HAND BOOK FOR BDS STUDENTS

BDS COURSE REGULATIONS

In accordance with the DCI revised BDS course regulations 2007
(subject to modification from time to time)

Dr. NTR UNIVERSITY OF HEALTH SCIENCES
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Revised as per the latest DCI Guidelines.

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MESSAGE FOR THE FRESH BATCH STUDENTS

On behalf of the University, it gives me immense pleasure in welcoming the fresh batch of students joined in the Bachelor of Dental Surgery for the academic session 2013-14. They deserve congratulations for having succeeded in getting admission to professional courses of this university. This is a very crucial period for all the students because they are entering the portals of the higher education straightaway from the school environment. The professional courses like Medicine, Dentistry, Physiotherapy and Nursing etc., consist of very difficult subjects, the syllabi are very heavy and the duration of the courses are lengthy. Therefore, the students should learn and adopt the new methods of teaching and training in professional colleges.

I recommend the students that they should consult library and museums at regular intervals. They should also adopt self-learning techniques. There are a number of books available in the market on the subjects like Communication Skills, How to read better? etc. Every medical student must acquire enough knowledge and skills to operate computer.

The students should behave in a dignified manner both inside and outside the college premises because they have entered in a noble profession and doctors always enjoy higher position in the society.

Regular reading habits, sincere and honest effort for learning will help the student to achieve the objective of becoming a good doctor.

I wish all the best and very bright future to all the students.

(Dr. I.V.RAO M.D.)
VICE-CHANCELLOR

B.D.S REGULATIONS

These regulations shall be called “The regulations for the BDS course of the Dr. NTR University of Health Sciences, Vijayawada, Andhra Pradesh”. These regulations are applicable to the students who are admitted to the course from the Academic Year 2007-08 onwards.

1. GENERAL OBJECTIVES :

The curriculum for the B.D.S. Course is designed to produce a dentist who is socially acceptable and who is able to diagnose, prevent and treat dental and oral diseases both in rural and urban areas.

The emphasis should be placed on fundamental aspects of the subjects taught and common problems of health and diseases avoiding greater details and areas of specification.

The education process should be an evolving one and not merely a process of acquisition of a large number of disjointed facts without a proper perspective.

There should be less emphasis on didactic lectures and major part of the learning time should be devoted to demonstrations, group discussions, seminars, clinical work and conferences stressing more on prevention of oral diseases instead of traditional teaching on curative aspects. Every attempt should be made to encourage the students to participate in group discussions and seminars to enable them to develop expression, character and personality and other qualities essential for a dental graduate to serve the community and nation effectively.

Proper record of the work should be maintained which should form the basis of internal assessment.

2. 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;

      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 colleges;

      or

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

      or

   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;

      or

   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;

      or

   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 subjects Physics, Chemistry and Biology (Botany, Zoology) and further that he/she passed the earlier qualifying examination with the following subjects - Physics, Chemistry Biology and English.

      or

   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 are not to be considered for admission to BDS Course.
- After the 10+2 course is introduced, the integrated courses should be abolished.

3. SELECTION OF STUDENTS:

The selection of students to dental colleges is based on the merit of the candidates in the EAMCET examination conducted by the Government of Andhra Pradesh.

a) To be eligible for competitive entrance examination, the candidate must have passed any of the qualifying examinations as enumerated above at 2.
b) A candidate for admission to dental course must have passed Physics, Chemistry, Biology and English individually and must have obtained 50% marks in Physics, Chemistry and Biology taken together at qualifying examination.
c) However, in respect of candidates belonging to scheduled castes / Scheduled Tribes and other Backward Classes (OBC) the qualifying marks should be 40% instead of 50%.
d) The eligibility criteria for admission to persons with locomotory disability of lower limbs will be a minimum of 45% marks instead of 50% taken together in qualifying examination and competitive entrance examination for admission in B.D.S course.

4. REGISTRATION :

A candidate admitted to the course in any of the affiliated colleges shall apply for registration with this University in the prescribed form within one month from the date of joining the college. The application for registration in the prescribed form along with the fee prescribed should be submitted to this University through the Principal of the College. The University, in turn, will allot an identification number that will be valid till the student completes the course. Without this identification number, the student will not be considered as a bonafide student of the University and his application for the University examination will not be accepted.

5. DURATION OF THE COURSE:

The undergraduate dental training programme leading to BDS degree shall be of 4 years with 240 teaching days in each academic year consisting of 8 working hours including lunch break of 1 hour per day. The minimum working days indicated each year does not include 1 month vacation and 1 month of University exams. During this period, the student shall be required to have engaged in full time study at a dental college recognized or approved by the Dental Council of India.

6. **COMPULSORY ROTATORY INSTERNSHIP:**

As per the 3rd Amendment (Page 7) regulations of the DCI revised course, 2011. Every candidate after passing the Final BDS examination has to undergo one year paid rotating internship in a dental college. The BDS degree shall be granted only after completion of the internship.

7. **MEDIUM OF INSTRUCTION:**

English shall be the medium of instruction of study and examinations of the Bachelor of Dental Surgery Course.

8. ATTENDANCE:

(i) 75% in theory and 75% in practical / clinical in each year.

(ii) 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 (i) above.

(iii) The attendance will be calculated from the day the course commenced and not from the day of admission of the student. If a student is admitted later than 30 days after the commencement of the course, he/she will continue the course along with the batch but will appear for the subsequent examination. The candidate will have to complete the curriculum, which was lost and certified by the Head of the department and institution to that effect.

(iv) The detained and referred students of B.D.S course are required to put in a minimum of 75% of attendance in theory and practicals separately during the 6 months tenure before the subsequent exam.

(v) If a student absents continuously for a period of 91 days or more and seeks permission to attend the course before one year, he /she may be permitted by the Principal conditionally after forwarding the application to the Registrar with the Principal's remarks. If the Vice-Chancellor is satisfied of the reasons, he may grant leave of absence attaching such conditions, as he may deem necessary. Candidates who are absent for a period of one year or more without permission, shall be deemed to have forfeited the admission to the course and his /her studentship shall stand cancelled without any further notice.

9. INTERNAL ASSESSMENT:

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

The referred and detained students are also required to appear for a minimum of one internal assessment examination in theory and practical / clinical in the subjects concerned. New assessment marks are to be taken for the declaration of the results.

If the candidate is absent for any of the examinations, the marks in that shall be treated as zero.

Internal assessment examination should include MCQ's.

10. SCHEME OF UNIVERSITY EXAMINATIONS:

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 year and final B.D.S. at the end of 4th year. 240 days minimum teaching in each academic year is mandatory.

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

1st B.D.S. Examination:

1. Anatomy including embryology and histology
2. Human Physiology, Biochemistry & Nutrition
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/she is permitted to appear for the next higher examination.

2nd B.D.S. Examination:

A candidate who has successfully completed the 1st B.D.S examination can only appear for the 2nd B.D.S Examination.

1. General Pathology and Microbiology
2. General and Dental Pharmacology and therapeutics
3. Dental Materials
4. Pre Clinical Conservative – Only Practical and Viva Voce
5. Pre Clinical Prosthodontics – Only Practical and Viva Voce

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

3rd B.D.S. Examination:

A candidate who has successfully completed the 2nd B.D.S. examination can only appear for the 3rd B.D.S Examination.

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

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

Final B.D.S. Examination:

A candidate who has successfully completed the 3rd B.D.S examination can only appear for the 4th B.D.S Examination.

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

Only those candidates who have passed in all the subjects in Final BDS examination will be allowed for the compulsory paid rotatory internship.

WRITTEN EXAMINATION:

1. The written examination in each subject shall consist of one paper of three hours duration and shall have maximum marks of 70.
2. In the subjects of Physiology & Biochemistry and Pathology & Microbiology each paper will be divided into two parts, A and B of equal marks.

PRACTICAL AND CLINICAL EXAMINATION:

1. **Objective Structured Clinical Evaluation:**

The present system of conducting practical and clinical examination at several universities provide chance for unrealistic proportions of luck. Only a particular clinical procedure or experiment is usually given for the examination. The clinical and practical examination should provide a number of chances for the candidate to express one's skills. A number of examination stations with specific instructions to be provided. This can include clinical procedures, laboratory experiments, spotters etc. Evaluation must be made objective and structured. The method of objective structured clinical examinations should be followed. This will avoid examiner bias because both the examiner and the examinee are given specific instructions on what is to be observed at each station.

2. **Records / Log Books:**

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

4. **Viva Voce**:

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

MARKS DISTRIBUTION IN EACH SUBJECT:

Each subject shall have a maximum of 200 marks.

Theory	100
Practical / Clinical	100

Break up of marks:-

Theory	-	100	Practical / Clinicals	-	100
University written exam		70	University Exam (Practicals)		90
Viva Voce (University exam)		20			
Internal assessment (written)		10	Internal assessment exam (practicals)		10
Total		100			100

For the subjects of Pre-clinical Prosthodontics & Pre-Clinical Conservative Dentistry

Internal Assessment	-	20
Practical	-	60
Viva Voce	-	20
		100

11. CRITERIA FOR A PASS AND CLASSIFICATION OF RESULTS:

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.
- First Class and Distinction etc. to be awarded by the University as per their respective rules.

13. PROMOTION RULES:

a. A candidate who has not successfully completed the 1st B.D.S. examination can not appear in the 2nd year Examination.
b. A candidate who has successfully completed the 2nd B.D.S. examination only can appear 3rd B.D.S. Examination.
c. Any candidate who fails in one subject in an Examination is permitted to go to the next higher class and appear for the subject and complete it successfully before he is permitted to appear for the next higher examination.
d. 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.

SYLLABUS FOR 1st BDS

1. **Anatomy including embryology and histology**

2. **Human Physiology**

3. **Biochemistry & Nutrition**

4. **Dental Anatomy, Embryology and Oral Histology**

ANATOMY INCLUDING EMBRYOLOGY AND HISTOLOGY

AIM:

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

OBJECTIVES:

a) KNOWLEDGE & UNDERSTANDING:

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

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

b) SKILLS

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

INTEGRATION:

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

This insight is gained in a variety of ways :

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

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

AN OUTLINE OF THE COURSE CONTENT:

(a) General anatomy : Introduction of anatomical terms and brief outline of various systems of the body.
(b) Regional anatomy of head & neck with osteology of head & neck, with emphasis on topics of dental importance.
(c) General dispositions of thoracic, abdominal & pelvic organs.
(d) The regional anatomy of the sites of intramuscular & intra vascular injections,& lumbar puncture.
(e) General embryology & systemic embryology with respect to development of head & neck.
(f) Histology of basic tissues and of the organs of gastro-intestinal, respiratory, endocrine, excretory systems & gonads.
(g) Medical genetics.

FURTHER DETAILS OF THE COURSE:

I. INTRODUCTION TO: Anatomical terms; Skin, superficial fascia & deep fascia; Cardiovascular system, portal system collateral circulation and arteries; Lymphatic system, regional lymph nodes.; Osteology – Including ossification & growth of bones; Myology – Including types of muscle tissue & innervations; Syndesmology – Including classification of Joints. ; Nervous system

II. HEAD & NECK :

- Scalp, face & temple, lacrimal aparatus
- Neck – Deep fascia of neck, posterior triangle, suboccipital triangle, anterior triangle, anterior median region of the neck, deep structures in the neck.
- Cranial cavity – Meninges, parts of brain, ventricles of brain, dural venous sinuses, cranial nerves attached to the brain, pituitary gland.
- Cranial nerves – III, IV,V, VI,VII,IX,XII in detail.
- Orbital cavity – Muscles of the eye ball, supports of the eye ball, nerves and vessels in the orbit.
- Parotid gland.
- Temporo mandibular joint, muscles of mastication, infratemporal fossa, pterygo – palatine fossa.
- Submandibular region .
- Walls of the nasal cavity, paranasal air sinuses .
- Palate.
- Oral cavity, Tongue.
- Pharynx (palatine tonsil and the auditory tube) Larynx. OSTEOLOGY – Foetal skull, adult skull, individual bones of the skull, hyoid bone and cervical vertebrae.

III. THORAX : Demonstration on a dissected specimen of

- Thoracic wall
- Heart chambers
- Coronary arteries
- Pericardium
- Lungs – surfaces ; pleural cavity
- Diaphragm.

IV. ABDOMEN : Demonstration on a dissected specimen of

- Peritoneal cavity
- Organs in the abdominal and pelvic cavity.

V. CLINICAL PROCEDURES :

- Intramuscular injections : Demonstration on a dissected specimen and on a living person of the following sites of injection.
  - Deltoid muscle and its relation to the axillary nerve and radial nerve.
  - Gluteal region and the relation of the sciatic nerve.
  - Vastus lateralis musle.

- Intravenous injection & venesection : Demonstration of veins in the dissected specimen and on a living person.

  a) Median cubital vein b) Cephalic vein c) Basilic vein d) Long saphenous vein

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

  a) Superficial temporal b) Facial c) Carotid d) Axillary e) Brachial f) Radial g) Ulnar h) Femoral i) Popliteal j) Dorsalis pedis

- Lumbar puncture : Demonstration on a dissected specimen of the spinal cord, cauda, 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.

VIII. MEDICAL GENETICS :

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

RECOMMENDED BOOKS :

1. SNELL (Richards s.)Clinical Anatomy for Medical students, Ed. 5, Llittle Brown & company, Boston.
2. RJ LAST'S Anatomy – McMINN, 9th edition.
3. ROMANES (G.J.) Cunningham Manual of Practical Anatomy :Head & Neck & Brain Ed. 15. Vol. III, Oxford Medical publication.
4. WHEATER, BURKITT & DANIELS, Functional Histology, Ed. 2, Churchill Livingstone.
5. SADLER, LANGMAN'S, Medical Embryology, Ed. 6.
6. JAMES E ANDERSON, Grant's Atlas of Anatomy. Williams & Wilkins.
7. WILLIAMS, Gray's Anatomy, Ed. 38, Churchill Livingstone.

HUMAN PHYSIOLOGY

AIM:

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

OBJECTIVES:

a) KNOWLEDGE:

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

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

b) SKILLS:

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

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

INTEGRATION:

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

COURSE CONTENT:

1. GENERAL PHYSIOLOGY:
   - Homeostasis: Basic concept, feed back mechanisms
   - Structure of cell membrane, transport across cell membrane
   - Membrane potentials

2. BLOOD :
   - Composition & functions of blood.
   - Specific gravity, Packed cell volume, factors affecting & methods of determination.
   - Plasma proteins – Types, concentration, functions & variations.
   - Erythrocyte – Morphology, functions & variations. Erythropoiesis & factors affecting erythropoiesis.
   - ESR – Methods of estimation, factors affecting, variations & significance.
   - Haemoglobin – Normal concentration, method of determination & variations in concentration.
   - Blood Indices - MCV, MCH, MCHC – definition, normal values, variation
   - Anaemia - Definition, classification, life span of RBC; destruction of RBCs, Formation & fate of bile pigments, Jaundice – types.
   - Leucocytes - Classification, number, percentage, distribution morphology, properties, functions & variations. Role of lymphocytes in immunity, life span & fate of leucocytes.
   - Thromobocytes –Morphology, number, variations, function & Thrombopoiesis
   - Haemostatsis – Role of vasoconstriction, platelet plug formation in haemostasis, coagulation factors, intrinsic & extrinsic pathways of coagulation, clot retraction.
   - Tests of haemostatic function, platelet count, clotting time, bleeding time, prothrombin time - normal values, method & variations. Anticoagulants – mechanism of action.
   - Bleeding disorders.
   - Blood groups : ABO & Rh system, method of determination, importance, indications & dangers of blood transfusion, blood substitutes.
   - Blood volume : Normal values, variations.
   - Body fluids: Distribution of total body water, intracellular & extra cellular 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 lf muscle contraction, neuromuscular transmission. Properties of skeletal muscle structure and properties of cardiac muscle & smooth muscle:

4. DIGESTIVE SYSTEM :
   - Introduction to digestion : General structure of G. I. tract, Innervation
   - Salivary glands : Structure of salivary glands, composition , regulation of secretion & functions of saliva.

- Stomach : Composition and functions of gastric juice, mechanism and regulation of gastric secretion.
- Exocrine Pancreas – Structure, composition of pancreatic juice, functions of each component, regulation of pancreatic secretion.
- Liver : structure , composition of bile, functions of bile, regulation of secretion –
- Gall bladder : structure, functions.
- Small intestine - Composition, functions & regulation of secretion of intestinal juice.
- Large intestine – Functions.
- Motor functions of GIT: Mastication, deglutition, gastric filling & emptying, movements of small and large intestine, defecation.

5. EXCRETORY SYSTEM :
   - Structure & functions of kidney, functional unit of kidney & functions of different parts.
   - Juxta glomerular apparatus , renal blood flow.
   - Formation of Urine : Glomerular filteration rate – definition, determination, normal values, factors influencing G.F.R.
   - Tubular re absorption – Re absorption of sodium, glucose, water & other substances.
   - Tubular 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 micturition & 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 , hypothalamic regulation of anterior pituitary function. Disorder of secretion of anterior pituitary hormones.
   - Posterior pituitary : Functions, regulations & disorders of secretion.
   - Thyroid :Histology, synthesis, secretion & transport of hormones, actions of hormones, regulations 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, 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
- 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 out put : 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 definitions, normal values significance, factors affecting vital capacity, variation in vital capacity , Forced Expiratory Volume & its variations.
- Pulmonary ventilation – alveolar ventilation & dead spaces – ventilation.
- Composition of inspired air, alveolar air and expired air.
- Exchanges of gases : Diffusing capacity, factors affecting it.
  Transport of Oxygen & carbon dioxide in the blood.
- Regulation of respiration – neural & chemical.
- Hypoxia, cyanosis, dyspnoea, periodic breathing.
- Artificial respiration, pulmonary function tests.

11. CENTRAL NERVOUS SYSTEM

- Organisation of central nervous system
- Neuronal organization at spinal cord level
- Synapse receptors, reflexes, sensations and tracts
- Physiology of pain
- Function of cerebellum, thalamus, hypothalamus and cerebral cortex.
- Formation and functions of CSF
- Autonomic nervous system.

12. SPECIAL SENSES

Fundamental knowledge of vision, hearing, taste and smell.

PRACTICALS

The following list of practicals is minimum and essential. All the practicals have been categorized 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 demonstration are to be shown to the students during practical classes. However these demonstrations would not be included in the University examinations but questions based on this would be given in the form of charts, graphs and calculations for interpretation by the students.

PROCEDURES:

- Enumeration of Red Blood Cells
- Enumeration of White Blood Cells
- Differential leucocyte counts
- Determination of Haemoglobin
- Determination of blood group
- Determination of bleeding time and clotting time
- Examination of pulse
- Recording of blood pressure

DEMONSTRATION :

- Determination of packed cell volume and erythrocyte sedimentation rate
- Determination of specific gravity of blood
- Determination of erythrocyte fragility
- Determination of vital capacity and timed vital capacity

- 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 temperature, genesis of fatigue and tetanus. Effect of after load and free load on muscle contraction, calculation of work done.
- Electrocardiography: Demonstration of recording of normal electro cardiogram
- Clinical examination of cardiovascular and respiratory system.

TEXT BOOKS :
Guyton ; Text book of Physiology 9th edition.
Ganong ; Review of Medical Physiology 19th edition
Choudhari ; Concise Medical Physiology, 2nd edition
Chaterjee; Human Physiology, 10th edition
A.K. Jain ; Human Physiology for BDS students, 1st edition
Tandon: Textbook of Physiology for Dental Students.

BOOKS FOR REFERENCE :

i) Berne & Levery : Physiology, 2nd edition
ii) West – Best & Taylor's Physiology basis of Medical Practice, 11th edition

EXPERIMENTAL PHYSIOLOGY :

i) Rannade: Practical Physiology, 4th edtion
ii)Ghai; a text book of practical physiology
iii) Hutchison 's Clinical Methods, 20th edition

BIOCHEMISTRY AND NUTRITION

AIM:

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

The chemistry portion should strive towards providing information on the functional groups, hydrophobic and hydrophilic moieties and weak valence forces that organize macromolecules. Details on structure need not be emphasized.

Discussion on metabolic processes should put emphasis on the overall change, interdependence and molecular turnover. While details of the steps may be given, the student should not be expected to memorise them. An introduction to biochemical genetics and molecular biology is a must but details should be avoided. The exposure to anti vitamins, anti metabolites and enzyme inhibitor at this stage, will provide a basis for the future study of medical subjects. An overview of metabolic regulation is to be taught by covering hormonal action, second messengers and regulation of enzyme activities. Medical aspects of biochemistry should avoid describing innumerable functional tests, most of which are not in vogue cataloguing genetic disorders under each head of metabolism is unnecessary. A few examples which correlate genotype change to functional changes should be adequate.

At the end of the course the student would be able to acquire a useful core of information, which can be retained for a long time . Typical acid tests can be used to determine what is to be taught or what is to be learnt. A few examples are given below.

1. Need not know the structure of cholesterol. Should know why it cannot be carried free in plasma.
2. Mutarotation should not be taught. Student should know why amylase will not hydrolyse cellulose.
3. Need not know the details of alpha - helix and beta – pleats in proteins.
4. Need not know mechanism of oxidative phosphorylation. Should know more than 90% of ATP is formed by this process.
5. Need not know details of the conversion of pepsinogen to pepsin. Should know hydrochloric acid cannot break a peptide bond at room temperature.
6. Need not remember the steps of glycogenesis. Should know that glycogen can also be synthesised from non carbohydrate sources.
7. Need not know about urea or creatinine clearance tests. Should know the basis of increase of urea and creatinine in blood in renal insufficiency.

8. Need not know the structure of insulin. Should know why insulin level in circulation is normal in most cases of maturity onset diabetes.
9. Need not know the structural details of ATP.
10. Need not know the mechanism of action of prolylhydroxylase. Should know why the gum bleeds in scurvy.
11. Need not know the structure of Vitamin K. Should know the basis of internal bleeding arising due to its deficiency.
12. Need not remember the structure of HMGCoA. Should know why it does not lead to increased cholesterol synthesis in starvation.

COURSE CONTENT:

1. CHEMISTRY OF BIO-ORGANIC MOLECULES

- Carbohydrates: Definition , biological importance and classification. Monosaccharides –Isomerism , Anomerism. Sugar derivatives, Disaccharides, Polysaccharides.Stuctures of starch and glycogen.

- Lipids : Definition , biological importance and classification. Fats and fatty acids. Introduction to compound lipids. Hydrophobic and hydrophilic groups, cholesterol, Bile salts, Micelle, Bimolecular leaflet.

- Proteins: Biological importance; aminoacids : classification. Introduction to peptides. Proteins: simple and conjugated ; globular and fibrous. Charge properties, Buffer action. Introduction to protein conformation : Denaturation.

- Nucleic acids : Building units Nucleotides. Outline of structure of DNA and RNA. High energy compound ATP, Phosphorylamidines, Thiolesters, Enol phosphates.

2. MACRONUTRIENTS 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 vitamin D and its role in calcium metabolism. Vitamin E. Vitamin K and gamma carboxylation, Introduction to antivitamins and hypervitaminosis.
- Minerals: Classification, daily requirement calcium and phosphate: sources, uptake, excretion, function.
- Serum calcium regulation.
- Iron: sources, uptake and transport. Heme and nonheme iron functions ; deficiency.
- lodine : Brief introduction to thyroxine synthesis. General; functions of thyroxine.
- Fluoride: function, deficiency and excess.
- Indications of role of other minerals.

4.ENERGY METABOLISM OF OVERVIEW

Outline 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, fattyacid 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. Outline of cholesterol synthesis and breakdown . Ammonia metabolism . Urea formation.Phosphocreatine formation. Transmethylation. Amines . Introduction to other functions of amino acids including one carbon transfer . Detoxication ; Typical reactions. Examples of toxic compounds. Oxygen toxicity.

6. BIOCHEMICAL GENETICS AND PROTEIN SYNTHESIS

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

7. ENZYME AND METABOLIC REGULATION

- Enzymes : Definition, classification. specificity and active site. Cofactors. Effect of pH, temperature and substrate concentration, introduction to enzyme inhibitors, proenzymes and isoenzymes. Introduction to allosteric regulation, covalent modification and regulation by induction / repression.
- Overview of hormones. Introduction to second messengers, cyclic AMP, calcium ion, inositol triphosphate. Mechanism of action of steroid hormones, Epinephrine, glucagons and insulin in brief. Acid base regulation . Electrolyte balance.

8. STRUCTURAL COMPONENTS AND BLOOD PROTEINS

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

9. MEDICAL BIOCHEMISTRY

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

PRACTICAL : Contact hours 50

1. Qualitative analysis of carbohydrates	4
2. Color reaction of protein and amino acids	4
3. Identification of nonprotein nitrogen substances	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. Titratable 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 hypothyrodism and hyperthyroidism	1
17.Profiles of hyper and hypoparathyroidism	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

RECOMMENDED BOOKS :

1. Concise text book of Biochemistry (3rd edition) 2001, T.N. Pattabiraman
2. Nutritional Biochemistry 1995, S. Ramakrishna and S. V. Rao
3. lecture notes in Biochemistry 1984, J. K. Kandlish

REFERENCE BOOKS:

1. Text book of Biochemistry with clinical correlation 1997, T.N. Devlin
2. Harper's Biochemistry, 1996., R. K. Murray et. al
3. Basic and applied Dental Biochemistry , 1997, R. A. D. Williams & J.C Elliot

DENTAL ANATOMY, EMBRYOLOGY AND ORAL HISTOLOGY

INTRODUCTION:

Dental Anatomy including Embryology and Oral Histology – a composite of basic Dental Sciences & their clinical applications.

SKILLS:

The students should acquire basic skills in :

1. Carving of permanent teeth in wax blocks.
2. Microscopic study of Oral tissues.
3. Age estimation by pattern of teeth eruption from plaster casts of different age groups.

OBJECTIVES:

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

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

COURSE CONTENT:

I. TOOTH MORPHOLOGY

i. Introduction to tooth morphology :
   - Human dentition, types of teeth & functions, Palmer's & Binomial notation system, tooth surfaces, their junctions – line angles & point angles, definition of terms used in dental morphology, geometric concepts in tooth morphology, contact areas & embrassures – Clinical significance.

ii. Morphology of permanent teeth :
   - Description of individual teeth & functions, along with their endodontic anatomy & including a note on their chronology of development, differences between similar class of teeth & identification of individual teeth .
   - Variation & Anomalies commonly seen in individual teeth.

iii. Morphology of Deciduous teeth:
- Generalized differences between Deciduous & Permanent dentition.
- Description of individual deciduous teeth, including their chronology of development, endodontic anatomy, differences between similar class of teeth & identification of individual teeth.

iv. Occlusion :
- Definition, factors influencing occlusion - basal bone, arch, individual teeth, external& internal forces & sequence of eruption .
- Inclination of individual teeth - compensatory curves.
- Centric relation & Centric occlusion - protrusive & lateral occlusion
- Clinical significance of normal occlusion.
- Introduction & classification of Malocclusion.

II. ORAL EMBRYOLOGY

i. Brief review of development of face, jaw, lip, palate & tongue, with applied aspects.
ii. Development of teeth :
- Epithelial mesenchymal interaction, detailed study of different stages of development of crown root & supporting tissues.
- Applied aspects of disorders in development of teeth.

iii. 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 applied aspects of disorders of eruption

iv. Shedding of teeth :
- Factors & mechanism of shedding of deciduous teeth .
- Complications of shedding

III. ORAL HISTOLOGY:

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 insult to exposed dentine; Pulp clacifications & Hypercementosis.

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.

Detailed microscope study of Oral Mucosa, variations in structure in relation to functional requirements, mechanisms of keratinization, clinical parts of gingiva, Dentogingival & Mucocutaneous junction & lingual papillae. Age changes & clinical considerations.

Salivary Glands :

- Detailed microscopic study of acini & ductal system
- Age changes & clinical considerations.

Temporomandibular Joint :

- Review of basic anatomical aspects & microscopic study & clinical considerations

Maxillary Sinus :

- Microscopic study, anatomical variations, functions & clinical relevance of maxillary sinus in dental practice.

Processing of Hard & soft tissues for microscopic study :

- Ground sections, decalcified sections & routine staining procedures.

Basic histochemical staining patterns of oral tissues.

IV. ORAL PHYSIOLOGY:

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.

Mastication :

- Masticatory force & its measurement – need for mastication, peculiarities of masticatory muscles, masticatory cycle, masticatory reflex & neural control of mastication.

Deglutition :

- Review of the steps in deglutition, swallowing in infants, neural control of deglutition & dysphagia.

Calcium , Phosphorous & fluoride metaboilism :

- Source, requirements, absorption, distribution, functions & excretion, clinical considerations, Hypo & hyper phosphatemia & fluorosis.

Theories of Mineralization :

- Definition, mechanisms, theories & their drawbacks.
- Applied aspects of physiology of mineralization, pathological considerations –calculus formation.

Physiology of Taste :

- Innervation of taste buds, pathway, physiologic basis of taste sensation, age changes & applied aspects – taste disorders.

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.

RECOMMENDED TEXT BOOKS:

1. Orban ‘s Oral Histology & Embryology – S. N. Bhaskar
2. Oral Development & Histology – James & Avery
3. Wheeler,s Dental Anatomy, Physiology & Occlusion – Major. M. Ash
4. Dental Anatomy – its relevance to dentistry – woelfel & Scheid
5. Applied Physiology of the mouth – Lavelle
6.Physiology & Biochemistry of the mouth -Jenkins

SYLLABUS FOR 2nd BDS

1. **General Pathology & Microbiology**
2. **General and Dental Pharmacology and therapeutics**
3. **Dental Materials**
4. **Pre-Clinical Conservative Dentistry – Only practical and Viva Voice**
5. **Pre-Clinical Prosthodontics – Only Practical and Viva Voice**

GENERAL PATHOLOGY

AIM:

At the end of the course the student should be competent to apply the scientific study of disease process, which result in morphological and functional alterations in cells, tissues and organs to the study of pathology and the practice of dentistry.

OBJECTIVES:

Enabling the student

1. To demonstrate and apply basic facts, concepts and theories in the field of pathology.
2. To recognize and analyze pathological changes at macroscopic and microscopic levels and explain their observations in terms of disease processes.
3. To Integrate knowledge from the basic sciences, clinical medicine and dentistry in the study of Pathology.
4. To demonstrate understanding of the capabilities and limitations of morphological pathology in its contribution to medicine, dentistry and biological research.
5. To demonstrate ability to consult resource materials outside lectures, laboratory and tutorial classes.

COURSE CONTENT:

a) General Pathology:

1. Introduction to Pathology:Terminologies, The cell in health, The normal cell structure, The cellular functions.
2. Etiology and Pathogenesis of Disease: Cell 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: Apoptosis,
   Definition, causes, features and types of necrosis.
   Gangrene – Dry, wet, gas gangrene.
   Pathological Calcifications (Dystrophic and metastatic)
5. Inflammation: Definition, causes, types, and features.
   Acute inflammation:The vascular response, The cellular response, Chemical mediators, The inflammatory cells, Fate .
   Chronic inflammation: Granulomatous inflammation.
6. Healing: Regeneration.
   Repair: Mechanisms, Healing by primary intention, Healing by secondary intention, Fracture healing, Factors influencing healing process, 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 criteria, Oral lesions.
9. Typhoid: Epidemiology, Pathogenesis, Pathological features, Diagnostic criteria.
10. Thrombosis: Definition, Pathophysiology, Formation, complications & Fate of a thrombus.
11. Embolism: Definition, Types, Effects.
12. Ischaemia and infarction: Definition, etiology, types. Infarction 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 Hepatitis.
18. Hypertension: Definition, classification, Pathophysiology, Effects in various organs.
19. Diabetes Mellitus: Definition, Classification, Pathogenesis, Pathology in different organs.
20. Adaptive disorders of growth: Atrophy & Hypertrophy, Hyperplasia, Metaplasia and Dysplasia.
21. General Aspects of neoplasia
    - Definition, terminology, classification
    - Differences between benign and malignant neoplasms
    - The neoplastic cell
    - Metastasis
    - Etiology and pathogenesis of neoplasia, Carcinogenesis
    - Tumour biology
    - Oncogenes and anti-oncogenes
    - Diagnosis
    - Precancerous lesions
    - Common specific tumours, Squamous papilloma and Carcinoma, Basal cell Carcinoma, Adenoma &
    - Adeno Carcinoma, Fibroma & Fibrosarcoma, Lipoma and liposarcoma.

b) Systemic Pathology:

22. Anaemias: Iron Deficiency anaemia, Megaloblastic anaemia, Refractory Anaemia, Sickle Cell Anaemia, Thalassemia.
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, Stomatits, Leukoplakia, Squamous cell Carcinoma, Dental caries, Dentigerous cyst, Oral Thrush, Ameloblastoma.
26. Diseases of salivary glands: Normal structure, Sialadenitis, Tumours.
27. Common diseases of Bones: Osteomyelitis, Metabolic bone diseases, Bone Tumours, Osteosarcoma, Osteoclastoma, Giant cell Tumour, Ewings sarcoma, Fibrous dysplasia, Aneurysmal bone cyst..
28. Diseases of Cardiovascular system: Cardiac failure, Congenital heart disease – ASD, VSD, PDA, Fallot's Tetrology, Infective Endocarditis, Atherosclerosis, Ischaemic heart Disease.
29. Haemorrhagic Disorders: Coagulation cascade, Coagulation disorders, Platelet function, Platelet disorders

PRACTICALS

1. Urine – Abnormal constitutients
   - Sugar, albumin, ketone bodies
2. Urine – Abnormal constituents
   - Blood, bile salts, bile pigments
3. Haemoglobin (Hb) estimation
4. Total WBC count
5. Differential WBC Count
6. Packed cell volume (PCV), Erythrocyte sedimentation Rate (ESR)
7. Bleeding Time & clotting Time.
8. Histopathology: Tissue Processing, Staining.
9. Histopathology slides: Acute appendicitis, Granulation tissue, fatty liver.
10. Histopathology slides: CV lung, CVC liver, Kidney amyloidosis.
11. Histopathology slides: Tuberculosis, Actinomycosis, Rhinosporidiosis.
12. Histopathology slides: Papilloma, Basal cell Carcinoma, Squamous cell Carcinoma.
13. Histopathology Slides: Osteosarcoma, osteoclastoma, Adenoma
14. Histopathology slides: Malignant melanoma, Ameloblastoma, Adenoma
15. Histopathology slides: Mixed parotid tumour, metastatic carcinoma in lymph node

List of Textbooks

1. Robbins – Pathologic Basis of Disease Cotran, Kumar, Robbins
2. Anderson's Pathology Vol.1 & 2 Editors – Ivan Damjanov & Jams Linder
3. Wintrobe's clinical Haematology Lee, Bithell, Foerster, Athens, Lukens.

MICROBIOLOGY

AIM:

To introduce the students to the exciting world of microbes. To make the students aware of various branches of Microbiology, importance, significance and contribution of each branch to mankind and other fields of medicine. The objectives of teaching Microbiology can be achieved by various teaching techniques such as :

Lectures, Lecture Demonstrations, Practical exercises, Audio visual aids, and Small group discussions with regular feed back from the students.

OBJECTIVES:

a) KNOWLEDGE AND UNDERSTANDING:

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

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

b) SKILLS:

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

COURSE CONTENT:

a) GENERAL MICROBIOLOGY:

- History, Introductions, Scope, Aims and Objectives.
- Morphology and Physiology of bacteria.
- Detailed account of Sterlisation and Disinfection.

- Brief account of Culture media and Culture techniques.
- Basic knowledge of selection, collection, transport and processing of clinical Specimens and identification of bacteria.
- Bacterial Genetics and Drug Resistance in bacteria.

b) IMMUNOLOGY:

- Infection – Definition, Classification, Source, Mode of transmission and types of infectious disease.
- Immunity
- Structure and functions of Immune system.
- The Complement System
- Antigens
- Immunoglobulins – Antibodies – General structure and the role played in defense mechanism of the body.
- Immune response
- Antigen – Antibody reactions – with reference to clinical utility in dental diseases and periodontal diseases.
- Immuno deficiency disorders – a brief knowledge of various types of immuno deficiency disorders – A sound knowledge of immuno deficiency disorders relevant to dentistry.
- Hypersensitivity reactions
- Autoimmune disorders – Basic knowledge of various types – sound knowledge of autoimmune disorders of oral cavity and related structures.
- Immunology of Transplantation and Malignancy.
- Immunohaematology

c) SYSTEMATIC BACTERIOLOGY:

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

d) VIROLOGY:

- Introduction
- General properties, cultivation, host – virus interaction with special reference to Interferon.
- Brief account of Laboratory diagnosis, Chemotherapy and immuno prophylaxis in general.
- A few viruses of relevance to dentistry.
  - Herpes Virus
  - Hepatitis B Virus – brief about other types
  - Human Immunodeficiency Virus (HIV)
  - Mumps Virus
  - Brief – Measles and Rubella Virus
- Bacteriophage – structure and Significance

e) MYCOLOGY

- Brief Introduction
- Candidiasis – in detail
- Briefly on oral lesions of systemic mycoses.

f) PARASITOLOGY:

- Brief introduction – protozoans and helminthes
- Brief knowledge about the mode of transmission and prevention of common parasitic infections in the region.

RECOMMENDED BOOKS FOR REGULAR READING:

1. Text book of Microbiology – R.Ananthanarayan & C.K.Jayaram Paniker.
2. Medical Microbiology – David Greenwood etal.

BOOKS FOR FURTHER READING / REFERENCE.

i. Microbiology – Prescott, etal.
ii. Microbiology – Bernard D.Davis, etal.
iii. Clinical & Pathogenic Microbiology – Barbara J Howard, etal.
iv. Mechanisms of Microbial diseases – Moselio Schaecter, etal.
v. Immunology an Introduction – Tizard
vi. Immunology 3rd edition – Evan Roitt, etal.

GENERAL AND DENTAL PHARMACOLOGY AND THERAPEUTICS

AIM:

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

OBJECTIVES:

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

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

SKILLS:

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

1. Prescribe drugs for common dental and medical ailments.
2. Appreciate adverse reactions and drug interactions of commonly used drugs.
3. Observe experiments designed for study of effects of drugs.
4. Critically evaluate drug formulations and be able to interpret the clinical pharmacology of marketed preparations commonly used in dentistry.
5. INTEGRATION: Practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical departments.

COURSE CONTENT:

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, antiepileptics, 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, leukotrienes 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-emetics, 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. Chelating 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 oral conditions in dentistry.

PRACTICALS AND DEMONSTRATIONS:

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

LIST OF BOOKS RECOMMENDED FOR READING AND REFERENCE:

1. Bertam G Katzung, Basic and Clinical pharmacology 6th ed. Appleton & Lange 1997.
2. Lauerence D.R.Clinical Pharmacology 8th ed. Churchill Livingstone 1997.
3. Satoskar R.S. & Bhandarkar S.D., Pharmacology and Pharmacotherapeutics part I & Part II, 13th Popular Prakashan Bombay 1993.

DENTAL MATERIALS

AIM:

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

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.

Aim of the course is to present basic chemical and physical properties of Dental materials to give sound educational background so that the practice of dentistry emerged from an art to empirical status of science as more information through further research becomes available. It is also the aim of the course of Dental materials to provide with certain criteria of selection which will enable the student to discriminate between facts and propaganda with regard to claims of manufacturers.

OBJECTIVES:

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

- Understand the evolution and development of science of dental material.
- Explain purpose of course in dental materials to personnels concerned with the profession of the dentistry.
- Knowledge of physical and chemical properties.
- Knowledge of biomechanical requirements of particular restorative procedure.
- An intelligent compromise of the conflicting as well as co-ordinating factors into the desired earnest.
- Laying down standards or specifications of various materials to guide to manufacturers as well as to help professionals.
- Speech for newer and better materials which may answer our requirements with greater satisfaction.
- Understand and evaluate the claims made by manufacturers of dental materials.

NEED FOR THE COURSE:

The profession has to rise from an art to a science. The need for the dentist to possess adequate knowledge of materials to exercise his best through knowledge of properties of different types of materials. The growing concern of health hazards due to mercury toxicity, inhalation of certain vapour or dust materials, irritations and allergic reaction to skin due to contact of materials. Materials causing irritation of oral tissues, pH of restorative materials causing inflammation and necrosis of pulp which is a cause for the dentist to posses wider knowledge of physical, chemical and biological properties of materials being used. For the protection of the patient and for his own protection, certain criteria of selection are provided that will enable the dentist to discriminate between facts and propaganda, which will make a material biologically acceptable.

SCOPE:

The dental materials are employed in mechanical procedures including restorative dentistry such as Prosthodontics, endodontics, periodontics, orthodontics and Restorative Dentistry. There is scarcely a dental procedure that does not make use of dental materials in one form or another and therefore the application of dental material is not limited to any one branch of dentistry. Branches such as minor surgery and periodontics require less use of materials but the physical and chemical character of materials are important in these fields.

The toxic and tissue reaction of dental materials and their durability in the oral cavity where the temperature is between 32 & 37 degree centigrade, and the ingestion of hot or cold food ranges from 0-70 degree centigrade. The acidity and alkalinity of fluids shows pH variation from 4 to 8.5. The load on 1 sq. mm of tooth or restorative materials can reach to a level as high as many kilograms. Thus the biological properties of dental materials cannot be separated from their physical and chemical properties.

COURSE CONTENT:

1) PERFORMANCE STANDARDS FOR DENTAL MATERIALS

2) 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.

3) IMPORTANT PHYSICAL PROPERTIES APPLICABLE TO DENTAL MATERIALS: Physical properties 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, metamerism, fluorescence, physical properties of tooth, stress during mastication.

4). BIOLOGICAL CONSIDERATIONS IN USE OF DENTAL MATERIALS:
Materials used with the knowledge of appreciation of certain biological considerations for use in oral cavity. Requirement of materials with biological compatibility. Classification of materials from perspective of biological compatibility eg. contact with soft tissues, affecting vitality of pulp, used for root canal fillings, affecting hard tissues of teeth, laboratory materials that could 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, mutagenicity and carcinogenicity. Disinfection of dental materials for infection control.

5). GYPSUM & GYPSUM PRODUCTS
Gypsum- its origin, chemical formula, Products manufactured from gypsum.
Dental plaster, Dental stone, Die stone, high strength, high expansion stone.
Application and manufacturing procedure of each, macroscopic and microscopic structure of each – supplied as and Commercial names.
Chemistry of setting, setting reaction, theories of setting, gauging water, Microscopic structure of set material.
Setting time: working time and setting time, Measurement of setting time and factors controlling setting time.
Setting expansion, Hygroscopic setting expansion – factors affecting each
Strength: Wet strength, dry strength, factors affecting strength, tensile strength
Slurry – need and use.

Care of cast: ADA classification of gypsum products; Description of impression plaster and dental investment; Manipulation including recent methods or advanced methods.
Disinfection : infection control, liquids, sprays, radiation; Method of use of disinfectants.
Storage of material – shelf life.

6) IMPRESSION MATERIALS USED IN DENTISTRY: Impression plaster, Impression compound, Zinc oxide eugenol impression paste & bite registration paste including non eugenol paste, Hydrocolloids, reversible and irreversible, Elastomeric impression materials. Polysulphide, Condensation silicones, Addition silicones, Polyether, Visible light cure polyether urethane dimethacrylate, Historical background & development of each impression material.

Definition of impression, Purpose of making impression, Ideal properties required and application of material, Classification as per ADA specification, general & individual impression material. Application and their uses in different disciplines, 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 material, electroplating. Biological properties: tissue reaction, Shelf life & storage of material, Infection control – disinfection, Advantages & disadvantages of each material.

7) SYNTHTIC RESINS USED IN DENTISTRY:

a) History: 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, polymerization mechanism, stages in addition polymerization, inhibition of polymerization, co polymerization, molecular weight, crosslinking, plastixizers, physical properties of polymers, polymer structures, types of resins.

b) Acrylic Resins: Mode of polymerization: Heat activated, Chemically activated, Light activated, Mode of supply, application, composition, polymerization reaction of each. Technical consideration: 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 resin, Resin impression trays, Tray materials, Resin teeth, materials in maxillofacial prosthesis, Denture cleansers, Infection control in detail, Biological properties and allergic reactions.

c) Restorative Resins: Historical background, Resin based restorative materials, Unfilled & filled, Composite restorative materials, Mode of supply, Composition, Polymerization mechanisms: Chemically activated, Light activated, Dual cure: Degree of conversion, Polymerization 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 Polymerization, Finishing and polishing of restoration, Repair of composites. Direct Bonding: Need for bonding, Acid – etch technique, Enamel bonding, Dentin bonding agents. Mode of bonding, Bond strength, Sandwich technique, its indication and procedure. Extended application for composites: Resins for restoring eroded teeth, Pit and fissure sealing, Resin inlay system – Indirect & direct, Core build up, Orthodontic applications.

8) METALS AND ALLOYS:

a) Structure and behaviour of metals, Solidification of metals, mechanism of crystallisation amorphous & crystalline. Classification of alloys, Solid solutions, Constitutes or equilibrium phase diagrams: Electric alloys, Physical properties of 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 (B & D).

b) History**:** Definition of dental amalgam, application, Alloy classification, manufacture of alloy powder composition, Commercial names.

   Amalgamation: setting reaction & resulting structure, properties, Microleakage, Dimensional stability, Strength, Creep, Clinical performance.

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

c) Direct filling gold: Properties of pure gold, mode of adhesion of gold for restoration, forms of direct filling gold for using as restorative material.
   Classification: Gold Foil, Electrolytic precipitate, powdered gold.
   Manipulation: Removal of surface impurities and compaction of direct filling gold.
   Physical properties of compacted gold, Clinical performance.

d) Dental casting alloys: Historical background, desirable properties of casting alloys.
   Alternatives to cast metal technology: direct filling gold, amalgam, mercury free condensable intermetallic compound – an alternative to metal casting process. CAD-CAM process for metal & ceramic inlays – without need of impression of teeth or casting procedure, pure titanium, bio compatible metals – by copy milling (without casting procedures).
   Classification of casting alloys: by function & description.

   Recent classification, High noble (HN), Noble (N) and predominantly base metal (PB) Alloys for crown & bridge, metal ceramic & removable partial denture. Composition, function, constituents and application, each alloy both noble and base metal. Properties of alloys: Melting range, mechanical properties, hardness, elongation, modulus of elasticity tarnish and corrosion.

   Casting shrinkage and compensation of casting shrinkage. 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.

9) DENTAL WAXES INCLUDING INLAY CASTING WAX:
Introduction and importance of waxes. Sources of natural waxes and their chemical nature.Classification of Waxes:
Properties: melting range, thermal expansion, mechanical properties, flow & residual stresses, ductility. Dental Wax: Mode of supply: Classification & composition, Ideal requirements: Properties of inlay wax: Flow, thermal properties Wax distortion & its causes.
Manipulation 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.

10) DENTAL CASTING INVESTMENTS:
Definition, requirements, classification. Gypsum bonded – classification. Phosphate bonded, Silica bonded.
Mode of Supply: Composition, application, setting mechanism, setting time & factors controlling.
Expansions:Setting expansion, Hygroscopic Setting expansion, & thermal expansion: factors affecting. Properties: Strength, porosity, and fineness & storage. Technical considerations: For Casting procedure, Preparation of die, Wax pattern, spruing, investing, control of shrinkage compensation, wax burnout, and heating the invested ring, casting machines, source of heat for melting the alloy. Defects in casting.

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

12) WROUGHT BASE METAL ALLOYS:
Applications and different alloys used mainly for orthodontics purpose: Stainless steel, Cobalt chromium nickel, Nickel titanium, Beta titanium.
Properties required for orthodontic wires, working range, springiness, stiffness, resilience, Formability, ductility, ease of joining corrosion resistance, stability in oral environment, bio compatibility.

Stainless steels: Description, type, composition & properties of each type. Sensitisation & stabilization, Mechanical properties – strength, tensile, yield strength, KHN. Braided & twisted wires their need, Solders for stainless steel, Fluxes, Welding.
Wrought cobalt chromium nickel alloys, composition, allocation, properties, heat treatment, physical properties. Nickel – Titanium alloys, shape, memory & super elastic. Titanium alloys, application, composition, properties, welding, Corrosion resistance.

13) 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, Varnish, Calcium hydroxide, Gutta percha.
Application, Composition,classification (general and individual) setting mechanism, mode of supply, Properties, factors affecting setting, special emphasis on critical procedures of manipulation and protection of cement, mode of adhesion, biomechansim of caries inhibition.
Agents for pulpal protection., Modifications and recent advances, Principles of cementation. Special emphasis on cavity liners and cement bases and luting agents.

14) DENTAL CERAMICS:
Historical background & General applications.
Dental ceramics: definition, classification, application, mode of supply, Composition, 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 Ceramics (PFM): Alloys – Types and composition of alloys. Ceramic – Type and Compostions.
Metal Ceramic Bond – Nature of bond. Bonding using electro deposition, foil copings, bonded platinum foil, swaged gold alloy foil coping. Technical considerations for porcelain and porcelain fused metal restorations. Recent advances – all porcelain restorations, Manganese core, injection moulded, castable ceramics, glass infiltrated alumina core ceramic (In ceram), ceramic veners, inlays and onlays, and CAD – CAM ceramic. Chemical attack of ceramic by fluoride. Porcelain furnaces.

15) 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.

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

17) DENTAL IMPLANTS**:**

History, Classifications, Components, Implant Materials, metals, Ceramics & Ceramic coators, Polymers, C & sic,
Biocompatibility of Implants, Biomechanics.

18) MECHANICS OF CUTTING:

Burs and points Types, Factors affecting cutting Efficiency.

RECOMMENDED BOOKS:

1. Phillips Science of Dental Materials – 10th edn. – Kenneth J.Anusavice.
2. Restorative Dental Materials – 10 edn. Robert G.Craig.
3. Notes on Dental Materials – E.C. Combe

PRE-CLINICAL CONSERVATIVE DENTISTRY (ONLY PRACTICAL AND VIVA VOCE)

1. Identification and study of handcutting instruments, chisels, gingival marginal trimmers, excavators and hatchet.
2. Identification and use of rotary cutting instruments contra angle hand pieces, burs (Micromotor).
3. Preparation of class I and extended class I and II and MOD's and class V amounting to 10 exercises in plaster models.
4. 12 Exercises in mounted extracted teeth as under

Class I	---- 4
Extended Class I	---- 2
Class II	---- 4
Class V	---- 2

   Cavity Preparation, base application, Matrix and wed placement, Restoration with Amalgam.
5. Exercise on phantom 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 Moods	2
Class V and III for glass ionomers	4
Class V for amalgam	2

2. Polishing of above restorations.
3. Demonstration of class III and Class V cavity preparation. For composites on extracted tooth completing the restoration.
4. Polishing and finishing of the restoration of composites.
5. Identification and manipulation of various bases like Zinc Phosphate, Poly carboxylate, Glass Ionomers, Zinc Oxide, Eugenol cements.
6. Identification and manipulation of various matrices, tooth separators and materials like composites and modified glass ionomer cements.
7. Cast Restoration
   - Preparation of Class II inlay cavity
   - Fabrication of wax pattern
   - Investing of wax pattern
   - Finishing and cementing of class II inlay in extracted tooth.
8. Endodontics
   - Identification of basic endodontic instruments
   - Coronal access cavity preparation on extracted upper central incisiors
   - Determination working length.
   - Biomechanical preparation of root canal space of central incisor
   - Obturation of root canal spaces.
   - Closure of access cavity.

PRE-CLINICAL PROSTHODONTICS
(ONLY PRACTICAL AND VIVA VOCE)

A. EXERCISES IN COMPLETE DENTURES

1. Study of Anatomical land marks of Maxillary & Mandibular Edentulous foundations.
2. Making of preliminary impressions using impression compound
    a. Maxillary
    b. Mandibular
3. Preparation of casts by
    a. Inversion method
    b. Beading and boxing
4. Preparation of special tray Using tray acrylic
5. Preparation of Occlusion Rims
6. Transfer of Jaw relations and securing the jaw relations to the Articulator
7. Selection and arrangement of teeth
8. Waxing & Carving
9. Processing of dentures
    a. Flasking
    b. Dewaxing
    c. Packing
    d. Curing
    e. Deflasking & Lab remounting
    f. Finishing & Polishing
    g. Repair of Dentures
10. Arrangement of teeth for normognathic jaw relation – 10 arrangements

B. EXERCISES IN REMOVABLE CAST PARTIAL DENTURES:
1. Study of definitions and components of cast partial denture
2. Classification of Partially Edentulous Arches
3. Components of Removable Partial Denture, types and functions.

C. EXERCISES IN FIXED PARTIAL DENTURES:
1. Definitions in Fixed Partial Denture
2. Components of Fixed Partial Dentures
3. Classification of Crown and Bridges
4. Functions of each components of Fixed Partial Denture

D. PERIODICALLY VIVA – VOCE TO BE CONDUCTED IN THE ABOVE TOPICS :

SYLLABUS FOR 3rd BDS

1. **General Medicine**

2. **General Surgery**

3. **Oral Pathology and Microbiology**

GENERAL MEDICINE

Special emphasis should be given throughout the course on the importance of various diseases as applicable to dentistry.

1. Special precautions / contraindication of anaesthesia 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 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.

COURSE CONTENT:

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

6	Hematology Anemias, bleeding & clotting disorders, leukemias, lymphomas, agranulocytosis, splenomegaly, oral manifestations of hematologic disorders, generalized lymphadenopathy.	
7	Renal System Acute nephritis Nephrotic syndrome	Renal failure
8	Nutrition Avitaminosis	Balanced diet PEM
9	CNS Facial palsy, facial pain including trigeminal neuralgia, epilepsy, headache including migraine.	- Meningitis - Examination of comatose patient - Examination of cranial nerves. Avitaminosis
10	Endocrines Diabetes Mellitus, Acromegaly, Hypothyroidism, Thyrotoxicosis, Calcium metabolism and parathyroids.	Addison's disease, Cushing's syndrome.
11	Critical care Syncope, cardiac arrest, CPR, shock	Acute 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.

Text Books Recommended:

a. Hutchison's Clinical Method
b. Davidson's Principles and practice of Medicine.
c. Latest edition of Kumar & clark's Clinical Medicine.

Reference Book:

Harrison's Principles of Medicine

GENERAL SURGERY

AIM:

To acquaint the student with various diseases, which may require surgical expertise and to train the student to analyse the history and be able to do a thorough physical examination of the patient. The diseases as related to head and neck region are to be given due importance, at the same time other relevant surgical problems are also to be addressed. At the end of one year of study the student should have a good theoretical knowledge of various ailments, and be practically trained to differentiate benign and malignant diseases and be able to decide which patient requires further evaluation.

COURSE CONTENT:

1. HISTORY OF SURGERY:

The development of surgery as a speciality over the years, will give the students an opportunity to know the contributions made by various scientists, teachers and investigators. It will also enable the student to understand the relations of various specialities in the practice of modern surgery.

2. GENERAL PRINCIPLES OF SURGERY:

Introduction to various aspects of surgical principles as related to orodental diseases. Classification of diseases in general. This will help the student to understand the various diseases, their relevance to routine dental practice.

3. WOUNDS:

Their classification, wound healing, repair, treatment of wounds, medico-legal aspects of accidental wounds and complications of wounds.

4. INFLAMMATION:

Inflammation of soft and hard tissues. Causes of inflammation, varieties, treatment and sequelae.

5. INFECTIONS:

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. TRANSMISSIBLE VIRAL INFECTIONS:

HIV and Hepatitis B with special reference to their prevention and precautions to be taken in treating patients in a carrier state.

7. SHOCK AND HAEMORRHAGE:

Classification, causes, clinical features and management of various types of shock. Syncope, Circulatory collapse. Haemorrhage – different types, causes, clinical features and management. Blood groups, blood transfusion, precautions and complication of blood and their products. Hemophilias, their transmission, clinical features and management especially in relation to minor dental procedures.

8. TUMOURS, ULCERS, CYSTS, SINUS AND FISTULAE:

Classification, clinical examination and treatment principles in various types of benign and malignant tumours, ulcers, cysts, sinus and fistulae.

9. DISEASES OF LYMPHATIC SYSTEM:

Especially those occurring in head and neck region. Special emphasis on identifying diseases such as tubercular infection, lymphomas, leukemias, metastatic lymph node diseases.

10. DISEASES OF THE ORAL CAVITY:

Infective and malignant diseases of the oral cavity and oropharynx including salivary glands with special emphasis on preventive aspects of premalignant and malignant diseases of the oral cavity.

11. DISEASES OF LARYNX, NASOPHARYNX:

Infections and tumours affecting these sites. Indications, procedure and complications of 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:

Principles 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.

Recommended Books:

1. Short Practice of Surgery by Bailey & Love.
2. Principles of Surgery by Schwartz
3. Text Book of Surgery by Sabiston
4. Text Book of Surgery by Das
5. Manual of Clinical Surgery by Das K.
6. Current Surgical Diagnosis & Treatment by Lawrence.
7. Manual of Surgery by Dr.G.Lakshmana prasad.

ORAL PATHOLOGY & MICROBIOLOGY

OBJECTIVES:

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

1. The different types of pathological processes that involve the oral cavity.
2. The manifestations of common diseases, their diagnosis & correlation with clinical pathological processes.
3. An understanding of the oral manifestations of systemic diseases should help in correlating with the systemic physical signs & laboratory findings.
4. The student should understand the underlying biological principles governing treatment of oral diseases.
5. The principles of certain basic aspects of Forensic Odontology.

SKILLS:

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

COURSE CONTENT:

1. INTRODUCTION:

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

2. Developmental disturbances of teeth, jaws and soft tissues of oral & paraoral Region:
   - Introduction to developmental disturbances – Hereditary, Familial, mutation, Hormonal etc. causes to be highlighted.
   - Developmental disturbances of teeth – Etiopathogenesis, clinical features, radiological features & histopathological features as appropriate:-
     The size, shape, number, structure & eruption of teeth & clinical significance of the anomalies to be emphasized.

- Forensic Odontology.
- Developmental disturbances of jaws – size & shape of the jaws.
- Developmental disturbances of oral & paraoral soft tissues – lip & palate – clefts, tongue, gingiva, mouth, salivary glands & face.

3. Dental Caries:

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

4. Pulp & Periapical Pathology & Osteomyelitis.

- Etiopathogenesis & interrelationship, clinical features, microbiology, histopathology & radiological features (as appropriate) of pulp & periapical lesions & osteomyelitis.
- Sequelae of periapical abscess – summary of space infections, systemic complications & significance.

5. Periodontal Diseases:

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

6. Microbial infections of oral soft tissues:

Microbiology, defence mechanisms including immunological aspects, oral manifestations, histopathogy 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, Aphthous Ulcers.

7. Common non-inflammatory diseases involving the jaws:

Etiopathogenesis, clinical features, radiological & laboratory values in diagnosis of: Fibrous dysplasia, Cherubism, Osteogenesis Imperfecta, Paget's disease, Cleidocranial dysplasia, Rickets, Achondroplasia, Marfan's syndrome & Down's syndrome.

8. Diseases of TM Joint:

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

9. Cysts of the Oral & Paraoral region:

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

10. Tumours of the Oral Cavity:

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

a) Odontogenic – all lesions.
b) Non-odontogenic
   - Benign Epithelial – Papilloma, Keratoacanthoma & Naevi.
   - Benign Mesenchymal – Fibroma, Aggressive fibrous lesions, Lipoma,Haemangioma,Lymphangioma, Neurofibroma,Schwannoma, Chondroma, Osteoma & Tori
   - Malignant Mesenchymal – Fibrosarcoma, Osteosarcoma, Giant cell Tumour, Chodrosarcoma, Angiosarcoma, Kaposi's sarcoma. Lymphomas, Ewing's sarcoma & Other Reticuloendothelial tumours.
c) Salivary Gland
   - Benign Epihelial neoplasms – Pleomorphic Adenoma, Warthin's Tumour & Oncocytoma
   - Malignant Epithelial neoplasms – Adenoid Cystic Carcinoma, Mucoepidermoid Carcinoma, Acinic Cell Carcinoma & Adenocarcinomas
d) Tumours of Disputed Origin – Congenital Epulis & Granular Cell Myoblastoma.
e) Metastatic tumours – Tumors metastasizing to & from oral cavity & the Routes of metastasis.

11. Traumatic, Reactive & Regressive lesions of Oral Cavity:

- Pyogenic & Giant cell granuloma, exostoses Fibrous Hyperplasia, Traumatic Ulcer & Traumatic Neuroma.
- Attrition, Abrasion, Erosion, Bruxism, Hypercementosis, Dentinal changes, Pulp calcifications & Resorption of teeth.
- Radiation effects of oral cavity, summary of Physical & Chemical injuries including allergic reactions of the oral cavity.
- Healing of Oral wounds & complications – Dry socket.

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:
    - Etiopathogenesis, clinical features & histopathology of the following common lesions. Lichen Planus, Lupus Erythematosus, Pemphigus & Pemphigoid lesions, Erythema Multiforme, Psoriasis, Scleroderma, Ectodermal Dysplasia, Epidermolysis bullosa & White spongy nevus.

15. Diseases of the Nerves:
    - Facial neuralgias – Trigeminal & Glossopharyngeal. VII nerve paralysis, Causalgia.
    - Psychogenic facial pain & Burning mouth syndrome.

16. Pigmentation of Oral & Paraoral region & Discolouration 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 histopatholotgical features, TNM classification. Recent advances in diagnosis, management and prevention.
    b) Biopsy: Types of biopsy, value of biopsy, cytology, histo chemistry & frozen sections in diagnosis of oral diseases.

19. Principles of Basic Forensic Odontology (Pre-clinical Forensic Odontology):
    - Introduction, definition, aims & scope.
    - Sex and ethnic (racial) difference 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.

RECOMMENDED BOOKS

1. A Text Book of Oral Pathology - Shafer, Hine & Levy.
2. Oral Pathology – Clinical Pathologic correlations - Regezi & Sciubba.
3. Oral Pathology - Soames & Southam.
4. Oral Pathology in the Tropics - Prabhu, Wilson, Johnson & Daftary

SYLLABUS FOR FINAL BDS

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

PUBLIC HEALTH DENTISTRY

AIM:

To prevent and control oral diseases and promote oral health through organized community efforts.

OBJECTIVES:

a) Knowledge:

At the conclusion of the course the student shall have a knowledge of the basis of public health, preventive dentistry, public health problems in India, Nutrition, Environment and their role in health, basics of dental statistics, epidemiological methods, National health policy with emphasis on oral health policy.

b) Skill and Attitude:

At the conclusion of the course the students shall have required skill of identifying health problems affecting the society, conducting health surveys, conducting health education classes and deciding health strategies. Students should develop a positive attitude towards the problems of the society and must take responsibilities in providing health.

c) Communication abilities:

At the conclusion of the course the student should be able to communicate the needs of the community efficiently, inform the society of all the recent methodologies in preventing oral disease.

COURSE CONTENT:

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, environmental sanitation, purification of water, disposal of waste, 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 influence in dental practice and community.
x. Health care delivery system: Center 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 or research, designing a written protocol
   iii. Bio-Statistics:- Introduction, collection of data, presentation of data, Measure 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.
6. Dentist Act 1948 with amendment.
7. Dental Council of India and State Dental Councils: Composition and responsibilities.
8. Indian Dental Association: Head Office, State, local and branches.

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. To 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 capita income.
b) Incidence and prevalence of common oral diseases like dental caries, periodontal disease, 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 center-to acquaint with activities and primary health care delivery.
g) Visit to water purification plant / public health laboratory / center for treatment of biochemical wastes and sewage water.
h) Visit to schools to assess 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, mentally, 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 pts, at least 2 patients.

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

SUGGESTED INTERNSHIP PROGRAMME IN COMMUNITY DENTISTRY:

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, completion of treatment on schedule, recall maintenance of records etc., at least 10 patients (both children and adults of all types posting for at least one month).

(b) The practice of chair side preventive dentistry including oral health education.

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

Graduates posted for at least one month to familiarize.

III. DESIRABLE: Learning use of computers - basic programmes.

Examination Pattern:

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

II. Health Education
   a) Make one – Audio visual aid
   b) Make a health talk

III. Practical work
   a) Pit and fissure sealant
   b) Topical fluoride application

BOOKS RECOMMENDED & REFERENCE:

1. Dentistry Dental Practice and Community by David F.Striffler and Brain A. Burt, Edn. 1983, W.B. Saunders Company.
2. Principles of Dental Public Health by James Morse Dunning, IVth Edition, 1986, Harward University Press.
3. Dental Public Health and Community Dentistry Ed by Anthony Jong Publication by the C.V.Mosby Company 1981.
4. Community Oral Health-A system approach by Patricia P.Cormier and Joyce I.Levy published by Appleton-Century-Crofts/New York, 1981.
5. Community Dentistry-A problem oriented approach by P.C. Dental Hand book series Vol.8 by Stephen L.Silverman and Ames F.Tryon, Series editor-Alvin F.Gardner, PSG Publishing company Inc. Littleton Massachuseltts, 1980.
6. Dental Public Health-An Introduction to Community Dentistry. Edition by Geoffrey L. Slack and Brain Burt, Published by John Wright and sons Bristol, 1980.
7. Oral Health Surveys- Basic Methods, 4th edition, 1997, published by W.H.O. Geneva available at the regional office New Delhi.
8. Preventive Medicine and Hygiene-By Maxcy and Rosenau, published by Appleton Century Crofts, 1986.
9. Preventive Dentistry-by J.O. Forrest published by John Wright and sons Bristoli, 1980.
10. Preventive Dentistry by Murray, 1997.
11. Text Book of Preventive and Social Medicine by Park and park, 14th edition.
12. Community Dentistry by Dr.Soben Peter.
13. Introduction to Bio-statistics by B.K. Mahajan
14. Research methodology and Bio-statistics by Sundar Rao
15. Introduction to Statistical Methods by Grewal

PERIODONTOLOGY

OBJECTIVES:

The student shall acquire the skill to perform dental scaling, diagnostic tests of periodontal diseases; to use the instruments for periodontal therapy and maintenance of the same.

The student shall develop attitude to impart the preventive measures namely, the prevention of periodontal diseases and prevention of the progress of the disease. The student shall also develop an attitude to perform the treatment with full aseptic precautions; shall develop an attitude to prevent iatrogenic disease; to conserve the tooth to the maximum possible time by maintaining periodontal health and to refer the patients who require specialist's care.

1 Introduction: Definition of Periodontology, Periodontics, Periodontia, Brief historical background, Scope of Periodontics

2 Development of periodontal tissues, micro-structural anatomy and biology of periodontal tissues in detail Gingiva, Junctional epithelium in detail, Epithelial-Mesenchymal interaction, Periodontal ligament, Cementum, Alveolar bone.

3 Defensive mechanisms in the oral cavity: Role of-Epithelium, Gingival fluid, Saliva and other defensive mechanisms in the oral environment.

4 Age changes in teeth and periodontal structures, Geriatric Dentistry and their association with periodontal diseases.

5 Classification of periodontal diseases:
- Need for classification, Scientific basis of classification, Classification of gingival and periodontal diseases as described in World Workshop 1989,1999.
- Gingivitis: Plaque associated, ANUG, steroid hormone influenced, Medication influenced, Desquamative gingivitis, other forms of gingivitis as in nutritional deficiency, bacterial and viral infection etc.
- Periodontitis: Localized and generalized aggressive periodontitis Refractory periodontitis

6 Gingival diseases:
- Localized and generalized gingivitis, Papillary, marginal and diffuse gingivitis

- Etiology, pathogenesis, clinical signs, symptoms and management of
  i) Plaque associated gingivitis
  ii) Systemically aggravated gingivitis (sex hormones, drugs and systemic diseases)
  iii) ANUG
  iv) Desquamative gingivitis-Gingivitis associated with lichen planus, permphigoid, 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 & Silnes 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 gingival area: 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:

i. 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

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

iii. Food Impaction
- Definition
- Types, Etiology
- Hirschfelds' classification
- Signs, symptoms & sequelae of treatment

iv. Trauma from occlusion
- Definition, Types
- Histopathological changes
- Role in periodontal disease
- Measures of management in brief

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

vi. Iatrogenic Factors

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

viii. 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.

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

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

11 Risk factors: Definition. Risk factors for periodontal diseases

12 Host response:
- Mechanism of initiation and progression of the periodontal diseases
- Basic concepts about cells, Mast cells, neutrophils, macrophages, lymphocytes, immunoglobulins, complement system, immune mechanisms & cytokines in brief
- Stages in gingivitis-Initial, early, established & advanced
- Periodontal disease activity, continuous paradigm, random burst & asynchronous multiple burst hypothesis

13 Periodontitis:
- Etiology, histopathology, clinical signs & symptoms, diagnosis and treatment of adult periodontitis
- Periodontal abscess; definition, classification, pathogensis, differential diagnosis and treatment
- Furcation involvement, Glickman's classification, prognosis and management
- Aggressive periodontitis
- Periodontitis associated with systemic diseases
- Refractory periodontitis

14 Diagnosis:
- Routine procedures, methods of probing, types of probes, (According to case history)
- Halitosis: Etiology and treatment. Mention advanced diagnostic aids and their role in brief.

15 Prognosis: Definition, types, purpose and factors to be taken into consideration

16 Treatment plan: Factors to be considered

17 Periodontal therapy:

i. General principles of periodontal therapy. Phase I, II, III, IV therapy. Definition of periodontal regeneration, repair, new attachment and reattachment.

ii. Plaque control
- Mechanical tooth brushes, interdental cleaning aids, dentifrices.
- Chemical; classification and mechanism of action of each & pocket irrigation

18 Pocket eradication procedures:

i. Scaling and root planning
- Indications
- Aims & objectives

- Healing following root planning
- Hand instruments, sonic, ultrasonic & piezoelectric scalers

ii. Curettage & present concepts
- Definition
- Indications
- Aims & objectives
- Procedures & healing response

iii. Flap surgery
- Definition
- Types of flaps, Design of flaps, papilla preservation
- Indications & contraindication
- Armamentarium
- Surgical procedure & healing response

19 Osseous Surgery:
- Osseous defects in periodontal disease
- Definition
- Classification
- Surgery: respective, additive osseous surgery (osseous grafts with classification of grafts)
- Healing responses
- Other regenerative procedures; root conditioning
- Guided tissue regeneration

20 Mucogingival surgery & periodontal plastic surgeries:
- Definition
- Mucogingival problems: etiology, classification of gingival recession (P.D.Miller Jr. and Sullivan and Atkins)
- Indications & objectives
- Gingival extension procedures: lateral pedicle graft, frenectomy, frenotomy
- Crown lengthening procedures
- Periodontal microsurgery in brief

21 Splints:
- Periodontal splints
- Purpose & classification
- Principles of splinting

22 Hypersensitivity: Causes, Theories & management

23 Implants: Definition, types, scope & biomaterials used.

Periodontal considerations: such as implant-bone interface, implant-gingival interface, implant failure, peri-implantitis & management.

24 Maintenance phase (SPT):
- Aims, objectives, and principles
- Importance
- Procedures
- Maintenance of implants

25 Pharmaco-therapy:
- Periodontal dressings
- Antibiotics & anti-inflammatory drugs
- Local drug delivery systems

26 Periodontal management of medically compromised patients: Topics concerning periodontal management of medically compromised patients

27 Inter-disciplinary care:
- Pulpo-periodontal involvement
- Routes of spread of infection
- Simons classification
- Management

28 Systemic effects of periodontal diseases in brief: Cardiovascular diseases, Low birth weight babies etc.

29 Infection control protocol: Sterilization and various aseptic procedures

30 Ethics

TUTORIALS DURING CLINICAL POSTING:

1. Infection control
2. Periodontal instruments
3. Chair position and principles 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 planing 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. Smear making for bacterial stains
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's Clinical Periodontology – Caranza

REFERENCE BOOKS:

1. Essentials of Periodontology and periodontics – Torquil Macphee
2. Contemporary periodontics – Cohen
3. Periodontal therapy – Goldman
4. Orbans' periodontics – Orban
5. Oral Health Survery – W.H.O.
6. Preventive Periodontics – Young and Stiffler
7. Public Health Dentistry – Slack
8. Advanced Periodontal Disease – John Prichard
9. Preventive Dentistry – Forrest
10. Clinical Periodontology – Jan Lindhe
11. Periodontics – Baer & Morris.

ORTHODONTICS & DENTOFACIAL ORTHOPAEDICS

OBJECTIVES:

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.

COURSE CONTENT:

The following basic instructional procedures will be adapted to achieve the above objectives.

1. Introduction, Definition, Historical Background, Aims And Objectives of Orthodontics And Need For Orthodontics Care.
2. Growth And Development: In General
   a. Definition
   b. Growth spurts and Differential growth
   c. Factors influencing growth and Development
   d. Methods of measuring growth
   e. Growth theories (Genetic, Sicher's, Scott's, Moss's, Petrovics, Multifactorial)
   f. Genetic and epigenetic factors in growth
   g. Cephalocaudal gradient in growth.
3. Morphologic Development of Craniofacial Structures
   a. Methods of bone growth
   b. Prenatal growth of craniofacial structures.
   c. Postnatal growth and development of: cranial base, maxilla, mandible, dental arches and occlusion.
4. Functional Development of Dental Arches and Occlusion
   a. Factors influencing functional development of dental arches and occlusion.
   b. Forces of occlusion.
   c. Wolfe's law of transformation of bone.
   d. Trajectories of forces
5. Clinical Application of Growth and Development
6. Malocclusion – In General
   a. Concept of normal occlusion.
   b. Definition of malocclusion
   c. Description of different types of dental, skeletal and functional malocclusion.
7. Classification of Malocclusion
   Principle, description, advantages and disadvantages of classification of malocclusion by Angle's, Simon's, Lischer's and Ackerman and Proffitt's.
8. Normal And Abnormal Function of Stomatognathic System.
9. Etiology of Malocclusion
   a. Definition, importance, classification, local and general etiological factors.

b. Etiology of following different types of malocclusion:
    - Midline diastema
    - Spacing
    - Crowding
    - Cross-Bite: Anterior / Posterior
    - Class III Malocclusion
    - Class II Malocclusion
    - Deep Bite
    - 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.
        - Definition
        - Description and use of cephalostat
        - Description and uses of anatomical landmarks lines and angles use in cephalometric analysis.
        - Analysis- Steiner's, Down's, Tweed's Ricket's-E-line
    g. Electromyography and its uses in orthodontics
    h. Wrist X-rays and its importance in orthodontics
11. General Principles in Orthodontic Treatment Planning of Dental And Skeletal Malocclusions.
12. Anchorage in Orthodontics – Definition, Classification, Types and Stability of Anchorage.
13. Biomechanical Principles In Orthodontic Tooth Movement
    a. Different types of tooth movements
    b. Tissue response to orthodontic force application.
    c. Age factor in orthodontic tooth movement
14. Preventive Orthodontics
    a. Definition
    b. Different procedures undertaken in preventive orthodontics and their limitations.
15. Interceptive Orthodontics
    a. Definition
    b. Different procedures undertaken in interceptive orthodontics
    c. Serial extractions: Definition, indications, contra-indication, technique, advantages and disadvantages.
    d. Role of muscle exercises and 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 Orthodontics – indications and selection of teeth for extraction.
17. Orthodontic Appliances: General
    a. Requisites for orthodontic appliances
    b. Classification, indications of Removable and Functional Appliances
    c. Methods of force application
    d. Materials used in construction of various orthodontic appliances – uses of stainless steel, technical considerations in curing of acrylic, Principles of welding and soldering, fluxes and antifluxes.
    e. Preliminary knowledge of acid etching and direct bondng.

REMOVABLE ORTHODONTIC APPLIANCES

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

FIXED ORTHODONTIC APPLIANCES

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

EXTRAORAL APPLIANCES

1. Headgears
2. Chin cup
3. Reverse pull headgears

MYOFUNCTIONAL APPLIANCES

1. Definition and principles
2. Muscle exercises and their uses in orthodontics
3. Functional appliances:
   i) Activator, Oral screens, Frankels function regulator, bionator twin blocks, lip bumper.
   ii) Inclined planes – upper and lower
18. Orthodontic Management of Cleft Lip And Palate
19. Principles of Surgical Orthodontics: Brief knowledge of correction of:
    - Mandibular Prognathism and Retrognathism
    - Maxillary Prognathism and Retrognathism
    - Anterior open bite and deep bite.
    - Cross bite.
20. Principle, Differential Diagnosis & Methods of Treatment of:
    - Midline diastema
    - Cross bite
    - Open bite
    - Deep bite
    - Spacing
    - Crowding
    - Class II – Division 1, Division 2
    - Class III Malocclusion – True and Pseudo 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 retention.
22. Ethics

CLINICALS IN ORTHODONTICS (III & IV BDS):

I. Basic wire bending exercises Gauge 22 or 0.7 mm
   1. Straightening of wires (4 Nos.)
   2. Bending of a equilateral triangle
   3. Bending of a rectangle
   4. Bending of a square
   5. Bending of a circle
   6. Bending of U.V
II. Construction of Clasps (Both sides upper/lower) Gauge 22 or 0.7 mm
   1. ¾ Clasp (C-Clasp)
   2. Full Clasp (Jackson's Crib)
   3. Adam's Clasp
   4. Triangular Clasp

III. Construction of Springs (on upper both sides) Gauge 24 or 0.5 mm
1. Finger Spring
2. Single Cantelever Spring
3. Double Cantelever Spring (Z-Spring)
4. T-Springs on premolars

IV. Construction of Canine retractors Gauge 23 or 0.6 mm
1. U – Loop canine retractor
(Both sides on upper & lower)
2. Helical canine retractor
(Both sides on upper & lower)
3. Buccal canine retractor:
- Self supported buccal canine retractor with
a) Sleeve – 5 mm wire or 24 gauge
b) Sleeve – 19 gauge needle on any one side.
4. Palatal canine retractor on upper both sides Gauge 23 or 0.6 mm

V. Labial Bow
Gauge 22 or 0.7 mm
One on both upper and lower

NO. EXERCISE

01. Making upper Alginate impression
02. Making lower Alginate impression
03. Study Model preparation
04. Model Analysis
a. Pont's Analysis
b. Ashley Howe's Analysis
c. Carey's Analysis
d. Bolton's Analysis
e. Moyer's Mixed Dentition Analysis

NO. EXERCISE
01. Case History taking
02. Case discussion
03. Discussion on the given topic
04. Cephalometric tracings
a. Down's Analysis
b. Steiner's Analysis
c. Tweed's Analysis

NO. EXERCISE

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
5. Appliance Construction in Acrylic
   - Upper & Lower Hawley's Appliance
   - Upper Hawley's with Anterior bite plane
   - Upper Habit breaking Appliance
   - Upper Hawley's with Posterior bite plane with 'Z' Spring
   - Construction of Activator
   - Lower inclined plane / Catalan's Appliance
   - Upper Expansion plate with Expansion Screw

RECOMMENDED AND REFERENCE BOOKS

1	CONTEMPORARY ORTHODONTICS	WILLIAM R.PROFFIT
2	ORTHODONTICS FOR DENTAL STUDENTS	WHITE and GARDINER
3	HANDBOOK OF ORTHODONTICS	MOYERS
4	ORTHODONTICS – PRINCIPLES AND PRACTICE	GRABER
5	DESIGN, CONSTRUCTION AND USE OF REMOVABLE	
6	ORTHODONTIC APPLIANCES	C. PHILIP ADAMS
7	CLINICAL ORTHODONTICS: VOL 1 & 2	SALLZMAN

ORAL MEDICINE & RADIOLOGY

AIM:

(1) To train the students to diagnose the common disorders of Orofacial region by clinical examination and with the help of investigations.
(2) To train the students about the importance, role, use and techniques of radiographs / digital radiograph and other imaging methods in diagnosis.
(3) The Principles of the clinical and radiographic aspects of Forensic Odontology.

Emphasis should be laid on oral manifestations of systemic diseases and ill-effects of oral sepsis on general health. 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.

COURSE CONTENT:

The course content is divided into three parts.

I. Part-I Oral Medicine and diagnostic aids
II. Part-II Behavioural Sciences and ethics
III. Part-III Oral Radiology

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) Importance, role, use of saliva and salivary gland. Salivary disorders/diseases, techniques of diagnosis of saliva as part of oral disease.
    (d) Examination of lesions like swellings, ulcers, erosions, sinus, fistula, growths, pigmented lesions, white and red patches.
    (e) Examination of lymph nodes
    (f) Forensic examination – Procedures for post-mortem dental examination; maintaining dental records and their use in dental practice and post-mortem identification; jurisprudence and ethics.

(3) Investigations
    (a) Biopsy and exfoliative cytology
    (b) Hematological, Microbiological and other tests and investigations necessary for diagnosis and prognosis.

SECTION (B) – DIAGNOSIS, DIFFERENTIAL DIAGNOSIS:

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 discoloration of teeth.
(2) Diseases of bone and Osteodystrophies: Development disorders: Anomalies, Exostosis and tori, infantile cortical hyperostosis, osteogenesis imperfecta, Marfans syndrome, osteopetrosis. Inflammation – Injury, infection and spread of infection, fascial space infections, osteoradionecrosis.
Metabolic disorders – Histiocytosis
Endocrine – Acromegaly and hyperparathyroidism
Miscellaneous – Paget's disease, Mono and polyostotic fibrous dysplasia, Cherubism.
(3) Temporomandibular joint: Developmental abnormalities of the condyle, Rheumatoid arthritis, Osteoarthritis, Sub-luxation and luxation.
(4) Common cysts and Tumors.
    i. CYSTS: Cysts of soft tissue: Mucocele and Ranula
    Cysts of bone: Odontogenic and nonodontogenic.

    ii. TUMORS:
        a) Soft Tissue:
            - Epithelial: Papilloma, Carcinoma, Melanoma
            - Connective tissue: Fibroma, Lipoma, Fibrosaracoma
            - Vascular: Haemangioma, Lymphangioma
            - Nerve Tissue: Neurofibroma, Traumatic Neuroma, Neurofibromatosis
            - Salivary Glands: Pleomorphic adenoma, Adenocarcinoma, Warthin's Tumor, Adenoid cystic carcinoma.

        b) Hard Tissue:
            - Non Odontogenic: Osteoma, Osteosarcoma, Osteoclastoma, Chondroma, Chondrosarcoma, Central giant cell rumor, and Central haemangioma
            - Odontogenic: Enameloma, Ameloblastoma, Calcifying Epithelial Odontogenic tumor, Adenomatoid Odontogenic tumor, Periapical cemental dysplasia and odontomas.

(5) Periodontal diseases: Gingival hyperplasia, gingivitis, periodontitis, pyogenic granuloma
(6) Granulomatous diseases: Tuberculosis, Sarcoidosis, Midline lethal granuloma, Crohn's Disease and Histiocytosis X.
(7) Miscellaneous Disorders. Burkitt's 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 etiology, 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, leukoedema, 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, periodontal tissue, mucosa, tongue, muscles, blood vessels, lymph tissue, bone, paranasal sinus, salivary glands etc.,
(ii) Pain arising due to C.N.S. diseases:
(a) Pain due to intracranial and extracranial involvement of cranial nerves, (Multiple sclerosis, cerebrovascular diseases, Trotters syndrome etc.)
(b) Neuralgic pain due to unknown causes: Trigeminal neuralgia, glossopharyngeal neuralgia, sphenopalatine ganglion neuralgia, periodic migrainous neuralgia and atypical facial pain.
(iii) Referred pain: Pain arising from distant tissues like heart, spine etc.,
(5) Altered sensations: Cacogeusia, halitosis

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

(7) Oral manifestations of:
  (i) Metabolic disorders:
    (a) Porphyria
    (b) Haemochromatosis
    (c) Histiocytosis X diseases
  (ii) Endocrine disorders:
    (a) Pituitary: Gigantism, acromegaly, hypopitutarism
    (b) Adrenal cortex: Addison's disease (Hypofuntion)
    Cushing's syndrome (Hyperfunction)
    (c) Parathyroid glands: Hyperparathyroidism
    (d) Thyroid gland: (Hypothyroidism) Cretinism, myxedema
    (e) Pancreas: Diabetes
  (iii) Nutritional deficiency: Vitamins: riboflavin, nicotinic acid, folic acid, Vitamin B12, Vitamin C (Scurvy)
  (iv) Blood disorders:
    (a) Red blood cell diseases
    Deficiency anemias: (Iron deficiency, plummer – Vinson syndrome, pernicious anemia)
    Haemolytic anemias: Thalassemia, sickle cell anemia, erythroblastosis fetalis)
    Aplastic anemia
    Polycythemia
    (b) White Blood cell diseases
    Neutropenia, cyclic neutropenia, agranulocytosis, infectious mononucleosis and leukemias
    (c) Haemorrhagic disorders:
    Thrombocytopenia, purpura, hemophilia, chrismas disease and von willebrand's disease.

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

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

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

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

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

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

(14) Precancerous lesions and conditions

(15) Nerve and muscle diseases:
(i) Nerves: (a) Neuropraxia (b) Neurotmesis (c) Neuritis (d) Facial nerve paralysis including Bell's plasy, Heerfordt's syndrome, Melkersson Rosenthal syndrome and ramsay hunt syndrome (e) Neuroma (f) Neurofibromatosis (g) Frey'syndrome.
(ii) Muscles: (a) Myositis ossificans (b) Myofascial pain dysfunction syndrome (c) Trismus.

(16) Forensic Odontology:
(a) Medicolegal aspects of orofacial injuries
(b) Identification of bite marks
(c) Determination of age and sex
(d) Identification of cadavers by dental appliances, Restorations and tissue remnants

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

Part-II BEHAVIOURAL SCIENCES AND ETHICS
(20 hrs of instruction)

AIM:

The aim of teaching behavioral sciences to undergraduate student is to impart such knowledge & skills that may enable him to apply principles of behavior:-

a) For all round development of his personality
b) In various therapeutic situation 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 behavior.

OBJECTIVES:

a). KNOWLEDGE & UNDERSTANDING:

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

1) Comprehend different aspects of normal behavior like learning, memory, motivation, personality & intelligence.
2) Recognise difference between normal and abnormal behavior.
3) Classify psychiatric disorders in dentistry.
4) Recognise clinical manifestations of dental phobia, dental anxiety, facial pain orofacial manifestations of psychiatric disorders, and behavioral problem in children. Addictive disorders, psychological disorders in various dental departments.
5) Should 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 patients compliance behavior.
3) Develop better interpersonal, managerial and problem solving skills.
4) Diagnose and manage minor psychological problems while treating dental patients.

INTEGRATION:

The training in Behavioral 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 Dentistry, Medicine, Pharmacology, Physiology and Biochemistry.

PSYCHOLOGY:

1. Definition & Need of Behavioral Science. Determinants of Behavior. Scope of Behavior Science.
2. Sensory process & perception perceptual process – clinical applications.
3. Attention – Definition – factors that determine attention. Clinical application.
4. Memory – Memory process – Types of memory, Forgetting: Methods to improve memory, Clinical assessment of memory & clinical application.
5. Definition – Laws of learning Type of learning. Classical conditioning, operant conditioning, cognitive learning Insight learning, social leaning, observational learning, principles of learning – Clinical application.
6. Intelligence – Definition: Nature of intelligences stability of intelligence Determinants of intelligence, clinical application.
7. Thinking – Definition: Types of thinking, delusions, problem solving.
8. Motivation – 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. Behavioral Sciences in Medical practice – Manju Mehta
5. Sciences basic to psychiatry – Basanth Puri & Peter J Tyrer

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 techniques) (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 temporomandibular joint and condyle of mandible (f) Projections of 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. Faulty radiographs and artefacts in radiographs
10. Interpretation of radiographs in various abnormalities of teeth, bones and other orofacial tissues.
11. Principles of radiotherapy of oro-facial malignancies and complications of radiotherapy.
12. Contrast radiography and basic knowledge of radio-active isotopes.
13. Radiography in Forensic Odontoloy – Radiographic age estimation and post-mortem radiographic methods.

PRACTICALS / CLINICALS:

1. Student 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, bite wing, occlusal)……. 25
   (c) Saliva diagnostic check as routine procedure.

BOOKS RECOMMENDED:

a) Oral Diagnosis, Oral Medicine & Oral Pathology

1. Oral Medicine – Burkit – J.B.Lippincott Company
2. Principles of Oral Diagnosis – Coleman –Mosby Year Book
3. Oral Manifestations of Systemic Diseases – Jones –W.B.Saunders company
4. Oral Diagnosis & Oral Medicine - Mitchell
5. Oral Diagnosis - Kerr
6. Oral Diagnosis & Treatment - Miller
7. Clinical Methods - Hutchinson
8. Oral Pathology - Shafers
9. Principles and practice of Oral Medicine - Sonis.S.T., Fazio.R.C and Fang.L

b) Oral Radiology

1. Oral Radiology – White & Goaz –Mosby year Book
2. Dental Radiology – Weahman –C.V.Mosby Company
3. Oral Roentgenographic Diagnosis – Stafne –W.B.Saunders Co.,

C. Forensic Odontology

1. Practical Forensic Odontology – Derek H.Clark –Butterworth – Heinemann (1992)
2. Manual of Forensic Odontology –C.Michael Bowers, Gary Bell –Forensic Pr (1995)

ORAL & MAXILLOFACIAL SURGERY

AIM:

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

OBJECTIVES:

a) Knowledge & Understanding:

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

1. Apply the knowledge gained in the related medical subjects like pathology, microbiology and general medicine in the management of patients with oral surgical problem.
2. Diagnose, manage and treat (understand the principles of treatment of) patients with oral surgical problems.
3. Knowledge of range of surgical treatments.
4. Decide the requirement of a patient to have oral surgical specialist opinion or treatment.
5. Understand the principles of in-patient management.
6. Understanding of the management of major oral surgical procedures and principles involved in patient management.
7. Should know ethical issues and communication ability

b) Skills:

1. A graduate should have acquired the skill to examine any patient with an oral surgical problem in an orderly manner. Be able to understand the requisition of various clinical and laboratory investigations and is capable of formulating differential diagnosis.
2. Should be competent in the extraction of teeth under both local and general anaesthesia.
3. Should be able to carry out certain minor oral surgical procedures under L.A. like frenectomy, alveolar procedures & biopsy etc.
4. Ability to assess, prevent and manage various complications during and after surgery.
5. Able to provide primary care and manage medical emergencies in the dental office.
6. Understanding of the management of major oral surgical problems and principles involved in in-patient management.

COURSE CONTENT:

1. Introduction, definition, scope, aims and objectives.
2. Diagnosis in oral surgery:
   (a) History taking
   (b) Clinical examination
   (c) Investigation.
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.
      - Preparation of the patient
      - Measures to be taken by operator
      - Sterilisation of instruments – various methods of sterilization etc.
      - Surgery set up.

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

   c) Access:
      Inter-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: Submandibular, Pre auricular, Incision to expose maxilla & orbit, Bicoronal incision.

   d) Control of haemorrhage during surgery
      - Normal Haemostasis
      - Local measures available to control bleeding
      - Hypotensive anaesthesia etc.

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

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

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

5. Exodontia: General considerations
   - Ideal Extraction.
   - Indications for extraction of teeth
   - Extractions in medically compromised patients.
   - Methods of extraction
     - Forceps or intra-alveolar or closed method. Principles, types of movement, force etc.
     - Trains 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) Impacted maxillary canine
   - Reasons for canine impaction,
   - Localization, indications for removal,
   - Methods of management, labial and palatal approach
   - Surgical exposure, transplantation, removal etc.

7. Pre-prosthetic Surgery:
   Definition, classification of procedures
   (a) Corrective procedures: Alveoloplasty,
   Reduction of maxillary tuberosities
   Frenectomies and removal of tori.
   (b) Ridge extension or Sulcus extension procedures
   Indication and various surgical procedures
   (c) Ridge augmentation and reconstruction
   - Indication, use of bone grafts, Hydroxyapatite implant
   - Concept of osseo integration
   - Knowledge of various types of implants and surgical procedure to place implants.
8. Diseases of the maxillary sinus
   - Surgical anatomy of the sinus
   - Sinusitis, both acute and chronic
   - Surgical approach of sinus – Caldwell-Luc procedure
   - Removal of root from the sinus.
   - Oro-antral fistula aetiology, clinical features and various surgical methods for closure.
9. Disorders of T.M. Joint
   - Applied surgical anatomy of the joint.
   - Dislocation – Types, aetiology, clinical features and management.
   - Ankylosis – Definition, aetiology, clinical features and management
   - Myo-facial pain dysfunction syndrome, aetiology, clinical features, management - Non surgical and surgical.
   - Internal derangement of the joint.
   - Arthritis of T.M. Joint.
10. Infections of the Oral cavity
    Introduction, factors responsible for infection, course of odontogenic
    Infection, spread of odontogenic infections through various facial spaces.
    Dento-alveolar abscess – aetiology, clinical features and management.
    Osteomyelitis of the jaws – definition, aetiology, pre-disposing factors,
    Classification, clinical features and management
    Ludwigs angina – definition, aetiology, clinical features, management and complications.
11. Benign cystic lesions of the jaws
    Definition, classification, pathogenesis.
    Diagnosis – Clinical features, radiological, aspiration biopsy, use of contrast media and histopathology.
    Management – Types of surgical procedures, rationale of the techniques, indications, procedures, complications etc.

12. Tumours of the Oral cavity
    General considerations
    Non odontogenetic benign tumours occurring in oral cavity – fibroma, papilloma, lipoma, ossifying fibroma, myoma 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 factures, 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.
    - Fractures of the Zygomatic complex: Classification, clinical features, indications for treatment, various methods of reduction and fixation.
    - Complications of fractures – delayed union, non-union and malunion.
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, neurorrhaphy 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) Anaphylactic reaction (e) Epilepsy
19. Emergency drugs & Intra muscular I.V. Injections –
    Applied anatomy, Ideal location for giving these injections, techniques etc.
20. Oral Implantology:
    - History of implants, their design & surface characteristics and oseo-integration.
    - Scope of oral & maxillofacial implantology & terminologies
    - A brief introduction to various implant systems in practice.
    - Bone biology, Morphology, Classification of bone and its relevance to implant treatment and bone augmentation materials.
    - Soft tissue consideration in implant dentistry
    - Diagnosis & treatment planning in implant dentistry.
      Case history taking / Examination / Medical evaluation / Orofacial evaluation/ Radiogaphic evaluation / Diagnostic evaluation / Diagnosis and treatment planning / treatment alternatives / Estimation of treatment costs / patient education and motivation.
    - Pre surgical preparation of patient.
    - Implant installation & armamentarium for the Branemark system as a role model.
    - First stage surgery – Mandible – Maxilla
    - Healing period & second stage surgery
    - Management of surgical complications & failures
    - General considerations in prosthodontic reconstruction & Bio mechanics
    - Prosthodontic components of the Branemark system as a role model
    - Impression procedures & Preparation of master cast
    - Jaw relation records and construction of suprastructure with special emphasis on occlusion for osseointegrated prosthesis
    - Management of prosthodontic complications & failures.
    - Recall & maintenance phase.

21. Ethics

LOCAL ANAESTHESIA:

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

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

GENERAL ANAESTHESIA –

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

RECOMMENDED BOOKS:

1. Impacted teeth; Alling John F & etal.
2. Principles of oral and maxillofacial surgery; Vol.1,2 & 3 Peterson LJ & etal.
3. Text book 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 middle 3rd of the facial skeleton; Banks P.
7. The maxillary sinus and its dental implications; McGovanda
8. Killey and Kays outline of oral surgery – Part-I; Seward GR & etal
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. & EA
14. Oral and maxillofacial infections; Topazian RG & Goldberg MH
15. Contemporary Implant Dentistry - Carl.E.Misch Mosby 1993 First Edition.
16. Osseointegration and Occlusal Rehabilitation - Hobo S., Ichida.E. and Garcia L.T. Quintessence Publishing Company, 1989 First Edition.

CONSERVATIVE DENTISTRY AND ENDODONTICS

OBJECTIVES:

a) Knowledge and understanding
b) Skills and
c) Attitudes

a) Knowledge and under standing:

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

i. To diagnose and treat simple restorative work for teeth.
ii. To gain knowledge about aesthetic restorative material and to translate the same to patients needs.
iii. To gain the knowledge about endodontic treatment on the basis of scientific foundation.
iv. To carry out simple endodontic treatment.
v. To carry out simple luxation of tooth and its treatment and to provide emergency endodontic treatment.

b) Skills:

He should attain following skills necessary for practice of dentistry

i. To use medium and high speed hand pieces to carry out restorative work.
ii. Posess the skills to use and familiarise endodontic instruments and materials needed for carrying out simple endodontic treatment.
iii. To achieve the skills to translate patient's esthetic needs along with function.

c) Attitudes:

i. Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life.
ii. Willingness to participate in CDE programme to update the knowledge and professional skill from time to time.
iii. To help and participate in the implementation of the national oral health policy.
iv. He should be able to motivate the patient for proper dental treatment at the same time proper maintenance of oral hygiene should be emphasised which will help to maintain the restorative work and prevent future damage.

INTRODUCTION:

Definition, aims, objectives of Conservative Dentistry, scope and future of Conservative Dentistry.

1. Nomenclature of Dentition:
   Tooth numbering systems A.D.A, Zsigmondy Palmer and F.D.I. systems.
2. Principles of Cavity Preparation, classification of cavities, nomenclature of floors, angles of cavities.
3. Dental Caries :
   Aetiology, classification clinical features, morphological features, microscopic features, clinical diagnosis and sequelae of dental caries.
4. Treatment Planning for Operative Dentistry :
   Detailed clinical examination, radiographic examination, tooth vitality tests, diagnosis and treatment planning, preparation of the case sheet.
5. Gnathological Concepts of Restoration:
   Physiology of occlusion, normal occlusion, Ideal occlusion, mandibular movements and occlusal analysis. Occlusal rehabilitation and restoration.
6. Aramamentarium for Cavity Preparation.
   General classification of operative instruments, Hand cutting instruments design formula and sharpening of instruments. Rotary cutting instruments dental bur, mechanism of cutting, evaluation of hand piece and speed current concepts of rotary cutting procedures. Sterilisation and maintenance of instruments. Basic instrument tray set up.
7. Control of Operating Filed.
   Light source, sterilization, field of operation, control of moisture, rubber dam in detail, cotton rolls and anti sialogogues.
8. Amalgam Restoration :
   Indication contraindication, physical and mechanical properties, clinical behaviour. Cavity preparation for Class I, II, V and III. Step wise procedure for cavity preparation and restoration, failure of amalgam restoration.
9. Pulp Protection:
   Liners, varnishes and bases, Zinc phosphate, zinc polycarboxylate, zinc oxide eugenol and glass ionomer cements.
10. Anterior Restorations :
    Selection of cases, selection of material, step wise procedures for using restorations, silicate (theory only) glass ionomers, composites, including sandwich restorations and bevels of the same with a note on status of the dentine bonding agents.
11. Direct Filling Gold Restorations :
    Types of direct filling gold, indications and limitations of cohesive gold. Annealing of gold foil cavity preparation and condensation of gold foils.

12. Preventive Measures In Restorative Practice:
    Plaque Control, Pit and fissure sealants, dietary measures, restorative procedure and periodontal health. Contact and contour of teeth and restorations, matrices, tooth separation and wedges.
13. Temporisation or Interim Restoration.
14. Pin Amalgam Restoration: Indication and Contra Indication:
    Advantage, disadvantages of each types of pin, methods of placement use of auto matrix. Failure of pin amalgam restoration.
15. Management of Deep Carious Lesions Indirect And Direct Pulp Capping.
16. Non Carious Destructions of Tooth Structures; Diagnosis and Clinical Management.
17. Hyper Sensitive Dentine And its Management.
18. Cast Restorations
    Indications, contra indications, advantages and disadvantages and materials used for Class II and Class I cavity preparation for inlays, fabrication of wax pattern, spruing, investing and casting procedures & casting defects.
19. Die Materials And Preparation Of Dies.
20. Gingival Tissue Management for Cast Restoration And Impression Procedures.
21. Recent Cavity Modification for Amalgam Restoration.
22. Differences between Amalgam And Inlay Cavity preparation with note on all types of bevels used for Cast Restoration.
23. Control Of Pain During Operative Procedures.
24. Treatment Planning for Operative Dentistry, Detailed Clinical Examination Radiographic Examination.
25. Vitality Tests, Diagnosis And Treatment Planning and Preparation of Case Sheet.
26. Applied Dental Materials.
    a. Biological Considerations.
       Evaluation, clinical application and adverse effects of. Dental cements, Zinc oxide eugenol cements, zinc phosphate cements, polycarboxylates, glass ionomer, cements, silicate cement, calcium hydroxides, varnishes. etc.,
    b. Dental amalgam, technical considerations, mercury toxicity, mercury hygiene.
    c. Composites, Dentine bonding agents, chemical and light curing composites.
    d. Rubber base implant. materials
    e. Noble metal alloys & non noble metal alloys
    f. Investment and its materials
    g. Inlay casting waxes.
    h. Dental porcelain
    i. Aesthetic Dentistry.
27. Endodontics: introduction, definition, scope and future of endodontics
28. Clinical diagnostic methods

29. Emergency endodontic procedures
30. Pulpal diseases: causes, types and treatment.
31. Periapical disease: acute periapical abscess, acute periodontal abscess, phoenix abscess, chronic alveolar abscess, granuloma cysts, condensing osteitis and external resorption.
32. Vital pulp therapy: indirect and direct pulp capping, pulpotomy different types and medicaments used.
33. Apexogenesis and apexification or problems of open apex.
34. Rationale of endodontic treatment, case selection, indications and contraindications for root canal treatment.
35. Principles of root canal treatment, mouth preparation, root canal instruments, hand instruments, power driven instruments, standardisation, color coding principles of using endodontic instruments. Sterilisation of root canal instruments and materials, rubber dam application.
36. Anatomy of the pulp cavity: root canals, apical foramen. Anomalies of pulp cavities, access cavity preparation of anterior and premolar teeth.
37. Preparation of root canal space. Determination of working length, cleaning and shaping of root canals, irrigating solution, chemical aids to instrumentation.
38. Disinfection of root canal space, intracanal medicaments, poly antibiotic paste, Grossman's paste, mummifying agents. Out line of root canal treatment, bacteriological examinations, culture methods.
39. Problems during cleaning and shaping of root canal spaces. Perforation and its management. Broken instruments and its management, management of single and double curved root canals.
40. Methods of cleaning and shaping like step back, crown down and conventional methods.
41. Obturation of the root canal system. Requirements of an ideal root canal filling material. obturation methods using gutta percha, healing after endodontic treatment. Failures in endodontics.
42. Root canal sealers: Ideal properties, classification and manipulation of root canal sealers.
43. Post endodontic restoration, fabrication, components of post core and preparation.
44. Smear layer and its importance in endodontics and conservative treatment.
45. Discoloured teeth and its management. Bleaching agents, vital and non vital bleaching methods.
46. Traumatized teeth, classification of fractured teeth. Management of fractured tooth and root. Luxated teeth and its management.

47. Endodontic surgeries: indications contraindications, pre operative preparation, Pre medication, surgical instruments and techniques, Apicectomy, retrograde filling, post operative sequale, trephination, hemisection, radicetomy. Techniques of tooth reimplantation (both intentional and accidental), endodontic implants.
48. Root resorption.
49. Emergency endodontic procedures.
50. Lasers in conservative endodontics (introduction only) practice management.
51. Professional association dentist act 1948 and its amendment 1993.
52. Duties towards the government like payments of professional tax, income tax.
53. Financial management of practice.
54. Dental material and basic equipment management.
55. Ethics.

RECOMMENDED BOOKS:

1) Stephen Cohen: Pathways of the pulp
2) Ingle, Bakland: Endodontics
3) Suresh Chandra, Gopi Krishna: Grossman's Endodontics practice
4) Gutmann's: Surgical Endodontics
5) Franklin S. Weine: Endodontic Therapy
6) Walton & Torabinejad: Endodontic Principles and practice
7) Theodore M. Roberson: Sturdevant's art & science of operative dentistry
8) Gerard T. Charbeneau: Principles and practice of operative dentistry
9) Marzouk M A: Operative Dentistry - Modern Theory and Practice
10) Schwartz & Summit: Fundamentals of Operative Dentistry
11) Ramya Raghu: Clinical Operative Dentistry – Principles and Practice
12) Anusavice: Phillip's Science of Dental Materials
13) McCabe: Applied Dental Materials
14) Christina Mitchell: Dental materials used in operative dentistry
15) Robert Craig: Restorative Dental Materials

PROSTHODONTICS AND CROWN BRIDGE

COURSE CONTENT:

Complete Dentures

A. Applied Anatomy and Physiology
   a) Introduction
   b) Biomechanics of the edentulous state
   c) Residual ridge resorption.
B. Communicating with resorption.
   a. Understanding the patient's Mental attitude
   b. Instructing the patient
C. Diagnosis and treatment planning for patients
   a) With some teeth remaining.
   b) With no teeth remaining.
      - Systemic status
      - Local factor.
      - The geriatric patient.
      - Diagnostic procedures.
D. Articulators
E. Improving the patient's denture foundation and ridge relation – an overview.
   a) Pre-operative examination.
   b) Initial hard tissue & soft tissue procedure.
   c) Secondary hard & soft tissue procedure.
   d) Implant procedure.
   e) Congenital deformities.
   f) Postoperative procedure.
F. Principles of Retention, Support and Stability
G. Impressions – detail.
   a) Muscles of facial expression.
   b) Biologic considerations for maxillary and mandibular impression including anatomical landmark and their interpretation.
   c) Impression objectives.
   d) Impression materials.
   e) Impression techniques.
   f) Maxillary and mandibular impression procedures.
      i. Preliminary impressions
      ii. Final impressions
   g) Laboratory procedures involved with impression making (Beading & Boxing, and cast preparation).

H. Record bases and occlusion rims-in detail.
    a) Materials & techniques
    b) Useful guidelines and ideal parameters.
    c) Recording and transferring bases and occlusal rims.

I. Biological consideration in jaw relation & jaw movements – craniomandibular relations.
    a) Mandibular movements.
    b) Maxillo – mandibular relation including vertical and horizontal jaw relations.
    c) Concept of occlusion – discuss in brief.

J. Relating the patient to the articulator.
    a) Face bow types & uses-discuss in brief.
    b) Face bow transfer procedure – discuss in brief.

K. Recording maxillo mandibular relation.
    a) Vertical relations.
    b) Centric relation records.
    c) Eccentric relation records.
    d) Lateral relation records.

L. Tooth selection and arrangement.
    a) Anterior teeth.
    b) Posterior teeth.
    c) Esthetic and functional harmony.

M. Relating inclination of teeth to concept of occlusion – in brief.
    a) Neutrocentric concept.
    b) Balanced occlusal concept.

N. Trial dentures

O. Laboratory procedures.
    a) Wax contouring.
    b) Investing of dentures.
    c) Preparing of mold
    d) Preparing & packing acrylic resin.
    e) Processing of dentures.
    f) Recovery of dentures.
    g) Lab remount procedures.
    h) Recovery 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.

Q. Treating problems with associated denture use – discuss in brief (tabulation / flow-chart form)
R. Treating abused tissues – discuss in brief
S. Relining and rebasing of dentures – discuss in brief
T. Immediate complete dentures construction procedure-discuss in brief.
U. The single complete denture – discuss in brief
V. Overdentures – discuss in brief.
W. 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 Partial Dentures

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

11. Laboratory procedures for framework construction-in brief
12. Fitting the framework-in brief
13. Try-in of the partial denture – in brief
14. Completion of the partial denture – in brief
15. Inserting the Removable Partial Denture – in brief
16. Postinsertion observations.
17. Temporary Acrylic Partial Dentures.
18. Immediate Removable Partial Denture.
19. Removable Partial Dentures opposing Complete denture.

Note: It is suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover.

1. Definition
2. Diagnosis (of the particular situation / patient selection / treatment planning)
3. Types / Classification
4. Materials
5. Methodology – Lab / Clinical
6. Advantages & disadvantages
7. Indication, contraindication
8. Maintenance Phase

Fixed Partial Dentures

Topics to be covered in detail:

1. Introduction
2. Fundamentals of occlusion – in brief
3. Articulators – in brief
4. Treatment planning for single tooth restorations
5. Treatment planning for the replacement of missing teeth including selection and choice of abutment teeth.
6. Fixed partial denture configurations.
7. Principles of tooth preparations.
8. Preparations for full veneer crowns in detail.
9. Preparations for partial veneer crowns – in brief
10. Provisional Restorations
11. Fluid Control and Soft Tissue Management
12. Impressions
13. Working Casts and Dies
14. Wax Patterns
15. Pontics and Edentulous Ridges
16. Esthetic Considerations
17. Finishing and Cementation

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 Partial 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.
2. Boucher's "Prosthodontic treatment for edentulous patients"
3. Essentials of complete denture prosthodontics by- Sheldon Winkler.
4. Maxillofacial prosthetics by – Willam R.Laney.
5. Mc Craken's Removable partial prosthodontics
6. Removable partial prosthdontics by – Ernest L.Miller and Joseph E.Grasso.

PAEDIATRIC & PREVENTIVE DENTISTRY

COURSE CONTENT:

1. INTRODUCTION TO PEDODONTICS & PREVENTIVE DENTISTRY
   - Definition, Scope, Objectives and Importance.
2. GROWTH & DEVELOPMENT:
   - Importance of study of growth and development in Pedodontics
   - Prenatal and Postnatal factors in growth & development
   - Theories of growth & development.
   - Development of maxilla and mandible and related age changes.
3. Development of occlusion from birth through adolescence.
   - Study of variations and abnormalities.
4. Dental Anatomy and Histology:
   - Development of teeth and associated structures.
   - Eruption and shedding of teeth.
   - Teething disorders and their management.
   - Chronology of eruption of teeth
   - Differences between deciduous and permanent teeth.
   - Development of dentition from birth to adolescence.
   - Importance of first permanent molar.
5. DENTAL RADIOLOGY RELATED TO PEDODONTICS.
6. ORAL SURGICAL PROCEDURES IN CHILDREN.
   - Indications and contraindications of extractions of primary and permanent teeth in children.
   - Knowledge of Local and General Anesthesia.
   - Minor surgical procedures in children.
7. DENTAL CARIES:
   - Historical background.
   - Definition, aetiology & pathogenesis
   - Caries pattern in primary, young permanent and permanent teeth in children.
   - Rampant caries, early childhood caries and extensive caries:
     - Definition, aetiology, Pathogenesis, Clinical features, Complications & Management
   - Role of diet and nutrition in Dental Caries.
   - Dietary modifications & Diet counseling.
   - Caries activity, tests, caries prediction, caries susceptibility & their clinical application.
8. GINGIVAL & PERIODONTAL DISEASES IN CHILDREN.
   - Normal 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. Behaviour management:
   - Definitions.
   - Types of behaviour encountered in the dental clinic.
   - Non-pharmacological & pharmacological methods of Behaviour Managment
11. PEDIATRIC OPERATIVE DENTISTRY:
   - Principles of Pediatric Operative Dentistry.
   - Modifications required for cavity preparation in primary and young permanent teeth.
   - Various Isolation Techniques.
   - Restorations of decayed primary, young permanent and permanent teeth in children using various restorative materials like Glass Ionomer, Composites & Silver Amalgam. Stainless steel, Polycarbonate & Resin Crowns.
12. PEDIATRIC ENDODONTICS
   - Principles & Diagnosis.
   - Classification Pulpal Pathology in primary, young permanent & permanent teeth.
   - Management of Pulpally involved primary, young permanent & permanent teeth.
     - Pulp capping – direct & indirect.
     - Pulpotomy
     - Pulpectomy
     - Apexogenesis
     - Apexification
   - Obturation Techniques & material used for primary, young permanent & Permanent teeth in children.
13. TRAUMATIC INJURIES IN CHILDREN:
   - Classifications & Importance.
   - Sequelae & reaction of teeth to trauma.
   - Management of Traumatized teeth.
14. PREVENTIVE & INTERCEPTIVE ORTHODONTICS:
   - Definitions.
   - Problems encountered during primary and mixed dentition phases & their management
   - Serial extractions.
   - Space management.

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

PRACTICALS

Following is the recommended clinical quota for under-graduate students in the subject of pediatric & 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.

BOOKS RECOMMENDED & REFERENCE:

1. Pediatric Dentistry (Infancy through Adolescences) – Pinkham.
2. Kennedy's Pediatric Operative Dentistry – Kennedy & Curzon.
3. Occlusal guidance in Pediatric Dentistry – Stephen H.Wei.
4. Clinical Use of Fluorides – Stephen H.Wei.
5. Pediatric Oral & Maxillofacial Surgery – Kaban.
6. Pediatric Medical Emergencies – P.S. whatt.
7. Understanding of Dental Caries – Niki Foruk.
8. An Atlas of Glass Ionomer cements – G.J.Mount.
9. Clinical Pedodontics – Finn.
10. Textbook of Pediatric Dentisty – Braham Morris.
11. Primary Preventive Dentistry – Norman O.Harris.
12. Handbook of Clinical Pedodontics – Kenneth. D.
13. Preventive Dentistry – Forrester.
14. The Metabolism and Toxicity of Fluoride – Garry M.whitford.
15. Dentistry for the Child and Adolescence – Mc.Donald.
16. Pediatric Dentistry – Damle S.G.
17. Behaviour Management – Wright
18. Pediatric Dentistry – Mathewson.
19. Traumatic Injuries – andreanson.
20. Occlusal guidance in Pediatric Dentistry – Nakata.
21. Pediatric Drug Therapy – Tomare
22. Contemporary Orthodontics – Profitt
23. Preventive Dentistry – Depaola.
24. Metabolism & Toxicity of Fluoride – whitford. G.M.
25. Endodontic Practice – Grossman.
26. Principles of Endodontics – Munford.
27. Endodontics – Ingle.
28. Pathways of Pulp – Cohen.
29. Management of Traumatized anterior Teeth – Hargreaves.

AESTHETIC DENTISTRY

Aesthetic Dentistry is gaining more popularity since last decade. It is better that undergraduate students should understand the philosophy and scientific knowledge of the esthetic dentistry.

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

Recommended books:

1. Esthetic 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).

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 and 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, 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 odontoogy

1. Introduction to forensic dentistry
   - Definition and history
   - Recent developments and future trends

2. Overview of forensic medicine and toxicology
   - Cause of death and postmortem changes
   - Toxicological manifestations in teeth and oral tissues

3. Dental identification
   - Definition
   - Basis for dental identification
   - Postmortem procedures
   - Dental record compilation and interpretation
   - Comparison of data, and principles of report writing
   - Identification in disasters and handling incinerated remains
   - Postmortem changes to oral structures

4. Maintaining dental records
   - Basic aspects of good record-keeping
   - Different types of dental records
     - Dental charts
     - Dental radiographs
     - Study casts
     - Denture marking
     - Photographs
   - Dental notations
   - Relevance of dental records in forensic investigation
5. Age estimation
   - Age estimation in children and adolescents
     - Advantages of tooth calcification over 'eruption' in estimating age
     - Radiographic methods of Schour & Massler, Demirjian et al
   - Age estimation in adults
     - Histological methods – Gustafson's six variables and Johnson's modification, Bang & Ramm's dentine translucency.
     - Radiographic method of Kvaal et al
   - Principles of report writing.

6. Sex differentiation
   - Sexual dimorphism in tooth dimension (Odontometrics)
7. Ethnic variations ('racial' differences') in tooth morphology
   - Description of human population groups
   - Genetic and environmental influences on tooth morphology
   - Description of metric and non-metric dental features used in ethnic differentiation.
8. Bite mark procedures
   - Definition and classification
   - Basis for bite mark investigation
   - Bite mark appearance
   - Macroscopic and microscopic aging of bite marks
   - Evidence collection from the victim and suspect of bite mark
   - Analysis and comparison
   - Principles of report writing
   - Animal bite investigation.
9. Dental DNA methods
   - Importance of dental DNA evidence in forensic investigations
   - Types of DNA and dental DNA isolation procedures
   - DNA analysis in personal identification
   - Gene-linked sex dimorphism
   - Population genetics

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

Theory sessions and practical exercises

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

Detailed didactic sessions for the above components, either in the form of lectures or as structured students-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 differences, 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:

- Introduction to forensic odontology
- Sex difference in odontometrics
- Ethnic variations in tooth morphology
- Histological age estimation
- Dental DNA methods
- Bite marks procedures
- 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:

- Dental identification
- Maintaining dental records
- Radiographic age estimation
- 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.

ETHICS (20 hrs. of instruction)

INTRODUCTION:

There is a definite shift now from the traditional patient and doctor relationship and delivery of dental care. With the 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 shift to greater accountability to the society. Dental specialists like the other health professionals are confronted with many ethical problems. It is therefore absolutely necessary for each and every one in the health care delivery to prepare themselves to deal with these problems. To accomplish this and develop human values 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 –

i. What is ethics
ii. What are values and norms
iii. How to form a value system in one's personal and professional life?
iv. Hippocratic oath.
v. 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 –

- Animal 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

Recommended Reading:

Medical Ethics, Francis C.M., I Ed. 1993, Jaypee Brothers, New Delhi 189.

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

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Human Anatomy including Embryology, Ostelogy and Histology	100	175		275
General Human Physiology	120	60		180
Biochemistry	70	60		130
Dental Materials	80	240		320
Dental Anatomy Embryology, and Oral Histology	105	250		355
Dental Pharmacology & Therapeutics	70	20		90
General Pathology	55	55		110
Microbiology	65	50		115
General Medicine	60		90	150
General Surgery	60		90	150
Oral Pathology & Microbiology	145	130		275
Oral Medicine & Radiology	65		170	235
Paediatric & Preventive Dentistry	65		170	235
Orthodontics & dental orthopaedics	50		170	220
Periodontology	80		170	250
Oral & Maxillofacial Surgery	70		270	340
Conservative Dentistry & Endodontics	135	200	370	705
Prosthodontics & Crown & Bridge	135	300	370	805
Public Health Dentistry	60		200	260
Total	**1590**	**1540**	**2070**	**5200**

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

MINIMUM WORKING 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, Ostelogy and Histology	100	175		275
General Human Physiology	120	60		180
Biochemistry	70	60		130
Dental Anatomy Embryology, and Oral Histology	105	250		355
Dental Materials	20	40		60
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 & Denal Pharmacology and therapeutics	70	20		90
General Pathology	55	55		110
Microbiology	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 & 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**		**750**	**1160**

FINAL B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
Oral Medicine and Radiology	45	-	100	145
Paediatric and Preventive Dentistry	45	-	100	145
Orthodontics & Dentofacial Orthopaedics	30	-	100	130
Periodontology	50	-	100	150
Oral & Maxillofacial Surgery	50	-	200	250
Conservative Dentistry & Endodontics	80	-	300	380
Prosthodontics and Crown & Bridge	80	-	300	380
Public Health Dentisty	60	-	200	260
Total	**440**	**-**	**1400**	**1840**

Note:

- Behavioral Sciences Classes shall commence in 1st year
- Forensic odontology shall be covered in the department of Oral pathology and Oral Medicine during 3rd year.
- Esthetic Dentistry shall be covered in the Departments of Conservative Dentistry and Prosthodontics during 3rd & 4th year.
- Oral Implantology shall be covered in the Department of Maxillofacial Surgery. Prosthodontics & Crown & Bridge and Periodontology during 4th Year.
- Ethics and dental jurisprudence shall be covered in Public Health Dentistry in 4th years.
- Electives / Research work should be encouraged during the 4th year lasting for a period of atleast one month to be spent in a different dental institution in India / overseas.
- The minimum working hours indicated for each year of study does not include one month mid year vacation and one month of university examination.

IV. **ANTIRAGGING ACT**:

THE ANDHRA PRADESH GAZETTE
PART-IV.B. EXTRAORDINARY
PUBLISHED BY AUTHORITY

No.36 HYDERABAD THURSDAY AUGUST 21, 1997

ANDHRA PRADESH ACTS, ORDINANCES AND REGULATIONS Etc.

The following Act of the Andhra Pradesh Legislative Assembly received the assent of the Governor on the 19th August, 1997 and the said assent is hereby first published on the 21 at August, 1997 in the Andhra Pradesh Gazette for general information.

ACT No. 26 of 1997

AN ACT TO PROHIBIT RAGGING IN EDUCTIONAL INSTITUTIONS IN THE STATE OF ANDHRA PRADESH.

Be it enacted by the Legislative Assembly of the State of Andhra Pradesh in the Forty-eigth of India, as follows:-

1. (1) This Act may be called the Andhra Pradesh Prohibition of Ragging Act, 1997. **Short title, extent and commencement**

   (2) It extends to the whole of the State of Andhra Pradesh.

   (3) It shall be deemed to have come into force with effect from 4th July.

2. In this act, unless the context otherwise requires:- **Definitions.**
   a) 'act' includes words either spoken or written or signs or sounds or gestures of visible representations;

   b) 'Educational Institution' means and includes a college, or other institution by whatever name called, carrying on the activity or imparting education therein (either exclusively or among other activities); and includes an orphanage or boarding home or hostel or autorial institution or any other premises attached thereto.

c) ‘Government’ means the State Government of Andhra Pradesh.

d) ‘notification’ means the notification published in the Andhra Pradesh Gazette and the word ‘notified’ shall be construed accordingly;

e) ‘ragging’ means doing an act which causes ‘or is likely’ to cause insult or annoyance of fear or apprehension or threat or intimidation or outrage of modesty’ or injury to a student.

A.P.Act 1 of 1982 Central Act 45 of 1860.

f) ‘student’ means a person who is admitted to an educational institution. And whose name is lawfully borne on the attendance register thereof;

g) All words and expressions used but not defined in this Act shall have the meanings assigned to them under the Andhra Pradesh Education Act, 1982 or Indian Penal Code, 1660 respectively.

3. Ragging within or outside any educational institution is prohibited.

Prohibition of Ragging.

4. Whoever, with the intention of causing ragging or with the knowledge that he is likely by such act to cause ragging, commits or abets ragging and thereby.

Penalty for Ragging.

(i) teases or embarrasses or humiliates a student shall be punished with imprisonment for a term which may extend to six months or with fine which may extend to one thousand rupees or with both; or

(ii) assaults or uses criminal force to or criminally intimidates, a student shall be punished with imprisonment for a term ‘which’ may extend to one year or with fine which may extend to two thousand rupees or with both; or

(iii) wrongfully restrains or wrong fully confines or causes hurt to a student shall be punished with imprisonment for a term which may extend to two years or with fine which may extend to five thousand rupees or with both; or

(iv) causes grievous hurt to or kidnaps or abducts of rapes or commits unnatural offence with a student shall be punished with imprisonment for a term 'which 'may extent to five years and with fine which may extend to ten thousand rupees; or

(v) causes death of abets suicide shall be punished with imprisonment for life or with imprisonment for a term which may extend to ten years and with a fine which may extend to fifty thousand rupees.

Dismissal of student.

5. (1) A student convicted of an offence under section 4 and punished with imprisonment for a team shall be dismissed from the educational institution.

(2) A student convicted of an offence under section 4 and punished with imprisonment for a team of more than six months shall not be admitted in any other educational institution.

Suspension of student

6. (1) Without prejudice to the fore going provisions, whenever any student complains of ragging to the head or manager of an educational institution, such head or manager shall inquire into or cause an inquiry to be made into the same forthwith and if the complaint is prima-facie found true, shall Suspend' the student or students complained against for such period as may be deemed necessary.

(2) The decision of the head or manager of the educational institution under sub section (1) shall be final.

Abetment.

7. (1) If the head or the manager of an educational institution fails or neglects to take action in the manner specified in sub-section (1) of section 6, such person shall be deemed to have abetted the offence and shall be punished with the punishment provided for the offence.

(2) If a student commits suicide due to or in consequence of ragging, the person who commits such ragging shall be deemed to have abetted such suicide.

8. The provisions of this Act shall be in addition to and not derogatory of any law for the time being in force. **Other laws not affected.**

9. (1) The Government may by notification, make rules for carrying out all or any of the purposes of this Act. **Power to make rules.**

(2) Every rule made under this Act shall immediately after it is made, be laid before the Legislative Assembly of the State, if it is in session and if it is not in session, in the session immediately following for a total period of fourteen days which may be comprised in one session or in two successive sessions, and if, before the expiration of the session in which it is so laid or the session 'immediately following the Legislative Assembly agrees in making any modification in the rule or in the annulment of the rule, the rule shall, from the date on which the modification or annulment is notified, have effect only in such modified form or shall stand annulled as the case may be so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

10. The Andhra Pradesh Prohibition of Ragging Ordinance, 1997 is hereby Repealed. **Repeal of ordinance 12 of 1997.**

G.BHAVANI PRASAD,
Secretary to Government,
Legislative Affairs & Justice,
Law Department.

Guidelines for prevention of ragging in the Educational Institutions:

a) That every educational institution should notify the disadvantages of ragging and also the consequences there of and the punishments for violation of the same in this regard in their prospectus for admission.

b) That as soon as the admissions of the freshers have started all the educational institutions must see that the students are made aware of the disadvantages of the ragging either by conducting classes or by way of lectures by the concerned teachers of the institution at least for a group of students as identified allotting one class in each week/month for bringing to the notice of the students about the disadvantages of the ragging.

c) All the communications of media like the Televisions, News papers, Open circulars, Suitable posters at colleges and hostel premises etc., by the Principal/head of the institution and that Public Address system should be utilized to bring to the notice of the students that ragging is a serious offence and wide publicity should be given mostly in the places where educational institutions are situated and at the traffic junctions through the public address system, at least, in the specified hours.

d) Strict surveillance should be maintained in such locations for prevention of ragging.

e) The educational institutions, who are able to afford, can also utilize the channels of media to give adequate publicity to the negative aspects of ragging and also narrating the past incidents of suicides, so that public awareness and aversion can be built up against ragging, as once life is lost, it is lost for ever in view of the fact that the agony of the parents cannot be explained in words as they would be sending their children with a hope that their children would come out of the portals of educational institutions with good education in near future;

f) As the matter relates to the students at large, the authorities i.e., District Collector and the Police department should cooperate with the educational institutions to bring awareness amongst the student community by arranging group meetings between the students of certain institutions at specified times and at specified places in the same college campus about the ‘disadvantages of ragging’, so that the students, if any, have any idea of indulging into ragging, would definitely change their minds, if they are properly taught.

g) Whenever any student compliances of ragging to the Head of the Educational Institution, such head shall enquire into the same forthwith and if the complaint is found true, shall take serious action against such doer of the act in view of the fact that no educational institution is taking serious view on the ragging till it becomes very serious in nature

h) The Head of the institution shall constitute anti ragging squads involving teachers and students to prevent ragging and keep continuous watch and vigil over ragging so as to prevent its occurrence and recurrence.

i) The Principal/Head of the institution shall obtain an undertaking in writing from the students at the time of admission that they shall not resort to ragging inside or outside the institution;

j) As soon as fresh admissions are over, Principal/head of the institution should see that there should be an assembly of the students of all classes including the freshers and seniors wherein the lecturers should take part with regard to the interaction amongst them and also the lecturers, teachers, staff and the students should be requested to take oath that they will not resort to ragging and the they will move friendly with all the freshers and juniors, and if that is done, we are hopeful that the students community at large would definitely understand the disadvantages of ragging;

k) At the commencement of the Academic session, the Review Committee headed by the District Collector and the Superintendent of Police of the concerned Districts should ensure that there should be an interaction with the students at large at least periodically may be twice in a month till the students i.e., freshers are settled down in their colleges to see that the act of ragging comes down and the freshers feel confident and secure in their college campus;

l) The Universities and the institutions shall at a reasonable time before the commencement of an academic year, and at frequent intervals, deliberate over and devise such positive and constructive activities to be arranged by involving the students generally so that the seniors and juniors, and the existing students and the freshers, interact with each other in a healthy atmosphere and develop a friendly relationship so as to behave like members of a family in an institution;

m) To stop the ragging awareness should be brought amongst the students, teachers and parents that ragging is a reprehensible act which does no good to any one and by simultaneously generating an atmosphere of discipline by a clear message that no act of ragging shall not go unnoticed sand unpunished;

V. **Standing orders on punishment for use of unfair means**.

1. During the University examination if a candidate is found in malafide possession of papers, books or notes or written notes on his clothes, body or table or chair, which is relevant to the examination(s) he will be disqualified from appearing in any university exam for one year and if found having copied will be disqualified for two years.

2. If a candidate is found talking to another candidate or person inside or outside the examination hall without permission even after a warning before, his answer book for that particular paper shall be cancelled.

3. If a candidate shows his / her answer book to another candidate or if he receives or attempts to receive help from any source, including consulting books, notes or papers or any other matter outside the exam hall or has given help or attempted to give help, he / she shall be disqualified from appearing in any university exam for two years.

4. If a candidate swallows or attempts to swallow a note or paper or runs away with the paper or causes disappearance or destruction of any such material(s), he shall be disqualified for two years.

5. If a candidate writes even a question or anything concerned either on blotting paper, or any other piece of paper including question paper or hall ticket, or attempts to pass on question paper or part there of he / she shall be disqualified for that examination.

6. If a candidate exchanges his / her seat or writes the registered number of another candidate on his / her answer book or creates any disturbance during the examination or refuses to obey the supervisory staff, he / she will be disqualified for three years.

7. If a candidate is found guilty of smuggling in or out or of replacing answer book or additional sheet during or after the exam with or without the connivance of any staff he / she shall be disqualified for three years and shall be liable to any punishment decided by Vice-Chancellor.

8. If a candidate takes way the answer book outside the examination hall or intentionally tears off or otherwise disposes his answer book or any part there of or additional sheet, he / she shall be disqualified for two years.

9. If a candidate is found guilty of serious misconduct in the examination hall or of misbehaviour towards the supervisory staff even outside the examination hall or any other place during the period, the examination is being held he / she be disqualified for a period upto five years.

10. If a person impersonates a candidate, he / she be disqualified from appearing for any university exam for five years and if he is not on university rolls, will not be admitted to any course for five years and the case may be reported to police, the candidate who is impersonated also will be disqualified for 5 years.

11. Chief superintendents and Assistant Superintendents who have reasons to suspect misconduct on the part of any candidate should forth with make all possible preliminary investigation and communicate with the registrar immediately forwarding all material evidence available together with the answer-book and the written explanation of the candidate. All such communications shall be sent by registered post acknowledgement due on the same day addressed to the registrar by name. In all such mischief cases of a suspected nature, the Chief Superintendents may use their discretion and decide whether the candidate in question shall be permitted to continue sitting for the rest of the examination or not and decision shall be reported to the registrar.

12. In all cases where the evidence is such as will leave no doubt in regard to the misconduct or when the candidate is caught red-handed, as it were, the candidate involved shall be sent out of the hall forthwith and kept out from the rest of the examination, but before the candidate leaves premises, his / her explanation shall be taken in writing and forwarded to the Registrar along with the report setting forth in detail all the material evidence.

13. In the case of the person who commits an offence under any of these rules but is not a candidate for any university examination, the chief superintendent may handover the case to the police.

14. In the case of a teacher or a person connected with an institution, who commits an offence, under any of these rules, his conduct shall be reported to the managing body of the institution, and to the government in the case of Government Institution, and shall be debarred from any remunerative job in the university permanently or for such period as the vice-chancellor may decide and also liable for such disciplinary action as may be decided by the University and the management of the college should abide by the decision of the University.

15. In case the candidate refuses to give a statement, he is not to be forced to do so, only the fact of his refusal shall be recorded by the superintendent and attested by two other members of the supervisory staff on duty at the time of occurrence and such candidates are liable for punishment for a period of 3 years.

16. A candidate guilty of communicating or attempting to communicate directly or through a relative, guardian or friend with an examiner or with the Registrar or any functionary involved in the conduct of examination or publication of results with the object of influencing him in the award of marks shall be disqualified from passing that examination and the one following it.

17. A candidate found guilty of approaching or influencing directly or indirectly regarding his unfair means case, a member of the committee or any University Official, shall be disqualified for one year in addition to the punishment awarded to him under the rules for her / his offence and for using unfair means.

18. Where a candidate alleged to have employed unfair means has not been awarded any opportunity to explain the misconduct of which he / she is reported to be guilty, the Registrar, or an officer authorized by him in this behalf, shall call upon the candidate to show cause why action should not be taken against him for his misconduct. If the candidate fails to do so within 15 days of the issue of such notice the university shall proceed with the case.

19. If the Executive Council is satisfied after enquiry that the integrity of a University Examination has been violated at an examination center, as a consequence of wholesale unfair assistance rendered to examinees, the Executive Council may order re-examination besides taking action under rules relating to unfair means and may also abolish the examination center for future or for a specified period.

20. For a case of unfair means not covered by these rules, the Executive Council may on the recommendation of the committee impart any such punishment as they deem fit accordingly to the nature of the offences.

Addition to the Standing orders of the Executive Council on punishment for use of unfair means:

1. One invigilator for every 20 candidates shall be appointed. However, there will be at least two invigilators in a room irrespective of number of candidates. Care should be taken not to keep the same invigilator in the same room and for same numbers everyday. The invigilators should report to the Chief Superintendent alteast 20 minutes before the commencement of examination. They are under the control of Chief Superintendents during the period they are on such duty. They should not leave the examination hall without the permission of the chief Superintendent.
2. Examination shall start exactly at 10.00 AM. Candidates should be in their seats 30 minutes before the schedule commencement of the examinations i.e., 9.30 AM. The answer books should be distributed ten minutes prior to the commencement of the examination i.e., 9.50 AM and all entries should be made and checked by 10.00 AM.
3. No candidate should be permitted to enter the examination hall after the commencement of examination i..e, 10.00 AM. No candidate shall be permitted to leave the exam hall earlier than half an hour before the completion of time of the exam.
4. Pagers, Cellular Phones or any other gadgets are strictly prohibited in the college premises during the examination days especially in examination hours by the students, House Surgeons and staff. The Principal should circulate this information widely. Further, the Principal, Chief Superintendents and observers are to be empowered to seize such articles and shall initiate disciplinary action under intended malpractice.
5. There shall not be any overwriting in the registered number and if there is any correction, it should be attested by the Chief Superintendent.
6. To affix Cellophone tape on the Regd.No.after it is entered in the column provided on the answer script (as is done for bank draft etc) by the concerned invigilator before the papers are collected.
7. To fix individual independent accountability on the invigilator, the Attendance sheet system should be introduced. The Attendance sheet contains the name of the invigilator with his / her signature and the list of the Regd.Nos. allotted to the invigilator for supervision. Against the Regd.No. the serial no. of the booklet No. and No. of additional sheets taken should be noted. They should be signed by the candidates. The invigilator also must sign in the last column as acknowledgement of having received the answer script from the candidate. <u>The format of the Attendance sheet is enclosed.</u>
8. When the time is over, all answer books must be collected immediately and the candidates should not be allowed to leave the room without handing over the answer books. The invigilators are responsible for the safe delivery of the answer books of the candidates under their charge to the Chief Superintendent after the examination is over and as such they should take proper precautions for the same.
9. No staff member except Head of the Department of the concerned subject or officially authorized person in place of HOD should be permitted to the examination hall to verify the question paper.

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GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

Andhra Pradesh Government Professional Institutions (Regulations of Admissions into undergraduate Medical Dental Professional Courses) Rules, 2004 – Rural Service to Doctors – Amendments – Notification – Issued.

HEALTH, MEDICAL & FAMILY WELFARE (E1) DEPARTMENT

G.O.Ms.No.166 Dated 20-07-2010
Read the following:-

1. G.O.Ms.No.183, HM&FW (E1) Dept., dt.30-6-2004.
2. G.O.Ms.No.205, HM&FW (E1) Dept., dt.15-7-2004.
3. G.O.Ms.No.415, HM&FW (E1) Dept., dt.2-12-2008.
4. G.O.Ms.No.140, HM&FW (E1) Dept., dt.4-7-2009.
5. G.O.Ms.No.165, HM&FW (E1) Dept., dt.20-7-2010.

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O R D E R:-

The following notification shall be published in the Extraordinary issue of the Andhra Pradesh Gazette, dated 22-07-2010.

NOTIFICATION

In exercise of the powers conferred by Sections 3 and 15 of the Andhra Pradesh Educational Institutions (Regulation of Admissions and Prohibition of Capitation Fee) Act, 1983 (Andhra Pradesh Act No.5 of 1983) the Governor of Andhra Pradesh hereby makes the following amendments to the Andhra Pradesh Government Professional Institutions (Regulations of Admissions into Under Graduate Medical and Dental Professional Courses) Rules, 2004 issued in G.O.Ms.No.183, HM&FW (E1) Department, dated 30.602004 and published in the Rules Supplement to Part-I, Extraordinary of the A.P.Gazette No.23, dated the 2nd July, 2004 and as subsequently amended:-

A M E N D M E N T

After rule 10 of the said rules the following shall be added, namely:-

“11 – Compulsory Rural Service:

The compulsory rural Medical / Dental service for MBBS/BDS candidates admitted from the academic year 2010-11 onwards shall be for a period of one year, immediately following the successful completion of the MBBS / BDS including the completion of house-surgeoncy. The candidates shall be called as “Junior Residents” during the period of 1 year of rural service.

(i) On successful completion one year rural medical / dental service, the candidate will be eligible for a permanent registration with Andhra Pradesh Medical/Dental Council.

(ii) A consolidated remuneration @ 150% of the stipend payable to house surgeons in 2015 for Junior Residents rendering compulsory rural medical / dental service in the rural areas and 175% of the stipend payable to house surgeons in 2015 for Junior Residents rendering compulsory rural medical / dental service in the tribal areas shall be paid.

(iii) Junior Residents shall be posted to work for one year in the Public Health Centers / Community Health Centers in various districts, following a transparent system of seeking 5 options and making the allotments strictly based on the merit at the MBBS / BDS examination.

(iv) The administrative supervision for the candidates shall be with the District Health Administration and the academic supervision over the candidates shall be the responsibility of the college from where the candidates has graduated. To the extent feasible, the academic supervision shall be conducted through online system so as the minimize the workload on the colleges.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

J.SATYANARAYANA
SPECIAL CHIEF SECRETARY TO GOVERNMENT