reconstruction.
Indications, use of bone grafts, Hydroxyapatite
Implants - concept of osseo integration
Knowledge of various types of implants and
surgical procedure to place implants.

8. Diseases of the maxillary sinus
Surgical anatomy of the sinus.
Sinusitis both acute and chronic
Surgical approach of sinus - Caldwell-Luc procedure
Removal of root from the sinus.
Oro-antral fistula - aetiology, clinical features and various surgical methods for closure.

9. Disorders of T.M. Joint
Applied surgical anatomy of the joint.
Dislocation - Types, aetiology, clinical features and management.
Ankylosis - Definition, aetiology, clinical features and management
Myo-facial pain dysfunction syndrome, aetiology, clinical features, management-

Non surgical and surgical.

Internal derangement of the joint.

Arthritis of T.M. Joint.

10. Infections of the Oral cavity

Introduction, factors responsible for infection, course of odontogenic

infections, spread of odontogenic infections through various facial spaces.

Dento-alveolar abscess - aetiology, clinical features and management.

Osteomyelitis of the jaws - definition, aetiology, pre-disposing factors,

classification, clinical features and management.

Ludwigs angina - definition, aetiology, clinical features, management and complications.

11.Benign cystic lesions of the jaws -

Definition, classification, pathogenesis.

Diagnosis - Clinical features, radiological, aspiration biopsy, use of contrast

media and histopathology.

Management - Types of surgical procedures, Rationale of the techniques,

indications, procedures, complications etc.

12.Tumours of the Oral cavity -

General considerations

Non odontogenetic benign tumours occuring in oral cavity - fibroma, papilloma, lipoma, ossifying fibroma, mynoma etc.

Ameloblastoma - Clinical features, radiological appearance and methods of management.

Carcinoma of the oral cavity -

Biopsy - types

TNM classification.

Outline of management of squamous

Cell carcinoma: surgery, radiation and chemotherapy

Role of dental surgeons in the prevention and early detection of oral cancer.

12.Fractures of the jaws -

General considerations, types of fractures, aetiology, clinical features and general principles of management.

mandibular fractures - Applied anatomy, classification.

Diagnosis - Clinical and radiological

Management - Reduction closed and open

Fixation and immobilisation methods

Outline of rigid and semi-rigid internal fixation.

Fractures of the condyle - aetiology, classification, clinical features, principles of management.

Fractures of the middle third of the face.

Definition of the mid face, applied surgical anatomy, classification, clinical

features and outline of management.

Alveolar fractures - methods of management

Fractures of the Zygomatic complex

Classification, clinical features, indications for treatment, various methods of reduction and fixation.

Complications of fractures - delayed union, non-union and malunion.

13.Salivary gland diseases -

Diagnosis of salivary gland diseases'

Sialography, contrast media, procedure.

Infections of the salivary glands

Sialolithiasis - Sub mandibular duct and gland and parotid duct.

Clinical features, management.

Salivary fistulae

Common tumours of salivary glands like Pleomorphic adenoma including minor salivary glands.

14.Jaw deformities -

Basic forms - Prognathism, Retrognathism and open bite.

Reasons for correction.

Outline of surgical methods carried out on mandible and maxilla.

15.Neurological disorders -

Trigeminal neuralgia - definition, aetiology, clinical features and methods of management including surgical.

Facial paralysis - Aetiology, clinical features.

Nerve injuries - Classification, neurorhaphy etc.

16.Cleft Lip and Palate -

Aetiology of the clefts, incidence, classification, role of dental surgeon in the management of cleft patients. Outline of the closure procedures.

17.Medical Emergencies in dental practice –

Primary care of medical emergencies in dental practice particularly -

(a)Cardio vascular (b) Respiratory (c) Endocrine
(d)Anaphylactic reaction (e) Epilepsy (f) Epilepsy

18. Emergency drugs & Intra muscular I.V. Injections -
Applied anatomy, Ideal location for giving these injections, techniques etc.

19. Oral Implantology

LOCAL ANAESTHESIA:

Introduction, concept of L.A., classification of local anaesthetic agents, ideal requirements, mode of action, types of local anaesthesia, complications.

Use of Vaso constrictors in local anaesthetic solution -
Advantages, contra-indications, various vaso constrictors used.
Anaesthesia of the mandible -
Pterygomandibular space - boundaries, contents etc.
Interior Dental Nerve Block - various techniques
Complications
Mental foramen nerve block
Anaesthesia of Maxilla -
Intra - orbital nerve block.
Posterior superior alveolar nerve block
Maxillary nerve block - techniques.

GENERAL ANAESTHESIA –

Concept of general anaesthesia.
Indications of general anaesthesia in dentistry.
Pre-anaesthetic evaluation of the patient.
Pre-anaesthetic medication - advantages, drugs used.
Commonly used anaesthetic agents.
Complication during and after G.A.
I.V. sedation with Diazepam and Medozolam.
Indications, mode of action, technique etc.
Cardiopulmonary resuscitation
Use of oxygen and emergency drugs.
Tracheostomy.

FINAL Year BDS: **PROSTHODONTICS AND CROWN & BRIDGE**

Course Code: D4PRO

COURSE OUTCOMES

At the end of the course, the student is expected to:

- Acquire knowledge to diagnose the prosthodontic needs of the patients
- Gain skill and expertise to fabricate complete and removable partial dentures for the patient rehabilitation
- Basic knowledge about fixed prosthodontics
- Attain knowledge about implants in prosthodontics

COURSE SYLLABUS & CONTENTS

Complete Dentures

A. Applied Anatomy and Physiology.

1. Introduction
2. Biomechanics of the edentulous state.
3. Residual ridge resorption.

B. Communicating with the patient

Understanding the patients.

- Mental attitude.

2. Instructing the patient.

C. Diagnosis and treatment planning for patients-

1. With some teeth remaining.
2. With no teeth remaining.

a) Systemic status.
b) Local factor.
c) The geriatric patient.
d) Diagnostic procedures.

D. Articulators- discussion

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 anatomy 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) Recovering 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.

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

   S. Treating abused tissues - discuss in brief.

   T. Relining and rebasing of dentures- discuss in brief.

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

   W. The single complete denture- discuss in brief.

   X. Overdentures denture- discuss in brief.

   Y. 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 Flexible Dentures

1. Introduction
   - Terminologies and scope
2. Classification.
3. Examination, Diagnosis & Treatment planning & evaluation of diagnostic data.
4. Components of a removable partial denture.
   - Major connectors,
   - minor connectors,
   - Rest and rest seats.
5. Components of a Removable Partial Denture.
   - Direct retainers,
   - Indirect retainers,
   - Tooth replacement.
6. Principles of Removable Partial Denture Design.
7. Survey and design – in brief.
   - Surveyors.
   - Surveying.
   - Designing.
8. Mouth preparation and master cast.
9. Impression materials and procedures for removable partial dentures.
10. Preliminary jaw relation and esthetic try-in for some anterior replacement teeth.
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.
19. Removable Partial Dentures opposing Complete denture.

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

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.
7. Principles of tooth preparations.
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