Section I

Goals of Education and Training

The curriculum is oriented towards educating students of B.D.S.

Course to:

1. Take up the responsibilities of Dental surgeon and be capable of functioning independently in both urban and rural environment.
2. Provide educational experience that allows hands-on experience both in hospital as well as in community setting.
3. Make maximum efforts to encourage integrated teaching and de-emphasize compartmentalization of disciplines so as to achieve horizontal and vertical integration in different phases.
4. Offer educational experience that emphasizes heath and prevention of disease rather than only treatment of disease.
5. Teach common problems of health and disease and the national programmes.
6. Use learner oriented methods, which would encourage clarity of expression, independence of judgment, scientific habits, problem solving abilities, self initiated and self-directed learning.
7. Use of active methods of learning such as group discussions, seminars, role play, field visits, demonstrations, peer interactions etc., which would enable students to develop personality, communication skills and other qualities which are necessary.

   Regular periodic assessment be done throughout the course. Examinations are designed with a view to assess not merely the knowledge but also practical and clinical skills, habits and values which are necessary for a

graduate to carry out professional day to day work competently.

Towards achieving these goals following methodology is to be adopted.

- Evolve institutional objectives, in consonance with the national goals and health policy.
- Shift the role of Dental teachers from merely imparting knowledge to that of a facilitator and motivator of student learning.
- Continuing Professional Development programes for faculty development, preparation of learning resource materials and for improving evaluation methods.

Section II

Aims and Objectives of BDS Course

AIMS

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 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.

OBJECTIVES:

The objectives are dealt under three headings (a) Knowledge and Understanding (b) Skills and (c) Attitudes.

(A) 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; ability 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) SKILLS:

A graduate should be able to demonstrate the following skills necessary for practice of dentistry.

1. 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. Prevent and manage complications if encountered while carrying out various surgical and other procedutres.
3. Carry out certain investigative procedures and ability to interpret laboratory findings.

4. Promote oral health and help prevent oral diseases where possible.
5. Control pain and anxiety among the patients during dental treatment.

(C) ATTITUDES:

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

1. Willingness to apply the current knowledge of dentistry in the best interest of the patient and 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 knowledge and professional skill from time to time.
5. Help and participate in the implementation of the national oral health policy.

Section III

Regulations relating to B.D.S Course

ADMISSION, SELECTION AND MIGRATION:-

I. Admission to the Dental Course – Eligibility Criteria

No Candidate shall be allowed to be admitted to the Dental Curriculum of first Bachelor of Dental Surgery (BDS) Course until:

1. He/she shall complete the age of 17 years on or before 31st December, of the year of admission to the BDS course;
2. He/she has passed qualifying examination as under:-

a. The higher secondary examination or the Indian School Certificate Examination which is equivalent to 10+2 Higher Secondary Examination after a period of 12 years study, the last two years of study comprising of physics, Chemistry, Biology and mathematics or any other elective subjects with English at a level not less than the core course for English as prescribed by the National Council for Educational Research and Training after the introduction of the 10+2+3 years educational structure as recommended by the National Committee on education; introduction of the 10+2+3 years educational structure as recommended by the National Committee on education;

   Note: Where the course content is not as prescribed for 10+2 education structure of the National Committee, the candidates will have to undergo a period of one year pre-professional training before admission to the dental college;

or

b. The intermediate examination in science of an Indian University/Board or other recognised examining body with physics, Chemistry and Biology which shall include a practical test in these subjects and also English as a compulsory subject;

c. The pre-professional /pre-medical examination with Physics, Chemistry and Biology, after passing either the higher secondary school examination, or the pre-university or an equivalent examination. The pre-professional/pre-medical examination shall

include a practical test in physics, Chemistry and Biology and also English as a compulsory subject;

d. The first year of the three years degree course of a recognized university, with Physics, Chemistry and Biology including a practical test in three subjects provided the examination is a "University Examination" and candidate has passed 10+2 with English at a level not less than a core course;

e. B.Sc. examination of an Indian University, provided that he/she has passed the B.Sc. examination with not less than two of the following subject Physics, Chemistry, Biology (Botany, Zoology) and further that he/she has passed the earlier qualifying examination with the following subjects-Physics, Chemistry, Biology and English.

f. Any other examination which, in scope and standard is found to be equivalent to the intermediate science examination of an Indian University/Board, taking Physics, Chemistry and Biology including practical test in each of these subjects and English.

Note:

- Marks obtained in Mathematics will not be considered for admission to BDS Course.
- After the 10+2 course is introduced, the integrated courses should be abolished.

II. Selection of Students: (a) The selection of students shall be based solely on merit of the candidate.

(b) A competitive entrance examination will be held on as to achieve a uniform evaluation as there may be variation of standards at qualifying examinations conducted by different agencies;

1. Procedure for selection to BDS course shall be as follows:-

I. In case of admission on the basis of qualifying examination, candidate for admission to BDS course must have passed in the subjects of Physics, Chemistry, Biology & English individually and mist have obtained a minimum of 50% marks taken together in physics, Chemistry, and Biology at the qualifying examination. In respect of candidates belonging to scheduled Castes, Scheduled Tribes or Other Backward Classes, the marks obtained in Physics, Chemistry and Biology taken together in qualifying examination be 40% instead of 50% as above and must have passing marks in English.

II. In case of admission on the basis of competitive entrance examination a candidate must have passed in the subjects of Physics, Chemistry, Biology and English individually and mist have obtained a minimum of 50% marks taken together in Physics, Chemistry and Biology at the qualifying examination and in addition must have come in the merit list prepared as a result of such competitive entrance examination by securing not less that 50% marks in Physics, Chemistry and Biology taken together in the competitive examination. In respect of candidates belonging to scheduled Castes, Scheduled Tribes or any other categories notified by the Government the marks

obtained in Physics, Chemistry and Biology taken together in qualifying examination and competitive entrance examination be 40% instead of 50% as stated above:

Provided that a candidate who has appeared in the qualifying examination the result of which has not been declared, he may be provisionally permitted to take up the competitive entrance examination and in case of selection for admission to the BDS course, he shall not be admitted to that course until he fulfils the eligibility criteria as per above regulations.

III. <u>Duration of the Course:</u>

The undergraduate dental training programme leading to BDS degree shall be of 5 years with 240 teaching days in each academic year. During this period, the student shall be required to have engaged in full time study at dental college

IV. <u>Migration:</u>

1) Migration from one dental college to another is not a right of a student. However, migration of students from one dental college to another dental college in India may be considered by the Dental Council of India. Only in exceptional cases on extreme compassionate grounds, provided the following criteria are fulfilled. Routine migrations on other ground shall not be allowed.

2) Both the colleges, i.e. one at which the student is studying at present and one to which migration is sought, are recognised by the Dental Council of India.

3) The applicant candidate should have passed first professional BDS examination.

4) The applicant candidate submits his application for migration, complete in all respects, to all authorities concerned within a period of one month of passing (declaration of results) the first professional Bachelor of Dental Surgery(BDS) examination.

5) The applicant candidate must submit an affidavit stating that he/she will pursue 240 days of prescribed study before appearing at IInd professional Bachelor of Dental surgery (BDS) examination at the transferee Dental college, which should be duly certified by the Registrar of the concerned University in which he/she is seeking transfer. The transfer will be applicable only after receipt of the affidavit.

Note 1:

1. Migration is permitted only in the beginning of IInd year BDS Course in recognised Institutions.
2. All applications for migration shall be referred to Dental Council of India by the college authorities. No Institution/University shall allow migration directly without the prior approval of the Council.

Note 2: Compassionate ground criteria;

1. Death of supporting guardian.
2. Disturbed conditions as declared by Government in the Dental College area.

V. Attendance requirement, Progress and Conduct

1. 75% in theory and 75% in practical/clinical in each year.
2. In case of a subject in which there is no examination at the end of the academic year/semester, the percentage of attendance shall not be less than 70%. However, at the time of appearing for the professional examination in the subject, the aggregate percentage of attendance in the subject should satisfy condition (1) above

VI. Subjects of Study:

First Year

1. General Human Anatomy including Embryology and Histology
2. General Human Physiology and Biochemistry, Nutrition and Dietics
3. Dental Anatomy, Embryology and Oral Histology
4. Dental Materials
5. Pre-clinical Prosthodontics and Crown & Bridge

Second Year

1. General Pathology and Microbiology
2. General and Dental Pharmacology and Therapeutics
3. Dental Materials
4. Pre clinical Conservative Dentistry
5. Pre-clinical Prosthodontics and Crown & Bridge
6. Oral pathology & Oral Microbiology

Third Year

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

4. Conservative Dentistry and Endodontics
5. Oral & Maxillofacial Surgery
6. Oral Medicine and Radiology
7. Orthodontics & Dentofacial Orthopaedics
8. Paediatric & Peventive Dentistry
9. Periodontolgy
10. Prosthodontics and Crown & Bridge

Fourth Year

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

Fifth Year

1. Oral & Maxillofacial Surgery
2. Prosthodontics and Crown & Bridge
3. Conservative Dentistry and Endodontics
4. Public Health Dentistry

EXAMINATIONS

I. PREFACE:

a. Evaluation is a continuous process and is based on criteria developed by the concerned authorities with certain objectives to

assess the performance of the learner. This also indirectly helps in the measurement of effectiveness and quality of the B.D.S. programme.

b. Evaluation is achieved by two processes
    1. Formative or internal assessment
    2. Summative or university examinations.

Formative evaluation shall be done through a series of test and examinations conducted periodically by the institution.

Summative evaluation will be done by the university through examinations conducted at the end of the specified course.

II. METHODS OF EVALUATION:

Evaluation may be achieved by the following tested methods:

1. Written test
2. Practicals
3. Clinical examination
4. Viva voce

INTERNAL ASSESSMENT EXAMINATION

The continuing assessment examinations may be held frequently at least 2 times in a given academic year and the average marks of these examinations should be considered. Ten percent of the total marks in each subject separately for theory and practical/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 4the and final B.D.S. at the end of 5th 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 laid down rules.

(1) University shall organise admission timings and the admission process in such a way that teaching starts from the 1st day of August in each academic year

I. B.D.S. Examination:

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

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 permitte to appear for the next higher examination.

II B.D.S. Examination:

A candidate who has not successfully completed the 1st B.D.S. examination can not appear in the IInd year Examination.

1. General Pathology and Microbiology
2. General and Dental Pharmacology and Therapeutics

3. Dental Materials

Pre Clinical Conservative – only Practical and Viva Voce

Pre Clinical Prosthodontics – only Practical and Viva Voce

III B.D.S. Examination

A candidate who has successfully completed the 2nd B.D.S. examination can appear in the IIIrd B.D.S. Examination.

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

IV B.D.S. Examination:

1. Oral Medicine and radiology
2. Paediatric & Preventive Dentistry
3. Orthodontics & dentofacial orthopaedics
4. Periodontology

V BDS Examination:

1. Prosthodontics and Crown & Bridge
2. Conservative Dentistry and Endodontics
3. Oral and Maxillofacial Surgery
4. Public Health Dentistry

WRITTEN EXAMINATION:

1. The written examination in each subject shall consist of one paper of three hours duration and shall have maximum of 70 marks.

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 such as essays, 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.

6. The University may set up a question bank

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 should 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 his 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 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. 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 subject shall have a maximum of 200 marks.

Theory	100
Practical/Clinical	100

Theory – 100		**Practicals/ Clinicals -**	**100**
University written exam	70	University Exam	90
Viva Voce	20		

Internal assessment (Written)	10	Internal assessment (Written)	10
Total	100		100

Practical and Viva Voce Only in University Examination

Pre-clinical Prosthodontics
Pre-Clinical Conservative dentistry……

Internal Assessment	-	20
Practical	-	60
Viva Voce	-	20
		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 Prosthetic Dentistry 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.

Grace Marks: Grace marks upto a maximum of 5 marks may be awarded to students who have failed only in one subject but passed in all other subjects.

Re-evaluation: The objective of re-evaluation is to ensure that the student receives a fair evaluation in the university examination and to minimize human error and extenuating circumstances. There shall be two mechanisms for this purpose.

1. **Re-totaling:** The University on application and remittance of a stipulated fee to be prescribed by the university, shall permit a recounting or opportunity to recount the marks received for various questions in an answer paper/ papers for theory of all subjects for which the candidate has appeared in the university examination. Any error in addition of the marks awarded if identified should be suitably rectified.

Qualification and experience for eligibility for examinership in BDS examination

1. M.D.S. Degree from a recognized Institution

2. Four years teaching experience in the subject in a dental college after MDS\

3. Should be holding the post of a Reader or above in a dental Institution approved/recognised by the Dental Council of India for B.D.S.

4. In case of Dental Materials, if internal is from Prosthodontics, external should be from Conservative Dentistry and vice versa

   Fifty percent of Examiners appointed shall be external from Dental Institutions approved/recognised by the Dental Council of India for B.D.S. Course, from another University.

   No person shall be an External Examiner to the same University for more than 3 consecutive years. However, if there is a break of one year the person can be re-appointed.

MINIMUM WORKING HOURS FOR EACH SUBJECT OF STUDY (B.D.S. COURSE)

Subjects	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Human Anatomy Including Embryology, Osteology and Histology	100	175		275
General Human Physiology	120 70	60 60		180 130

Biochemistry				
Dental Materials	80	240		320
Dental Anatomy Embryology, and Oral Histology	105	250		355
Dental Pharmacology & Therapeutics	70	20		90
General Pathology Microbiology	55 65	55 50		110 115
General Medicine	60		90	150
General Surgery	60		90	150
Oral Pathology & Microbiology	145	130		275
Oral Medicine & Radiology	65		200	265
Paediatric & Preventive Dentistry	65		200	265
Orthodontics & dental orthopaedics	50		200	250
Periodontology	80		200	280
Oral & Maxillofacial Surgery	70		360	430
Conservative Dentistry & Endodontics	135	200	460	795
Prosthodontics & Crown & Bridge	135	300	460	895
Public Health Dentistry	60		290	350
Total	1590	1540	2550	5680

Note:

There should be a minimum of 240 teaching days every academic year consisting of 8 working hours including one hour of lunch break.

MINIMUM WORKIN HOURS FOR EACH SUBJECT OF STUDY (B.D.S COURSE)

I.B.D.S

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Human Anatomy Including Embryology, Osteology and Histology	100	175		275
General Human Physiology	120	60		180
Biochemistry	70	60		130
Dental Anatomy Embrylogy, and Oral Histology	105	250		355
Dental Materials	20	40		100
Pre clinical Prosthodontics & Crown & Bridge	-	100		100
Total	415	685		1100

II.B.D.S

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General & Dental Pharmacology and therapeutics	70	20		90
General Pathology	55	55		110
Microbiologe	65	50		115

Dental Materials	60	200		260
Oral Pathology and Oral Microbiology	25	50		75
Pre Clinical Prosthodontics & Crown & Bridge	25	200		225
Pre Clinical Conservative Dentistry	25	200		225
Total	**325**	**775**		**1100**

III B.D.S

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Medicine	60		90	150
General Surgery	60		90	150
Oral Pathology and Oral Microbiology	120	80		200
Oral Medicine and Radiology	20		70	90
Paediatric and Preventive Dentistry	20		70	90
Orthodontics & Dentofacial Orthopaedics	20		70	90
Periodontology	30		70	100
Oral & Maxillofacial Surgery	20		70	90
Conservative Dentistry & Endodontics	30		70	100
Prosthodontics and Crown & Bridge	30		70	100
Total	**410**	**80**	**750**	**1160**

IV B.D.S

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
Oral Medicine and Radiology	45		130	175
Paediatric and Preventive Dentistry	45		130	175
Orthodontics & Dentofacial Orthopaedics	30		130	160
Periodontology	50		130	180
Oral & Maxillofacial Surgery	20		90	110
Conservative Dentistry & Endodontics	30		90	120
Prosthodontics and Crown & Bridge	30		90	120
Public Health Dentistry	30		90	120
Total	**280**		**880**	**1160**

V B.D.S

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
Oral & Maxillofacial Surgery	30		200	230
Conservative Dentistry & Endodontics	50		300	350
Prosthodontics and Crown & Bridge	50		300	350
Public Health Dentistry	30		200	230
Total	**160**		**1000**	**1160**

SYLLABUS OF STUDY

1. HUMAN ANATOMY, EMBRYOLOGY, HISTOLOGY & MEDICAL GENETICS

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 & systems embryology with respect to decelopment of head & neck.

6 Histology of basic tissues and of the organs of gastrointestinal, respiratory, Endocrine, excretory systems & gonads.

7 Medical genetics.

E I. <u>FURTHER DETAILS OF THE COURSE.</u>

1 Anatomical terms

2 Skin, superficial fascia & deep fascia

3 Cardiovascular system, portal system sollateral circulation and arteries

4 Lymphatic system, regional lymph nodes.

5 Osteology – Including types of muscle tissue & innervation

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, individual bones of the skull, hyoid bone and cervical vertebrae.

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 maxillary nerve and radial nerve.
    2. Gluteal region and the relation of the sciatic nerve.
    3. Vastus materials muscle.
b. Intravenous injections & venesection: Demonstration of veins in the dissected specimen and on a living person.

1. Median cubical vein. 2. Cephalic vein. 3. Basilic vein, 4. Long saphenous vein

C. Arterial pulsations: Demonstration of arteries on a dissected specimen and feeling of pulsation of the following arteries on a living person.

1. Superficial temporal, 2. Facial, 3. Carotid, 4. Axillary, 5. Brachial, 6. Radial, 7. Ulnar, 8. Femoral, 9. Popliteal, 10. Dorsalispedis

D. Lumbar puncture: Demonstration on a dissected specimen of the spinal cord, cauda equine & epidural space and the inter vertebral space between L4 & L5.

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

2. HUMAN PHYSIOLOGY

COURSE CONTENTS THEORY

1. GENERAL PHYSIOLOGY

1 Homeostasis: Basic concept, Feed back mechanisms

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2 Structure of cell membrane, transport across cell membrane

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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'c 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 & Ph 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 endotrelial 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, 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 & abnormalities.

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.

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, fertilization, 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 & enemical.

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.

PRACTICALS

The followings list of practical is minimum and essential. All the

practical have been categorised as procedures and demonstrations. The procedures are to be performed by the students during practical classes to acquire skills. All the procedures are to be included in the University practical examination. Those categorized as demonstrations are to be shown to the students during practical classes. However these demonstrations would not be included in the University examinations but question based on this would be given in the form of charts, graphs and calculations for interpretation by the students.

PROCEDURES

1 Enumeration of Red Blood Cells
2 Enumeration of White Blood Cells
3 Differential leucocyte counts
4 Determination of Haemoglobin
5 Determination of blood group
6 Determination of bleeding time and clotting time
7 Examination of pulse
8 Recording of blood pressure.

DEMONSTRATION :

1 Determination of packed cell volume and erythrocyte sedimentation rate
2 Determination of specific gravity of blood
3 Determination of erythrocyte fragility
4 Determination of vital capacity and timed vital capacity
5 Skeletal muscle experiments.
  Study of laboratory appliances in experimental physiology, Frog's gastrocneminus sciatic preparation. Simple muscle curve, effects of two successive stimuli, effects of increasing strength of stimuli, effects of temperature, genesis of fatigue and tetanus. Effect of after load and free load on muscle contraction, calculation work done.
6 Electrocardiography : Demonstration of recording of normal Electro cardiogram
7 Clinical examination of cardiovascular and respiratory system.

BIOCHEMISTRY

BIOCHEMISTRY AND NUTRITION

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. Amino acids: 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 gramma carboxylation. Introduction to antivitamins and hypervitaminosis.

Minerals : Classification, daily requirement. Calcium and phosphate: sources, uptake, excertion, function. Serum calcium regulation. Iron: sources, uptake and transport. Heme and nonheme iron functions; deficiency. Iodine: Brief introducftion 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 utilization. Introduction to glycogenesis, glycogenolysis, fatty acid synthesis, lipogenesis and lipolysis. Gluconeogenesis. Lactate metabolism Protein utilization 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 functionsof 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.

8. STRUCTURAL COMPONENTS AND BLOOD PROTEINS

Connective tissue: Collagen and elastin. Glycosaminoglycans.

Bone structure. Sturcture 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 disorder. Evaluation of glycemic status. Hyperthyroidism and hypothyroidism: Biochemical evaluation. Hyperlipoproteinemias and altherosclerosis, 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. Goat. Examples of genetic disorders including lysosmal 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.

PRACTICALS: Contact hours 50

1.	Qualitative analysis of carbohydrates	4
2.	Color reactions of proteins and amino acids	4
3.	Identification of no protein nitrogen substance	4
4.	Normal constituents of urine	4
5.	Abnormal constituents of urine	4
6.	Analysis of saliva including amylase	2
7.	Analysis of milk Quantitative estimations	2
8.	Titrable acidity and ammonia in urine	2
9.	Free and total acidity in gastric juice	2
10.	Blood glucose estimation	2
11.	Serum total protein estimation	2
12.	Urine creatinine estimation Demonstration	2
13.	Paper electrophoresis charts/clinical data evaluation	2
14.	Glucose tolerance test profiles	2

15.	Serum lipid profiles	1
16.	Profiles of hypothyrodisim and hyperthyrodisim	1
17.	Profiles of hyper and hypoparathyrodism	1
18.	Profiles of liver function	1
19.	Urea, uric acid creatinine profile in kidney disorders	1
20.	Blood gas profile in acidosis/alkalosis	1

3. DENTAL ANATOMY, EMBRYOLOGY AND ORAL HISTOLOGY

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:

- Generalised 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 indicidual teeth.

4 Occlusion:

- Definition, factors omfluencing occlusion – basal bone, arch, individual teeth, external & internal forces &

sequence of eruption.

- Inclination of individual teeth – compernsatory 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, jawa, 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 keratinisation, clinical parts of gingival,

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 & microscopiuc 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 & hyupercalcemia & hyper & hypo phosphatemia & fluorosis.

5 Theories of Mineralisation:

- 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.

4. GENERAL PATHOLOGY

COURSE CONTENT

A. General Pathology -

1 Introduction of Pathology
Terminologies
The cell in health
The normal cell structure
The cellular functions

2 Aetiology and Pathogenesis of Disease
Cell Injury
Types – 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
Apotasis
Def, causes, features and types of necrosis
Gangrene – Dry, wet, gas
Pathological Calcifications
(Dystrophic and metastatic)

5 Inclammation

- 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

      Granulomations 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 & autommunity

17. AIDS and Hepatites.

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. Aetiology and pathogenesis of neoplasia, Carcinogenesis
f. Tumour biology
g. Oncogenes and anti- oncogenes

h. Diagnosis
i. Precancerous lesions
j. Common specific tumours, Squamous papilloma & Carcinoma, Basal cell Carcinoma, Adenoma & Adenoca, Fibroma & Fibrosarcoma, Lipoma and liposarcoma

B. Systemic Pathology -

22 Anaemias
- Iron 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, Squamous cell Carcinoma, 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, Osteocalstoma, Giant cell Tumour, Eqing's sarcoma, Fibrous dysplasia, Aneurysmal bone cyst
-

28 Diseases of Cardiovascular system
- Cardiac failuare
- Congenital heart disease – ASD, VSD, PDA
- Fallot's Tetrology
- Infective Endocarditis
- Atherosclrrosis
- Ischaemic heart Disease

29. Haemorrhagic Disorders
Coagulation cascade
Coagulation disorders
- Platelet function

- Platelet disorders

Practicals

1. Urine – Abnormal consitutients
   – Sugar, albumin, ketone bodies
2. Urine – Abnormal constituents
   – Blood, bile sealts, bile pigments
3. Haemoglobin (hb) estimation
4. Total WBC count
5. Different WBC count
6. Packed cell volume (PVC) Erythrocyte Sedimentation Rate (ESR)
7. Bleeding time & Clotting Time
8. Histopathology
   Tissue Processing
   Staining
9. Histopathology slides
   – Acute apendictis, Granulation tissue, fatty liver
10. Histopathology slides
    – CVC lung, CVC liver, kidney amyloidosis
11. Histopathology slides
    Tuberculosis, Actionomysosis, Rhinosporidiosis
12. Histopathology slides
    Papilloma, Basal cell Ca, Sq cell Ca
13. Histopathology slides
    Osteosarcoma, osteoclastoma, fibrosarcoma
14. Histopathology slides
    Malignant melanoma, Ameloblastoma, Adenoma
15. Histopathology slides
    Mixed parotid tumour,metastatic
    Carcinoma in lymph node

MICROBIOLOGY

A. GENERAL MICROBIOLOGY

1 History introduction, Scope, Aims and Objectives.
2 Morphology and Physiology of bacteria.
3 Detail account of Sterilisation 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 Bacteria 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 defense mechanism of the body.
7 Immune response
8 Antigen – Antibody reactions – with reference to clinical utility
9 Immunodeficiency disorders – a brief knowledge of various types of immunodeficiency disorders – A sound knowledge of immunodeficiency 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 Immunehaematology

C. SYSTEMATIC BACTERIOLOGY:

1 Pyogenic cocci – Staphylococcus, Streptococcus, Pneumococcus, Gonococcus, Meningococcus – brief account of each coccus – detailed account of mode 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 immunization.
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

5 Bacteriophage – structure and significance

E. MYCOLOGY

1 Brief Introduction – protozoans and helminthes

2 Brief knowledge about the mode of transmission and prevention of commonly seen parasitic infection in the region.

5. GENERAL AND DENTAL PHARMACOLOGY AND THERAPEUTICS

I 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, analgesics 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.

5 Autocoids:
Histamine, antihistamines, prostaglandins, leukotriens and bronchodilators, Implications of Autocoids in clinical dentistry.

6 Drugs acting on blood; coagulants and anticoagulants, hematinics, Implications of these drugs in clinical dentistry.

7 G.I.T. Drugs, Purgatives, anti-diarrhoeal, antacids, anti-ematics, Implications of these drugs in clinical dentistry.

8 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.

9 Chemotherapy: antimicrobial agents (against bacteria, anaerobic infections, fungi, virus and broad spectrum). Infection management in dentistry. Pharmacotherapy of Tuberculosis, leprosy and chemotherapy of malignancy in general implications of chemotherapy in clinical dentistry .

10 Vitamins: Water soluble vitamins, Vit. D, Vit.K. and Vit. E, Implications of Vitamins in clinical dentistry.

11 Pharmacotherapy of emergencies in dental office and emergency drugs tray Implications of Pharmacotherapy in clinical dentistry.

12 Chealating agents – BAL, EDTA and desferrioxamine.

II DENTAL PHARMACOLOGY

1 Anti – septics, astringents, obtundents, mummifying agents, bleaching agents, styptics disclosing agents, dentifrices, mouth washes, caries and fluorides.

2 Pharmacotherapy of common oralo conditions in dentistry.

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

6. DENTAL MATERIALS

1 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.

2 IMPORTANT PHYSICAL PROPERTIES APPLIABLE TO DENTA 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.

3 BIOLOGICAL CONSIDERATIONS IN USE OF DENTAL MATERIALS

Materials used are with the knowledge of appreciation of certain biological considerations for use in oral cavity. Raquirement 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 cound 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.

4 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 reaction, 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

5 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. Polysulphide, Codensation 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.

6 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, polymerization, polymerisation mechanism stages in addition polymerization, inhibition of polymerization, co-polymerisation, molecular weight, crosslinking, plasticiers, Physical properties of polymers, polymer structures types of resins.

ACRYLEC RESINS:

Mode of polymerisation: Heat activated, Chemically activated, Light activated, Mode of supply, application, composition,

polymerization 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 applilcation for composites: Resins for restoring eroded teeth, Pit and fissure sealing, Resin inlay system- Indirect & direct, Core build up, Orthodontic applications.

7 METAL AND ALLOYS:

Structure and behaviour of metals, Solidification of metals, mechanism of crystallization amorphous & crystalline. Classification of alloys, solid solutions, Constitutes or equilibrium phase diagrams: Electric alloys, Physicals 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, Micro leakage, 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 hygine.

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.

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 for 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 coping – 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, and elongation, modulus of elasticity, tarnish and corrosion.

Casting shrinkage and compensation of casting shrinkage. Biocompatibility – 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.

8 DENTAL WAXES INCLUDING INLAY CASTING WAX

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

Classification of Waxes:

Properties: melting rage, thermal expansion, mechanical properties, flow & residual stresses, ductility. Dental Wax: 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.

9 DENTAL CASTING INVESTMENTS.

Definition, requirements, classification

Gypsum bonded – classification. Phosphate bonded, Silica bonded.

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

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

10 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 flux: 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. Sensitization & stabilization, 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, and Corrosion resistance.

11 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, bio mechanism 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.

12 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, biocompatibility, technical considerations.
Metal Ceramic (PFM): Alloys – Types and composition of alloys. Ceramic – Type and Composition.
Metal Ceramics 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 cream), ceramic veners, inlays and onlays and CAD- CAM ceramic. Chemical attach of ceramic by fluoride. Procelain furnaces.

13 ABRASION & POLISHING AGENTS
Definition of abrasion and polishing. Need of abrasion and polishing. Types of abrasives: Finishing, polishing & cleaning. Types of abrasives: Diamond, Emery, aluminum 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 polishing. Electrolytic polishing and burnishing.

14 DIE AND COUNTER DIE MATERIALS INCLUDING ELECTROFORMING AND ELECTROPOLISHING
Types – Gypsum products, Electroforming, Epoxy resin, Amalgam.

15 DENTAL IMPLANTS: Evolution of dental implants, types and materials.

16 MECHANICS OF CUTTING: Burs and points.

At the end of the course the student should have the knowledge about 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.

7. PRE-CLINICAL CONSERVATIVE DENTISTRY LABORATORY EXERCISES

1. Identification and study of handcutting instruments chisles, gingival margin trimmers, excavators and hatchet.
2. Identification and use of rotary cutting instruments in contra angle hand pieces burs (micromotor).
3. Preparation class I and extended class I and class II and MOD's and class V amounting to 10 exercises in plaster models.
4. Ten exercises in mounted extracted teeth of following: class I, 4 in number; class I extended cavities 2; class II 4 in number and Class V2 in number. Cavity preparation base application, matrix and wedge placement restoration with amalgam.
5. Exercises on phatom head models which includes cavity preparation base and varnish application matrix and wedge placement followed by amalgam restoration.

Class I	5
Class I with extension	2
Class II	10
Class II Mods	2
Class V and III for glass ionomers	4
Class V for amalgam	2

6. Polishing of above restorations.
7. Demonstration of class III and class V cavity preparation. For composites on extracted tooth completing the restoration.
8. Polishing and finishing of the restoration of composites.
9. Identification and manipulation of varnish bases like Zinc Phosphate, Poly carboxylate, Glass Ionomers, Zinc Oxide, Euginol cements.
10. Identification and manipulation of various matrices, tooth separators and materials like composites and modified glass ionomer cements.

11. Cast Restoration
    1) Preparation of class II inlay cavity.
    2) Fabrication of wax pattern.
    3) Sprue for inner attachment investing
    4) Investing of wax pattern
    5) Finishing and cementing of class II inlay in extracted tooth.
12. Endodontics
    1) Identification of basic endodontics instruments.
    2) Coronal access cavity preparation on extracted upper central incisor.
    3) Determination of working length.
    4) Biomechanical preparation of root canal space of central incisor.
    5) Obturation of root canal space. Absence of coronal access cavity.
    6) Closure of access cavity.

8. PRE CLINICAL PROSTHODONTICS

1. Identification & study of instrument used for Pre-Clinical laboratory exercises like wax knife, lacron carver, bowl, plaster spatula, hot plate, class slab, articulator (different), wax spatula, plaster knife, occlusal plate, clamp & flask.
2. Physical properties & manipulation of dental materials used in pre-clinical laboratory exercises like impression materials (Imp. Compound) Gypsum procucts, waxes, denture base materials, finishing & polishing materials.
3. Different types of impressions
4. Laboratory procedures involved with impression making
5. Beading, boxing & cast preparation
6. Transferring bases & occlusal rims. (Materials & techniques)
7. Articulation
8. Teeth selection & arrangement – class I, II, III
9. Concept of balanced occlusion
10. Laboratory procedures
    a) Wax contouring
    b) Investing of denture

c) Preparation of mold
d) Preparing & packing acrylic resin
e) Processing of dentures
f) Lab remount procedures
g) Recovering C.D. from the cast
h) Finishing and polishing of complete dentures

9. ORAL PATHOLOGY & ORAL MICROBIOLOGY

1. 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 is to be emphasized.
2. Development disturbances of teeth, jaws and soft tissues of oral & paraoral region:
   - Introduction to developmental disturbances – Hereditary, Familial mutation, Hormonal etc. causes to be highlighted.
   - Development disturbances of teeth – Aetiopathogenesis, 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.
   - Development disturbances of jaws – size & shape of the jaws.
   - Development disturbances of oral & paraoral soft tissues – lip & palate- clefts, tongue, gingival, mouth, salivary glands & face.
3. Dental Caries:
   - Aetiopathogenesis, microbiology, clinical features, diagnosis, histopathology, immunology, prevention of dental caries & its sequel.
4. Pulp & Periapical Pathology & Osteomyelitis.
   - Aetiopathogenesis & 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.

5. Periodontal Diseases:
   - Aetiopathogenesis, microbiology, clinical features, microbiology, histopathology & radiological features (as appropriate) of gingivitis, gingival enlargements & periodontitis. Basic immunological mechanisms of periodontal disease to be highlighted.
6. Microbial infections of oral soft tissues:
   - Microbiology, defense 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.
7. Common non-inflammatory diseases involving the jaws:
   - Aetipathogenesis, 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.
8. Diseases of TM Joint:
   - Ankylosis, summary of different types of arthritis & other developmental malformations, traumatic injuries & myofascial pain dysfunction sundrome.
9. Cysts of the Oral & Paraoral region:
   - Classification, etipathogenesis, clinical features, histopathology, laboratory & radiological features (as appropriate) of Odontogenic cysts, Non-Odontogenic cysts, Pseudocysts of jaws & soft tissue cysts of oral & paraoral region.
10. Tumours of the Oral Cavity:
    - Classification of Odontogenic, Non-Odontogenic & Salivary Gland Tumours. ASetipathogenesis, 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 & Naevi.

-Benign Mesenchymal – Fibroma, Aggressive Fibrous Lesions, Lipoma, Haemangioma, Lymphangioma, Neurofibroma, Schwannoma, Chondroma, Osetoma & 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 – Plemorphic Adenoma, Warthin's tumour, & Oncocytome.

-Malignant Epithelial neoplasms – Adenoid Cystic Carcinoma, Mucoepidermoid Carcinoma, Acinic Cell Carinoma & Adenocarcinomas.

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

e) Metasatic tumours – Tumors metastasizing to & from oral cavity the routes of metastasis.

11 Traumatic, Reactive & Regressive lesions of Oral Cavity:

- Pyogenic & Giant cell granuloma, exostoses Fibrous Hyperplasia, Traumatic Ulcer & Traumatic Neuroma.
- Attrition, Abrasion, Merosion, 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.

12. Non neoplastic Salivary Gland Diseases:

- Sialolithiasis, Sialosis, Sialadenitis, Xerostomia & Ptyalism.

13. Systemic Diseases involving Oral cavity:

- Brief review & oral manifestations, diagnosis & significance of common Blood, Nutritional, Hormonal & Metabolic diseases of

Oral cavity.

14. Mucocutaneous Lesions:
    - Aetiopathogenesis, clinical features & histopathology of the following common lesions.Lichen Planus, Lupus Erythematosus, Pemphigus & Pemphigoid lesions, Erythema Multiforme, Psoriasis, Scheroderma, Ectodermal Dysplasia, Epidermolysis bullosa & Whitesponge nervus.
15. Diseases of the Nerves:
    - Facial neuralgias – Trigeminal & Glossopharyngeal. VII nerve paralysis, Casalgia.
    - Psychogenic facial pain & burning mouth syndrome.
16. Pigmentation of Oral & Paraoral region & Discoloration of teeth:
    - Causes & clinical manifestations.
17. Diseases of Maxillary Sinus:
    - Traumatic injuries to sinus, Sinusitis, Cysts & Tumours involving antrum.
18. a) ORAL PRECANCER – CANCER; Epidemiology, aetiology, clinical and histopathological features, TNM classification. Recent advances in diagnosis, management and prevention.

    b) Biopsy: Types of biopsy, value of biopsy, cytology, histochemistry & frozen sections in diagnosis of oral diseases.
19. 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

10. GENERAL MEDICINE.

GUIDELINES**:**

Special emphasis should be given throughout on the importance of

various diseases as applicable to dentistry.

1. Special precautions/contraindications of anesthesia and various dental procedures in different systemic diseases.
2. Oral manifestations of systemic diseases.
3. Medical emergencies in dental practice.

A dental student should be taught in such a manner that he/she is 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. He should be capable of handling medical emergencies encountered in dental practice.

THEORY SYLLABUS

	CORE TOPICS (Must Know)	COLLATERAL TOPICS (Desirable to Know)
1.	Aims of medicine Definitions of signs, symptoms, diagnosis, differential diagnosis treatment & prognosis.	
2.	<u>Infections</u>. Enteric fever, AIDS, herpes simplex, herpes zoster, syphilis diphtheria.	Infectious mononucleosis mumps, measles, rubella, malaria.
3.	<u>G.I.T.</u> Stomatitis, gingival hyperplasia, dysphagia, acid peptic disease, jaundice, acute and chronic hepatitis, cirrhosis of liver ascites	Diarrhoea, Dysentery, Amoebiasis, Molabsorption
4.	<u>CVS.</u> Acute rheumatic fever, rheumatic valvlar heart disease, hypertension, ischemic heart disease, infective endocarditis, common arrhythmias, congenital heart disease, congestive cardiac failure	
5.	<u>RS</u> Pneumonia, COPD, Pulmonary TB, Bronehial asthma	Lung Abscess, Pleural effusion, Pneumothorax,

	Bronchietasis, Lung cancers.
6. Haematology Anaemias, bleeding & clotting disorders, leukemias, lumphomas, agranulocytosis, splenomegaly, oral manifestations of haematologic disorders, generalized lymphadenopathy.	
7. Rental System Acute nephrities Nephrotic syndrome	Renal failure
8. Nutrition Avitaminosis	Balance diet PEM Avitaminosis
9. CNS Facial palsy, facial pain including trigeminal neuralgia, epilepsy, headache including maraine	-Meningitis -Examination of comatose patient -Examination of cranial nerves.
10. Endocrines Diabetes Mellitus Acromegaly, Hypothyroidism, Thyrotoxicosis, Calcium metabolism and parathyroids	Addisions's disease, crushing's syndrome
11. Critical care Syncope, cardiac arrest, CPR, shock	Ac LVF ARDS

CLINICAL TRAINING:

The student must be 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.

11. GENERAL SURGERY

1 HISTORY OF SURGERY:

The development of surgery as a speciality over the years, will give the students and 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:
Introductions 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, and their relevance to routine dental practice.

3 WOUNDS:
Their classification, healing, repair, treatment, 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 INFECTION:
Acute and chronic abscess skin infections, cellulites, carbuncle, and erysipelas. 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. Synocope, 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, SYSTS, SINUS AND FISTULAE:
Clasification, 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, 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:
Infection and tumours affecting these sites. Indications, procedure and complications of tracheostomy.

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:
Princples as applicable to minor surgical procedures including detailed description of asepsis, antiseptics, sterilization, principles of anaesthesia and principles of tissue replacement. Knowledge of sutures, drains, diathermy, cryosurgery and use of Laser in surgery.

15 ANOMALIES 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.

12. CONSERVATIVE DENTISTRY AND ENDODONTICS

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 and 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. Armamentarium 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. Sterilization and maintenance of instruments. Basic instrument tray set up.
6. Control of Operating Filed:
   Light source sterilization filed of operation control of moisture, rubber dam in detail, cotton rolls and anti sialogagues.
7. 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.

8. Pulp Protection:
   Liners, varnishes and bases, Zinc phosphate, zinc polycarboxylate, zinc oxide eugenol and glass inomer cements.
9. 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.
10. 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.
11. Preventive Measures in Restorative Practice:
    Plaque Control, Pit and fissure sealants dietary measures restorative procedures and periodontal health. Contact and contour of teeth and restorations matrices tooth separation and wedges.
12. Temporisation or Interim Restoration.
13. Pin amalgam Restoration Indication and Contra Indiacation:
    Advantages disadvantages of each types of pin methods of placement use of auto matrix. Failure of pin amalgam restoration.
14. Management of Deep Carious Lesions; Indirect and Direct Pulp Capping.
15. Non Carious Destruction of Tooth Structures Diagnosis and clinical Management.
16. Hyper Sensitive Dentine and its Management.
17. 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.
18. Die Materials.
19. Gingival tissue Management for Cast Restoration and Impression Procedures
20. Recent Cavity Modification amalgam Restoration.
21. Difference between amalgam and Inlay Cavity preparation with note on all the types of Bevels used for Cast Restoration.
22. Control of Pain during Operative Procedures.
23. Treatment planning for Operative Dentistry Detailed Clinical and

Radiographic Examination.

24. Vitality Tests, Diagnosis and Treatment Planning and Preparation of Case Sheet.
25. Applied Dental Materials.
    a. 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.
    b. Dental amalgam, technical considerations mercury toxicity mercury hygiene.
    c. Composite, Dentine bonding agents, chemical and light curing composites.
    d. Rubber base Imp. Materials.
    e. Noble & non – noble metal alloys
    f. Investment and die materials
    g. Inlay casting waxes
    h. Dental porcelain
    I. Aesthetic Dentistry
26. Endodontics: introduction, definition, scope and future of endodontics.
27. Clinical diagnostic methods
28. Emergency endodontic procedures.
29. Pulpal diseases causes, types and treatment.
30. Periapical diseases: acute periapical abscess, acute periodontal abscess phoenix abscess, chronic alveolar abscess granuloma cysts condensing osteits, external resorption.
31. Vitakl pulp therapy: indirect and direct pulp capping, pulpotomy, different types and medicaments used.
32. Apexogenisis and apexification or problems of open apex.
33. Rationale of endodontics treatment case selection indication and contraindications for root canal treatments.
34. Principles of root canal treatment, mouth preparation, root canal instruments, hand instruments, power driven instruments, standardization, colour- cooling principle of using endodontics instruments. Sterilization of root canal instruments and materials rubber dam application.

35. Anatomy of the pulp cavity: root canals apical foramen. Anomalies of pulp cavities access cavity preparation of anterior and premolar teeth.
36. Preparation of root canal space, Determination of working length, cleaning and shaping of root canals, irrigating solution, chemical aids to instrumentation.
37. Disinfection of root canal space intracanal medicaments, poly antibiotic paste gross mans paste, mummifying agents. Outline of root canal treatment, bacteriological examinations, culture methods.
38. 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.
39. Methods of cleaning and shaping like step-back crown down and conventional methods.
40. 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.
41. Root canal sealers. Ideal properties classification. Manipulation of root canal sealers.
42. Post endodontic restoration fabrication and components of post core preparation.
43. Smear layer and its importance in endodontics and conservative treatment.
44. Discoloured teeth and its management, bleaching agents, vital and non vital bleaching methods.
45. Traumatised teeth classification of fractured teeth, management of fractured tooth and root, Luxated teeth and its management.
46. Endodontics surgeries indication and contraindication, pre operative preparation. Pre-medication surgical instruments and techniques apicectomy, retrograde filling, post operative sequale trephination hemi section, radisectomy techniques of tooth reimplantation (both intentional and accidental) endodontic implants.
47. Root resorption.
48. Emergency endodontic procedures.
49. Lasers in conservative endodontics (introduction only) Practice management.
50. Professional association Dentist Act 1948 and its amendment 1993.

51. Duties towards the govt. like payments of professional tax, income tax.
52. Financial management of practice.
53. Dental material and basic equipment management.
54. Ethics.

13. ORAL & MAXILLOFACIAL SURGERY

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. Sterlisation of instruments – various methods of sterilization 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, stuture 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
Idea Extraction.
Indications for extraction of teeth
Extractions in medically compromised patients.
Methods of extraction-

(a) Forceps or intro – anveolar 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 exodontias
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) Impact maxillary canine
Reasons for canine impaction
Localisation, 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,
Frenectemies 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-antrak 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, predisposing 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 hostopathology.

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 occurring in oral cavity – fibroma, papilloma, lipoma, ossifying fibroma, myxoma 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.

13 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 immobilization 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
Faractures 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.

14 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.

15 Jaw deformities-

Basic forms – Prognathism, Retrognathism and open bite.
Reasons for correction.
Outline of surgical methods carried out on mandible and maxilla.

16. Neurological disorders -

Trigeminal neuralgia – definition, aetiology, clinical features and methods of management including surgical.
Facial paralysis – Aetiology, clinical features.
Nerve injuries – Classification, neurorhaphy etc.

17. 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.

18. Medical Emergencies in dental practice -

    Primary care of medical emergencies in dental practice particularly –

    (a) Cardio vascular (b) Respiratory (c) Endocrine

    (d) Anaphylactice reaction (e) Epilepsy

19. Emergency drugs, Intra muscular I.V. injections –
    Applied anatomy, Ideal location for giving these injections, techniques etc.
20. Oral Implantology
21. Ethics

LOCAL ANAESTHESIA:

Introduction, concept of L.A., classification of local anaesthesia 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. sadation with Diazepam and medozolam.
Indications, mode of action, technique etc.
Cardiopulmonary resuscitation
Use of oxygen and emergency drugs.
Tracheostomy.

RECOMMENDED BOOKS:

1. Impacted teeth; Alling John F et al.
2. Principles of oral and maxillofacial surgery; Vol. 1, 2 & 3 peterson LJ et al.
3. Text hook of oral and maxillofacial surgery; Srinivasan B.
4. Handbook of medical emergencies in the dental office, Malamed SF.
5. Killeys Fractures of the mandible; Banks P.
6. Killeys fractures of the middle 3rd of the facial skeleton; Bands P.
7. The maxillary sinus and its dental implications; Mc Govanda
8. Killey and kays outline of oral surgery – Part – 1; Seward GR et al
9. Essentials of safe dentistry for the medically compromised patients; Mc Carthy FM
10. Oral & maxillofacial surgery, Vol. 2, Laskin DM
11. Extraction of teeth; Howe. GL
12. Minor Oral Surgery; Howe, GL
13. Contemporary oral and maxillofacial surgery; Peterson I.J. et al
14. Oral and maxillofacial infections; Topazian RG & Goldberg MH

14. ORAL MEDICINE AND RADIOLOGY

COURSE CONTENT

1. Emphasis should be laid on oral manifestations of systemic diseases and ill-effects of oral sepsis on general health.
2. To avoid confusion regarding which lesion and to what extent the student should learn and know, this elaborate syllabus is prepared. As certain lesions come under more than one group, there is repetition.

Part-I 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. Haematological, Microbiological and other tests and investigations necessary for diagnosis and prognosis.

SECTION (B) – DIAGNOSIS, DIFFERENTIAL DIAGNOSIS.

While learning the following chapters, emphasis shall be given only on diagnostic aspects including differential diagnosis.

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

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

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

luxation and luxation.

(4) Common cysts and Tumors:
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: Plemorpghic adenoma, Adenocarcinoma, Warthin's Tumor, Adenoid cystic carcinoma.

Hard Tissue:

Non Odontogenic: Osteoma, Osteosarcoma, Osteoclastoma, Chondroma, Chondrosarcoma, Central giant cell tumor, and Central haemangioma

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

(5) Periondontal 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..

The following chapters shall be studied in detail including the aetiology, pathogenesis, clinical features, investigations, differential diagnosis, management and prevention.

(1) Infections of oral and paraoral structures:
Bacterial: Streptococcal, tuberculosis, syphilis, 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.

Vesiculo-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 and 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 extra cranial involvement of cranial nerves. (multiple sclerosis, cerebrovascular diseases, trotter's syundrome etc.)

(b) Neuralgic pain due to uknown causes: Trigeminal neuralgia, glossopharyngeal neuralgia, sphenopalatine ganglion neuralgia, periodic migrainous neuralgia and atpical 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 rhymboid glossitis, depapillation of tongue, hairy tongue, atrophic tongue, reactive lymphoid hyperplasia, glossodynia, glosspryosis, ulcers, white and red patches etc.)

(7) Oral manifestations of:

(i) Metabolic disorders:

(a) Porphyria

(b) Haemochromatosis
© Histocytosis X diseases
(ii) Endocrine disorders:
(a) Pituitary: Gigantism, acromegaly, hypopituitarism
(b) Adrenal cortex: Addision's disease (Hypofuntion)]
Cushing;s syndrome (Hyperfunction)
© Parathyroid glands: Hyperparathyroidism.
(d) Thyroid gland: (Hypothyroidism) Cretinism, myxoedema
(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 anaemia)
Haemolytic anaemias: (Thalaseemia, sickle cell anaemia, erythroblastosis foetalis)
Aplastic anaemia
Polycythemia
(b) White Blood cell diseases
Neutropenia, cyclic neutropenia, agranulocytosis, infectious mononeucleosis and leukemias
© Haemorrhagic disorders:
Thrombocytopenia, purpura, haemophillia, Christmas disease and Von Willebrant's disease

(8) Disease of salivary glands:
(i) Development disturbances: Aplasia, atresia and aberration
(ii) Functional disturbances – Xerostomia, ptyalism
(iii) Inflammatory conditions: Nonspecific sialadenities, mumps, sarcoidosis heerdfort's syndrome (Uveoparotid fever), Necrotising sialometaplasia.
(iv) Cysts and tumours: Mucocele, ranula, plemorphic adenoma, mucoepidermoid carcinoma
(v) Miscellaneous: Sialolithiasis, Sjogren's syndrome, mikuliez;s disease and sialosis.

(9) Dermatological diseases with oral manifestations:

(a) Ectodermal dysplasia (b) Hyperkerotosis palmarplantaris with periodontoopathy (c) Scleroderma (d) Lichen planus including ginspan's syndrome (e) Lupus erythematosus (f) Pemphigus (g) Erythema multiforme (h) Psoriasis.

(10) Immunological diseases with oral manifestations

(a) Leukemia (b) Lymphomas (c) Multiple mycloma (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 sysdrome, Melkerson Rosenthel syndrome and Ramsay Hunt syndrome (e) Neuroma (f) Neurofibromatosis (g) Frey'sndrome

(ii) Muscles: (a) Mysitis 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 remaints

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, antisialogogues and drugs used in the treatment of malignancy

Part – II BEHAVIOURAL SCIENCES AND ETHICS.

Part – III 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) Orthopantomograph (e) Projections of temperomandibular 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 artifacts 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.

PRACTICALS/CLINICALS:

1. Students is trained to arrive at proper diagnosis by following a scientific and systematic procedure of history taking and examination of the orofacial region. Training is also imparted in management wherever possible. Training also shall be imparted on saliva diagnostic procedures. Training also shall be imparted in various radiographic procedures and interpretation of radiographs.

2. In view of the above each student shall maintain a record of work done, which shall be evaluated for marks at the time of university examination.

3. The following is the minimum of prescribed work for recording

   (a) Recording of detailed case histories of interesting cases……10

   (b) Intra-oral radiographs (Periapical, bitewing, occlusal)…… 25

   © Saliva diagnostic check as routine procedure.

15. ORTHODONTICS & DENTAL ORTHOPAEDICS

COURSE OBJECTIVE:

Undergraduate programme in Orthodontics is designed to enable the qualifying dental surgeon to diagnose, analyse and treat common

orthodontic problems by preventive, interceptive and corrective orthodontic procedures. The following basic instructional procedures will be adapted to achieve the above ojjectives.

1. Introduction, Definition, Historical Background, Aims and Objectives of Orthodontics and Need for Orthodontic 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
   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 of Angle, Simon, Lischer and Ackerman and Proffitt.
8. Normal and Abnormal Function of Stomatognathic System
9. Aetiology Of Malocclusion

a. Definition, importance, classification, local and general aetiological factors.
b. Etiology of following different types of malocclusion:
    i. Midline diastema
    ii. Spacing
    iii. Crowding
    iv. Cross-Bite: anterior/Posterior
    v. Class III Malocclusion
    vi. Class II Malocclusion
    vii. Deep Bite
    viii 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, disadvantages and uses
    f. Cephalometrics: its advantages, disadvantages
    i. Definition
    ii. Description and use of cephalostat
    iii. Description and uses of anatomical landmarks lines and angles used in cephalometric analysis
    iv. Analysis – Steiner's, Down's, Tweed's, Ricket's-E-line
    g. Electromyography and its use 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 n 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 Orthododontics- indications and selection of teeth for extraction.
17. Orthodontic Appliances: General
    a. Requisites for orthodontics appliances
    b. Classification, indications of Removable and Functional Appliances
    c. Methods of force application
    d. Materials used in construction of various orthodontic appliances – use 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 use
3. Different types of labial bows and their use
4. Different types of springs and their use
5. Expansion appliances in orthodontics:
   - i. Principles
   - ii. Indications of 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 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. Activalor, Oral screens, Frankels function regulator,
     Bionator twin blocks, lip bumper
   - ii. Inclined plances – 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.

CLINICALS AND PRACTICALS IN ORTHODONTICS

PRACTICAL TRAINING DURNG II YEAR B.D.S.

1. Basic wire bending exercises Gauge 22 or 0.7 mm
    a Straightening of wires (4 Nos.)
    b Bending of a equilateral triangle
    c Bending of a rectangle
    d Bending of a square
    e Bending of a circle
    f Bending of U.V.
2. Construction of Clasps (Both sides upper/lower) Gauge 22 or 0.7 mm
    a ¾ Clasp (C-Clasp)
    b Full Clasp (Jackson's Crib)
    c Adam's Clasp
    d Triangular Clasp
3. Construction of Springs (on upper both sides) Gauge 24 or 0.5mm
    a Finger Spring

b Single Cantelever Spring
c Double Cantelever Spring (Z-Spring)
d T- Springs on premolars

4. Construction of Canine retractors Gauge 23 or 0.6 mm
   a U – Loop canine retractor
   (Both sides on upper & lower)
   b Helical canine retractor
   (Both sides on upper & lower)
   c Buccal canine retractor:
   Self supported buccal canine retractor
   i Sleeve – 5 mm wire or 24 gauge
   ii Sleeve – 19 gauge needle on any one side.
   d Palatal canine retractor on upper both sides
   Gauge 23 or 0.6 mm
5. Labial Bow
   Gauge 22 or 0.7 mm
   One on both upper and lower

CLINICAL TRAINING DURING III YEAR B.D.S.

NO. EXERCISE

1. Making upper Alginate impression
2. Making lower Alginate impression
3. Study Model preparation
4. Model Analysis
   i Pont's Analysis
   ii Ashley Howe's Analysis
   iii Carey's Analysis
   iv. Bolton's analysis
   v Moyer's Mixed Dentition analysis

CLINICAL TRAINING DURING FINAL YEAR B.D.S.

NO. EXERCISE

a. Case History taking
b. Case discussion
c. Discussion on the given topic
d. Cephalometric tracings
   i. Down's Analysis

ii. Steiner's Analysis
iii. Tweed's Analysis

PRACTICAL TRAINING DURING FINAL YEAR B.D.S.

1. Adam's Clasp on anterior teeth Gauge 0.7 mm
2. Modified Adam's Clasp on upper arch Gauge 0.7 mm
3. High Labial bow with Apron spring on upper arch
   (Gauge of Labial bow – 0.9 mm, Apron spring – 0.3 mm)
4. Coffin spring on upper arch Gauge 1 mm

APPLIANCE CONSTRUCTION IN ACRYLIC

1. Upper & Lower Hawley's Appliance
2. Upper Hawley's with Anterior bite plane
3. Upper Habit breaking Appliance
4. Upper Hawley's with Posterior bite plane with 'Z'Spring
5. Construction of Activator
6. Lower inclined plane/Catalan's Appliance
7. Upper Expansion plate with expansion Screw

16. PAEDIATRIC & PREVENTIVE DENTISTRY

THEORY:

1. INTRODUCTION TO PAEDODONTICS & PREVENTIVE DENTISTRY.
   Definition, Scope, Objectives and Importance.
2. GROWTH & DEVELOPMENT:
   Importance of study of growth and development in Paedodontics.
   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 structure.
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 PAEDODONTICS.

6. ORAL SURGICAL PROCEDURES IN CHILDREN.
Indications and contraindications of extractions of primary and permanent teeth in children.
Knowledge of Local and General Anaesthesia.
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 gingival & 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 BEHAVIOR MANAGEMENT:

Types of behaviour encountered in the dental clinic.

Non-pharmacological & pharmacological methods of Behaviour Management.

11 PEDIATRIC OPERATIVE DENTISTRY:

Principles of paediatric Operative Dentistry.

Modifictions 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, Coposites & Silver amalgam. Stainless steel, Polycarbonate & Resin Crowns.

12 PAEDIATRIC ENDODONTICS

Principles & Diagnosis.

Classification of Pulpal Pathology in primary, young permanent & permanent teeth.

Management of Pulpally involved primary, young permanent & permanent teeth.

a. Pulp capping – direct & indirect.
b. Pulpotomy
c. Pulpectomy
d. Apexogenesis
e. 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 Traumatised 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, Behavioral and Clinical features & Management of children with:

a. Physically handicapping conditions.
b. Mentally compromising conditions.
c. Medically compromising conditions.
d. Genetic disorders.

17 CONGENITAL ABNORMALITIES IN CHILDREN:
Definition, Classification, Clinical features & Management.

18 DENTAL EMERGENCIES IN CHILDREN & THEIR MANAGEMENT.

19 DENTAL MATERIALS USED IN PEDIATRICS DENTISTRY.

20 PREVENTIVE DENTISTRY:

Definition
Principles & Scope.
Types of prevention.
Different preventive measure used in paediatric 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 PAEDODONTIC CLINIC

25 ETHICS

B. PRACTICALS:
Following is the recommended clinical quota for under-graduate students in the subject of paediatric & preventive dentistry.

1. Restorations – Class I & II only : 45
2. Preventive measures e.g. Oral Prophylaxis – 20.
3. Fluoride applications – 10
4. Extractions – 25
5. Case History Recording & Treatment Planning – 10
6. Education & motivation of the patients using disclosing agents. Educating patients about oral hygiene measures like tooth brushing, flossing etc.

17 PUBLIC HEALTH DENTISTRY

Syllabus:

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 relevance in dental practice and community.
    x. Health care delivery system: Centre and state, oral health policy, primary health care, national programmes, health organizations.
3. Dental Public Health:
    i. Definition and difference between community and clinical health.
    ii. Epidemiology of dental diseases-dental caries, periodontal diseases, malocclusion, dental fluorosis and oral cancer.
    iii. Survey procedures: Planning, implementation and evaluation, WHO oral health survey methods 1997, indices for dental diseases.
    iv. Delivery of dental care: Dental auxiliaries, operational and non-operational, incremental and comprehensive health care, school dental health.

v. Payments of dental care: Methods of payments and dental insurance, government plans.

vi Preventive Dentistry – definition, Levels, role of individual, community and profession, fluorides in dentistry, plaque control programmes.

4. Research Methodology and Dental Statistics
   i. Health Information – Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes
   ii. Research Methodology – Definition, types of research, designing a written protocol.
   iii. 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 trials and calibration.
5. Practice Management
   i. Place and locality
   ii. Premises & layout
   iii. Selection of equipments
   iv. Maintenance of records/accounts/audit.

PRACTICALS/CLINICALS/FIELD PROGRAMME IN COMMUNITY DENTISTRY:

These exercises designed to help the student in IV year students:

1. Understand the community aspects of dentistry.
2. Take up leadership role in solving community oral health programme

Exercises:

a) Collection of statistical data (demographic) on population in India, birth rates, morbidity and mortality, literacy, per capital income

b) Incidence and prevalence of common oral diseases like dental caries, periodontal disease, and oral cancer, fluorosis at national and international levels.

c) Preparation of oral health education material – posters, models, slides, lectures, play acting skits etc.

d) Oral health status assessment of the community using indices and WHO basic oral health survey methods.

e) Exploring and planning setting of private dental clinics in rural, semi urban and urban locations, availment of finances for dental practices-preparing project report.
f) Visit to primary health centre-to acquaint with activities and primary health care delivery.
g) Visit to water purification plant/public health laboratory/centre for treatment of waste and sewage water.
h) Visit to schools-to asses the oral health status of school children, emergency treatment and health education including possible preventive care at school (tooth brushing technique demonstration and oral rinse programme etc.)
i) Visit to institution for the care of handicapped, physically, mental, or medically compromised patients.
j) Preventive dentistry: in the department application of pit and fissure sealants, fluoride gel application procedure, A.R.T., Comprehensive health for 5 patients at least 2 patients.

The colleges are encouraged to involve in the N.S.S. programme for college students for carrying out social work in rural areas.

I. AT THE COLLEGE:

Students are posted to the department to get training in dental practice management.

a) Total oral health care approach – in order to prepare the new graduates in their approach to diagnosis, treatment planning, cost of treatment, prevention of treatment on schedule, recall maintenance of records etc. at least 10 patients (both children and adults of all types posting for atleast one month).
b) The practice of chair side preventive dentistry including oral health education.

II. AT THE COMMUNITH ORAL HEALTH CARE CENTRE (ADOPTED BY THE DENTAL COLLEGE IN RURAL AREAS)

Graduates posted for at least one month to familiarize in:

a) Survey methods, analysis and presentation of oral health assessment of school children and community independently using WHO basis oral health survey methods.
b) Participation in rural oral health education programmes
c) Stay in the village to understand the problems and life in rural areas.

III Examination Pattern

I. Index:
   a) Case History
   b) Oral hygiene indices simplified-Green and Vermilion.
   c) Silness and Loe index for Plaque.
   d) Loe and Silness index for gingival
   e) CPI
   f) DMF: T and S, df:t and s
   g) Deans fluoride index

II. Health Education
   1. Make one- Audio visual aid
   2. Make a health talk

III. Practical work
   1. Pit and fissure sealant
   2. Topical fluoride application

18. PERIODONTOLOGY

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-Mensenchymal 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 — Need for classification, Scientific basis of classification

	diseases	Classification of gingival and periodontal diseases as described in World Workshop 1989 Gingivitis: Plaque associated, ANUG, steroid hormone influence, 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	Lacalised and generalized gingivitis, Papillary, marginal and diffuse gingivitis Aetiology, 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, Aetiology Hirschfelds' classification

		Signs & symptoms & sequelae of treatment
		Trauma from occlusion
		Definition, Types
		Histapathological changes
		Role inperiodontal 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
		Haemorrhagic diseases, Leukemia, clotting factor disorders, PMN disorders
11.	Risk factors	Difinition. 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, emmune mechanisms & cytokines in brief Stages in gingivitis-Initial, early, established & advanced Periodontal disease activity, continuous paradigm, random burst & asynchronous multiple burst hypotheses
13.	Periodontitis		Aetiology, 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: Localised 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: Aetiology 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 planning: 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
19.	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	

20.	Mucogingival surgery & periodontal plastic surgeries	Definition Mucogingival problems: etiology, classification of gingival recession

		(P.D. Miller Jr. and Sullivan and Atkins) Indication & 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, perimplantitis & management.
24.	Maintenance phase (SPT)	- Aims, objectives, and principles - Importance .
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
30.	Ethics	

TUTORIALS DURING CLINICAL POSTING:

1. Infection control
2. Periodontal instruments
3. Chair position and principle of instrumentation
4. Maintenance of instruments (sharpening)
5. Ultrasonic Piezoelectric and sonic scaling – demonstration of technique
6. Diagnosis of periodontal disease and determination of prognosis
7. Radiographic interpretation and lab investigations
8. Motivation of patients – oral hygiene instructions

Students should be able to record a detailed periodontal case history, determine diagnosis, prognosis and plan treatment. Student should perform scaling, root planning local drug delivery and SPT. Shall be given demonstration of all periodontal surgical procedures.

DEMONSTRATIONS:

1. History taking and clinical examination of the patients
2. Recording different indices
3. Methods of using various scaling and surgical instruments
4. Polishing the teeth
5. Bacterial smear taking
6. Demonstration to patients about different oral hygiene aids
7. Surgical procedures – gingivectomy, gingivoplasty, and flap operations
8. Follow up procedures, post operative care and supervision

REQUIREMENTS

1. Diagnosis, treatment planning and discussion and total periodontal treatment 25 cases
2. Dental scaling, oral hygiene instructions – 50 complete cases/equivalent
3. Assistance in periodontal surgery- 5 cases
4. A work record should be maintained by all the students and should be submitted at the time of examination after due certification from the head of the department.

   Students should have to complete the work prescribed by the concerned department from time to time and submit a certified record for evaluation.

PRESCRIBED BOOK:

1. Glickman' Clinical Periodontology – Carranza

19. PROSTHODONTICS AND CROWN & BRIDGE

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.
   1. Mental attitude
   2. Instructing the patient.

C. Diagnosis and treatment planning for patents-
   1. With some teeth remaining.
   2. With no teeth remaining.
   i. Systemic status.
   ii. Local factor.
   iii. The geriatric patient.
   iv. Diagnostic procedures.

D. Articulators – discussion

E. Improving the patients's denture foundation and ridge relation – and 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.

1. Biological consideration in jaw relation & jaw movements – craniomandibular relations.
   a. Mandibylar 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/flowchart form).

S. Treating abused tissues – discuss in brief.

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

U. Immediate complete denture construction procedure- discuss in brief.

V. The single complete denture- discuss in brief.

W. Overdentures- discuss in brief.

X. 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
   i. Terminologies and scope
2. Classification.
3. Examination, Diagnosis & Treatment planning & evaluation of diagnostic data.
4. Components of a removable partial denture.
   i. Major connectors.
   ii. Minor connectors.
   iii. Rest and rest seats.
5. Components of a Removable partial denture.

i. Direct retainers.
ii. Indirect retainers.
ii. Tooth replacement.

6. Principles of Removable Partial denture design.
7. Survey and design – in brief.
   i. Surveyors.
   ii. Surveying.
   iii. Designing.
8. Mouth preparation and master cast.
9. Impression materials and procedures for removable partial dentures.
10. Preliminary jaw relation and aesthetic 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. Post-inserton observation.
17. Temporary acrylic Partial Denture.
18. Immediate Removable Partial Dentures.
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. Aesthetic Considerations
17. Finishing and Cementation

TOPICS TO BE COVERED IN BRIEF-

1. Solder Joints and other connectors
2. All- Ceramic Restorations
3. Metal- Ceramic Restorations
4. Preparations of intracoronal restorations.
5. Preparations for extensively damaged teeth.
6. Preparations for periodontally weakened teeth
7. The Functionally Generated Path Technique
8. Investing and Casting
9. Resin – Bonded Fixed Partials 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

RECOMMENDED BOOKS:

1. Syllabus of complete denture by – Charles M. Heartwell Jr. and Arthur O. Rahn.
   Boucher's "Prosthodontic treatment for edentulous patients"
   Essentials of complete denture prosthodontics by – Sheldon winkler.
   Maxillofacial prosthetics by – willam R. Laney.
   Mc craken's Removable partial prosthodontics
   Removable partial prosthodontics by-Ernest L. Miller and Joseph E. Grasso.

20. AESTHETIC DENTISTRY

Aesthetic dentistry has gained popularity over last decade. Therefore it is better that undergraduate students understand the philosophy and scientific knowledge of aesthetic dentistry.

1. Introduction and scope of aesthetic dentistry
2. Anatomy & physiology of smile
3. Role of the colour in aesthetic dentistry
4. Simple procedures (foundering of central incisors to enhance esthetic appearance)
5. Bleaching of teeth
6. Veneers with various materials
7. Preventive and interceptive aesthetics
8. Ceramics
9. Simple gingival contouring to enhance the appearance
10. Simple clinical procedures for BDS students

RECOMMENDED BOOKS:

1. Esthetics guidelines for restorative dentistry; Scharer & others
2. Esthetics of anterior fixed prosthodontics; Chiche (GJ) & Pinault (Alain)
3. Esthetic & the treatment of facial form, Vol 28; Mc Namara (JA)

21. FORENSIC ODONTOLOGY (30 hrs of instruction)

DEFINITION

Forensic is derived from the Latin word forum, which means 'court of law.' Odontology literally implies 'the study of teeth.' Forensic odontology, therefore, has been defined by the Federation Dentaire

International (FDI) as "that branch of dentistry which, in the interest of justice, deals with the proper handling and examination of dental evidence and with the proper evaluation and presentation of dental findings."

Objectives of the undergraduate curriculum

At the end of the programme, the dental graduate should:

1. Have sound knowledge of the theoretical and practical aspects of forensic odontology.
2. Have an awareness of ethical obligations and legal responsibilities in routine practice and forensic casework.
3. Be competent to recognize forensic cases with dental applications when consulted by the police, forensic pathologists, lawyers and associated professionals.
4. Be competent in proper collection of dental evidence related to cases of identification, ethnic and sex differentiation, age estimation and bite marks.
5. Be able to assist in analysis, evaluation and presentation of dental facts within the realm of law.

CURRICULUM FOR FORENSIC ODONTOLOGY

1. Introduction to forensic dentistry
   - i. Definition to forensic dentistry
   - ii. Recent developments and future trends
2. Overview of forensic medicine and toxicology
   - i. Cause of death and postmortem changes
   - ii. Toxicological manifestations in teeth and oral tissues
3. Dental Identification
   - i. Definition
   - ii. Basis for dental identification
   - iii. Postmortem procedures
   - iv. Dental record compilation and interpretation
   - v. Comparison of data and principles of report writing
   - vi. Identification in disasters and handling incinerated remains
   - vii. Postmortem changes to oral structures
4. Maintaining dental records

i. Basic aspects of good record-keeping

ii. Different types of dental records
   - a. Dental charts

b. Dental radiographs
c. Study casts
d. Denture making
e. Photographs

iii. Dental notations
iv. Relevance of dental records in forensic investigation

5. Age estimation

i. Age estimation in children and adolescents
   a. Advantages of tooth calcification over 'eruption' in estimating age
   b. Radiographic methods of Schour & Massler, Demirjian et al

ii. Age estimation in adults
   a. Histological methods- Gustafson's six variables and Johanson's modification,
      Bang & Ramm's dentine translucency
   b. Radiographic method of Kvaal et al

iii. Principles of report writing

6. Sex differentiation
   i. Sexual dimorphism in tooth dimensions (Odontometrics)

7. Ethnic variations ('racial'differences) in tooth morphology
   a. Description of human population groups
   b. Genetic and environmental influences on tooth morphology
   c. Description of metric and non-metric dental features used in ethnic differentiation

8. Bite mark procedures
   i. Definition and classification
   ii. Basis for bite mark investigation
   iii. Bite mark appearance
   iv. Macroscopic and microscopic ageing of bite marks
   v. Evidence collection from the victim and suspect of bite mark
   vi. Analysis and comparison
   vii. Principles of repot writing
   viii. Animal bite investigation

9. Dental DNA methods
   i. Importance of dental DNA evidence in forensic investigations
   ii. Types of DNA and dental DNA isolation procedures
   iii. DNA analysis in personal identification

iv. Gene-linked sex dimorphism
v. Population genetics

10. Jurisprudence and ethics
    i. Fundamentals of law and the constitution
    ii. Medical legislation and statutes (Dental and Medical council Acts, etc)
    iii. Basics of civil law (including torts, contracts and consumer protection act)
    iv. Criminal and civil procedure code (including expert witness requirement)
    v. Assessment and quantification of dental injuries in courts of law
    vi. Medical negligence and liability
    vii. Informed consent and confidentiality
    viii. Rights and duties of doctors and patients
    ix. Medical and dental ethics (as per Dentists' Act)

    Theory sessions and practical exercises

    Total hours for the course
    i. Didactic – 10-12 hours
    ii. Practical – 20-25 hours

Detailed didactic sessions for the above components, either in the form of lectures of as structured student-teacher interactions, is essential. Specialists from multiple disciplines, particularly from legal and forensic sciences, can be encouraged to undertake teaching in their area of expertise.

An interactive, navigable and non-linear (INN) model may also be utilized for education.

Practical exercises (real-life casework and/or simulated cases) must complement didactic sessions to facilitate optimal student understanding of the subject. Mandatory practical training in dental identification methods, dental profiling (ethnic and sex defferences, radiographic age estimation) and bite mark procedures, is of paramount importance. In addition, practical exercises/demonstrations in histological age estimation, comparative dental anatomy, DNA methods, medical autopsy, court visits and other topics may be conducted depending on available expertise, equipment and feasibility.

Approach to teaching forensic odontology

Forensic odontology could be covered in two separate streams. The divisions include a preclinical stream and a clinical stream.

Preclinical stream

i. Introduction to forensic odontology
ii. Sex differences in odontometrics
iii. Ethnic variations in tooth morphology
iv. Histological age estimation
v. Dental DNA methods
v. Bite marks procedures
vi. Overview of forensic medicine and toxicology

It could prove useful to undertake the preclinical stream in II or III year under Oral

Biology/Oral Pathology since these aspects of forensic odontology require grounding in dental morphology, dental histology and basic sciences, which, students would have obtained in I and /or II BDS.

Clinical stream

i. Dental identification
ii. Maintaining dental records
iii. Radiographic age estimation
iv. Medical jurisprudence and ethics

It would be suitable to undertake these topics in the IV or V year as part of Oral Medicine and Radiology, since students require reasonable clinical exposure and acumen to interpret dental records, perform dental postmortems and analyse dental radiographs for age estimation.

22. ORAL IMPLANTOLOGY (30 hrs of instruction)

INTRUDUCTION TO ORAL IMPLANTOLOGY

Oral Implantology has now emerged as a new branch in dentistry world wide and it has been given a separate status in the universities abroad. In India day to day the practice of treating patients with implants is on the rise. In this context inclusion of this branch into under graduate curriculum is essential. The objective behind this is to impart basic Knowledge of Oral Implantology to undergraduates and enable them to diagnose, plan the treatment and to carry out the needed pre surgical mouth preparations and treat or refer them to speciality centres. This teaching programme may be divided and carried out by the dept. or Oral

surger, Prosthodontics and Periodontics.

1. History of implants, their design & surface characteristics and osseo-integration
2. Scope of oral & maxillofacial implantology & terminologies
3. A brief introduction to various implant systems in practice
4. Bone biology, Morphology, Classification of bone and its relevance to implant treatment and bone augmentation materials.
5. Soft tissue considerations in implant dentistry
6. Diagnosis & treatment planning in implant dentistry
   Case history taking/Examination/Medical evaluation/Orofacial evaluation/Radiographic evaluation/Diagnostic evaluation/Diagnosis and treatment planning/treatment alternatives/Estimation of treatment costs/patient education and motivation
7. Pre-surgical preparation of patient
8. Implant installation & armamentarium for the Branemark system as a role model
9. First stage surgery – Mandible – Maxilla
10. Healing period & second stage surgery
11. Management of surgical complications & failures
12. General considerations in prosthodontic reconstruction & Bio mechanics
13. Prosthodontic components of the Branemark system as a role model
14. Impression procedures & Preparation of master cast
15. Jaw relation records and construction of suprastructure with special emphasis on occlusion for osseointegrated prosthesis
16. Management of prosthodontic complications & failures
17. Recall & maintenance phase.

Criteria for success of osseointegrated implant supported prosthesis

SUGGESTED BOOKS FOR READING

1. Contemporary Implant dentistry — Carl. E. Misch
2. Osseiointegration and Occlusal Rahabilitation — Hobo S., Ichida. E. and Garcia L.T. Quintessence Publishing company, 1989 First Edition.

23. BEHAVIORAL SCIENCES (20hrs of instruction)

GOAL

The aim of teaching behavioural science to undergraduate student is to impart such knowledge & skills that may enable him t apply principles of behaviour.

a. For all round development of his personality
b. In various therapeutic situations in dentistry.

The student should be able to develop skills of assessing psychological factors in each patient, explaining stress, learning simple counseling techniques and improving patients compliance bahaviour.

OBJECTIVES:

A. KNOWLEDGE & UNDERSTANDING:

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

1. Comprehend different aspects of normal behaviour like learning, memory, motivation, personality & intelligence.
2. Recognize difference between normal and abnormal behaviour.
3. Classify psychiatric disorders in dentistry.
4. Recognise clinical manifestations of dental phobia, dental anxiety, facial pain, orofacial manifestations of psychiatric disorders and behavioural problems in children. Addictive disorders, psychological disorders in various dental departments.
5. Have understanding of stress in dentistry and knowledge of simple counseling techniques.
6. Have some background knowledge of interpersonal, managerial and problem solving skills which are an integral part of modern dental practice.
7. Have knowledge of social context of dental care.

B. SKILLS

The student shall be able to:

1. Interview the patient and understand different methods of communication skills in dentist – patient relationship.
2. Improve patient compliance behaviour.
3. Develop better interpersonal, managerial and problem solving skills.
4. Diagnose and manage minor psychological problems while treating dental patients.

INTEGRATION:

The training in Behavioural sciences shall prepare the students to deliver preventive, promotive, curative and rehabilitative services to the care of the patients both in family and community and refer advanced cases to specialized psychiatric hospitals.

Training should be integrated with all the departments of Detistry, Medicine Pharmacology, Physiology and Biochemistry.

PSYCHOLOGY:

1. Definition & Need of Behavioural science. Determinants of Behaviour. Hrs 1
2. Sensory process & perception perceptual process – clinical application.
3. ATTENTION- Definition-factors that determine attention. Clinical application.
4. MEMORY-Memory process- Types of memory, forgetting:
5. DEFINITION- Laws of learning
   Type of learning. Classical conditioning, operant conditioning, cognitive learning, Insight learning, social learning, observational learning, principles of learning – Clinical application.
6. INTELLIGENCE- Definition: Nature of intelligence stability of intelligence
   Determinants of intelligence, clinical application.
7. THINKING-Definition : Types of thinking, delusions, problem solving
8. Definition: Motive, drive, needs classification of motives
9. EMOTIONS- Definition differentiation from feelings- Role of hypothalamus, Cerebral cortex, adrenal glands ANS. Theories of emotion, Types of emotions.
   Personality. Assessment of personality: Questionnaires, personality inventory, rating scales, Interview projective techniques – Rorshach ink blot test, RAT CAT

SOCIOLOGY:

Social class, social groups – family, types of family types of marriages, communities and Nations and institutions.

REFERENCE BOOKS:

1. General psychology – S.K. Mangal
2. General psychology – Hans Raj, Bhatia
3. General Psychology – Munn

4. Behavioural Sciences in Medical practies – Manju Mehta
5. Sciences basic to psychiatry – Basanth Puri & Peter J Tyrer

24. ETHICS (20 hrs. of instruction)

Introduction:

There is a define shift now from the traditional patient and doctor relationship and delivery of dental care. With advances in science and technology and the increasing needs of the patient, their families and community, there is a concern for the health of the community as a whole. There is a shift to greater accountability to the society. Dental specialists like other health professionals are confronted with many ethical problems. It is therefore absolutely necessary for each and every one in health care delivery to prepare themselves to deal with these problems. To accomplish his and develop human values the Council desires that all the trainees undergo ethical sensitization by lectures or discussion on ethical issues, discussion of cases with an important ethical component.

COURSE CONTENT:

Introduction to ethics-

What is ethics?

What are values and norms?

How to form a value system in one's personal and professional life?

Hippocratic oath.

Declaration of Helsinki, WHO declaration of Geneva, International code of ethics, DCI code of ethics.

Ethics of the individual-

The patient as a person.

Right to be respected

Truth and confidentiality

Autonomy of decision

Doctor Patient relationship

Profession Ethics-

Code of conduct

Contract and confidentiality

Charging of fees, fee splitting

Prescription of drugs

Over-investigating the patient

- Malpractice and negligence

Research Ethics-

- Animals and experimental research/humanness
- Human experimentation
- Human volunteer research-informed consent
- Drug trials

Ethical workshop of cases
Gathering all scientific factors
Gathering all value factors
Identifying areas of value-conflict, setting of priorities
Working our criteria towards decisions