

DENTAL COUNCIL OF INDIA

BDS COURSE REGULATIONS 2007



DENTAL COUNCIL OF INDIA

Temple Lane, Kotla Road

New Delhi – 110 002

BDS - DEGREE COURSE

Sl. No.	Subjects	Course Code
I Year		
1.	General Anatomy including Embryology and Histology	1
2.	General Human Physiology and Biochemistry	2&3
3.	Dental Anatomy, Embryology and Oral Histology	4
II Year		
4.	General Pathology and Microbiology	5&6
5.	General and Dental Pharmacology and Therapeutics	8
6.	Dental Materials	7
7.	Pre Clinical Conservative Dentistry	9
8.	Pre Clinical Prosthodontics & Crown & Bridge	10
III Year		
9.	General Medicine	11
10.	General Surgery	12
11.	Oral Pathology and Oral Microbiology	13
IV Year		
12.	Oral Medicine and Radiology	16
13.	Paediatric and Preventive Dentistry	21
14.	Orthodontics and Dentofacial Orthopaedics	17
15.	Periodontology	15
16.	Prosthodontics and Crown and Bridge	20
17.	Conservative Dentistry and Endodontics	19
18.	Oral and Maxillofacial Surgery	18
19.	Public Health Dentistry	14



PRINCIPAL

J.K.K.NATTRAJA DENTAL

COLLEGE & HOSPITAL

KUMARAPALAYAM - 638 183.

1. GENERAL ANATOMY INCLUDING EMBRYOLOGY AND HISTOLOGY

1. GOAL

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 the clinically important structure, so that the relevant anatomical and scientific foundations are laid down for the clinical years of the BDS course.

2. OBJECTIVES

a. KNOWLEDGE AND UNDERSTANDING:

At the end of the first BDS in anatomical science the undergraduate student is expected to

- i. Know the normal disposition of the structures in the body while clinically examining a Patient and while conducting the clinical procedures
- ii. Know the anatomical basis of disease and injury
- iii. Know the microscopic structure of the various tissues, a prerequisite for understanding the disease process.
- iv. Know the nervous system to locate the site of lesion according to the sensory and or the motor deficits encountered
- v. Have an idea about the basis of the abnormal development, critical stages of development, effects of teratogens, genetic mutations and environmental hazards
- vi. Know the sectional anatomy of the head and neck and brain to read the features in the Radiographs and the picture taken by modern technique
- vii. Know the anatomy of cardiopulmonary resuscitation

b. SKILLS:

- i. To locate various structure of the body and to mark the topography of the living anatomy
- ii. To identify various tissues under microscope
- iii. To identify the features in radiography and modern imaging techniques.
- iv. To detect various congenital abnormalities.



c. ATTITUDE:

- i. Willingness to apply the current knowledge of dentistry in the best interest of the patient and community
- ii. Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community

d. INTEGRATION

By emphasizing on the relevant information the anatomy taught integrally with other basic sciences and clinical subjects not only keeps the learner curious 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 and small group teachings
- 2) Demonstrations
- 3) Dissection of human cadavers
- 4) Study of dissected specimens
- 5) Osteology
- 6) Study of histology slides
- 7) Audio visual aids
- 8) Charts and models for embryology and genetics

e. KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area / personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

f. COMPUTER PROFICIENCY

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses, and online courses.

The following validation is required and must be completed.

- i) Technological Requirements for all Graduate Students
- ii) A laptop or desktop computer that supports the following requirements
 - a) Operating system requirements
 - b) Internet browser requirements
 - c) Reliable and consistent access to the internet
 - d) Anti virus software which is current and consistently updated
 - e) Microsoft Office
 - f) Adobe Reader (or equivalent to view PDF files)

3. COMPETENCIES

i. General skills:

- Apply knowledge & skills in day to day practice
- Apply principles of ethics
- Analyze the outcome of treatment
- Evaluate the scientific literature and information to decide the treatment
- Participate and involve in professional bodies
- Self-assessment & willingness to update the knowledge & skills from time to time
- Involvement in simple research projects
- Minimum computer proficiency to enhance knowledge and skills
- Refer patients for consultation and specialized treatment
- Basic study of forensic odontology and geriatric dental problems

ii. Practice Management :

- Evaluate practice location, population dynamics & reimbursement mechanism
- Co-ordinate & supervise the activities of allied dental health personnel
- Maintain all records
- Implement & monitor infection control and environmental safety programs
- Practice within the scope of one's competence

iii. Communication and Community Resources:

- Assess patients goals, values and concerns to establish

rapport and guide patient care

- Able to communicate freely, orally and In writing with all concerned
 - Participate in improving the oral health Of the individuals through community activities.
- iv. Patient Care – Diagnosis:
- Obtaining patient's .history in a methodical way
 - Performing thorough clinical examination
 - Selection and interpretation of clinical, radiological and other diagnostic information
 - Obtaining appropriate consultation
 - Arriving at provisional, differential and final diagnosis
- v. Patient Care - Treatment Planning:
- Integrate multiple disciplines into an individual comprehensive sequence treatment plan using diagnostic andprognostic information
 - Ability to order appropriate investigations
 - Recognition and initial management of medical emergencies that may occur during dental treatment
 - Perform basic cardiac life support
 - Management of pain including post operative
 - Administration of all forms of local anaesthesia
 - Administration of intra muscular and venous injections
 - Prescription of drugs, pre operative, prophylactic and therapeutic requirements
 - Uncomplicated extraction of teeth
 - Transalveolar extractions and removal of simple impacted teeth
 - Minor oral surgical procedures
 - Management of oro-facial infections
 - Simple orthodontic appliance therapy ,
 - Taking, processing and interpretation of various types of intra oral radiographs
 - Various kinds of motivative procedures using different materials available
 - Simple endodontic procedures



- Removable and fixed prosthodontics
- Various kinds of periodontal therapy
- vi. Competencies specific to the subject

4. TEACHING HOURS

Lecture hours – 100 hrs

Practical hours – 175 hrs

Total - 275 hrs

5. TEACHING METHODOLOGY:

- Combination of Lectures
- Small group seminars, tutorials
- Dissection and learning from dissected specimens
- Audio visual aids
- Demonstration of articulated and individual bone specimens.
- Microscopic demonstration
- Use of workbook for practical classes
- Drawing histology diagrams in record notebook
- Surface anatomy on living individual
- Study of radiographs & other modern imaging techniques.
- Study of Histology slides. □
- Study of embryology models.

6. THEORY SYLLABUS

TOPIC	MUST KNOW	DESIRA BLETO KNOW	NICE TO KNOW
Anatomical terminology	An understanding of the various subdivisions of anatomy <input type="checkbox"/> Anatomical position <input type="checkbox"/> Anatomical planes <input type="checkbox"/> Terms of direction, relation, comparison, laterality & movement		
Introduction to bones	Composition of bone and bone marrow <input type="checkbox"/> Regional classification of skeleton <input type="checkbox"/> Structural classification of bone a. Distribution of spongy and compact bone in the body		Laws of ossification, including direction of nutrient foramen and the growing end of the



	<input type="checkbox"/> Classification of bone according to shape <input type="checkbox"/> Classification of bone based on ossification <input type="checkbox"/> Parts of a long bone <input type="checkbox"/> Blood and nerve supply of a long bone <input type="checkbox"/> Special features of a sesamoid bone		<p>bone</p> <p><input type="checkbox"/> Exceptions to the laws of ossification</p>
Introduction to joints	<p>Definition Classification according to</p> <p>a. Structure- with subtypes and examples of fibrous, cartilaginous and synovial joints</p> <p>b. Mobility</p> <p>c. Axes of movement</p> <p><input type="checkbox"/> Complex and compound joints</p> <p><input type="checkbox"/> Nerve supply of joints- Hilton's law</p> <p>Blood supply of joints</p>		
Introduction to the muscular system	<p>Structural classification of muscle</p> <p><input type="checkbox"/> Parts of a skeletal muscle Differentiate tendon and aponeurosis</p> <p><input type="checkbox"/> General principles about how attachments of muscles affect the joints they cross</p> <p><input type="checkbox"/> Classification of muscle according to action (agonists, antagonists, synergists, fixators)</p>		<p>Classification of muscle according to direction of muscle fibres and shape</p>



<p>Introduction to the cardiovascular system</p>	<p>Classification into blood vascular system</p> <ul style="list-style-type: none"> <input type="checkbox"/> Differentiate pulmonary and systemic circulation <input type="checkbox"/> Layers of any blood vessel <input type="checkbox"/> Types of blood vessels a. General differences between arteries and veins b. Functional difference between elastic, muscular arteries and arterioles c. Function of meta-arterioles, precapillary sphincters, arterio-venous anastomoses d. Microvasculature-types of capillaries and their functional significance 	<p>Concepts of thrombosis, infarction, aneurysm</p> <ul style="list-style-type: none"> <input type="checkbox"/> Concept of lymphoedema and spread of tumors via lymphatics and venous system
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	<input type="checkbox"/> Venous return a. Musculo-venous pumps b. Role of valves <input type="checkbox"/> Definition and structure of a portal system		
Lymphatic system	Components and function of the lymphatic system a. Structure of lymph capillaries b. Concept that lymphatics accompany blood vessels c. Concept that lymph ultimately drains into the venous system d. Function of lymph nodes in the lymphatic system		
Nervous system	Subdivisions of nervous system into Central and peripheral nervous system, somatic and autonomic nervous system Structure and classification of neuron		
Respiratory system	Trachea, pleura and Lungs		
Gastrointestinal system Accessory organs of digestion	Name, position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects of: Spleen, Abdominal part of esophagus Stomach, Liver & its vascular segments Gall bladder, Pancreas, Small intestines Caecum, Appendix, Colon, Extrahepatic biliary apparatus		



Urinary system	Kidneys, Ureter Suprarenals , Urinary bladder		
Genital system	Testis, Ovary, Uterus, Fallopian tube		
Introduction	Terms used in embryology Stages of development		
Mitosis and Meiosis and	Primordial germ cells Concept of Chromosomal abnormalities		
Gametogenesis	Oogenesis Spermatogenesis		
Uterine and ovarian cycles	Uterine and ovarian cycles Ovulation		
Fertilization	Definition, Phases of fertilization, Results of fertilization		



and Blastocyst			
Bilaminar germ Disc	Implantation Abnormal implantation		
Trilaminar germdisc	Gastrulation		
Embryonic period	Definition, Neurulation – neural pores and the time of closure, Derivatives of each of the 3 germ layers, Somites		
Fetal membranes and Placenta	Structure, Placental circulation, Function, Placental barrier		
Amnion and umbilical cord	Structure and function	Amniotic fluid- hydramnios and oligohydramnios	



Birth defects	Face Palate Tongue Branchial apparatus Pituitary glandThyroid gland Eye		Types of abnormal ities- malforma tion, disruptio n, deformati on, syndrom e, Teratogens
			Facial clefts, First Arch Anomalies, Developmental anomalies of tongue, Branchial cysts and fistulae, Ectopic thymic, parathyroid or thyroid tissue, Thyroglossal cyst



	<input type="checkbox"/> Clinical applications of karyotyping <input type="checkbox"/> Reading of karyotypes for normal male, female, Trisomies, Turner syndrome, Klinefelter syndrome		
Osteology	Anatomical position of skull Identification and locations of individual skull bones in an articulated skull <input type="checkbox"/> Features seen in Normas frontalis, verticalis, occipitalis, lateralis and basalis <input type="checkbox"/> Cranial cavity- subdivisions, foraminae and structures passing through them <input type="checkbox"/> Details of Mandible and Maxilla, <input type="checkbox"/> Features of typical and atypical cervical vertebrae		Concept of bones which ossify in membranes and cartilage <input type="checkbox"/> Frankfort Plane <input type="checkbox"/> Parietal, Occipital, Frontal and Temporal bones <input type="checkbox"/> Sphenoid,
Scalp	Layers of scalp, Extent/ attachment of each layer, Surgical importance of each layer, Blood supply, nerve supply and lymphatic drainage		
Superficial dissection of the face	Muscles of facial expression Muscle groups acting upon the angle of the mouth - Attachments of the orbicularis oculi, orbicularis oris and buccinator muscles only <input type="checkbox"/> Sensory innervation of the face		Names of the superficial muscles in the face, with their actions and nerve supply



Deep dissection of the face	<p>Facial artery: Origin, course and branches</p> <p><input type="checkbox"/> Facial vein: Formation, course and tributaries</p> <p><input type="checkbox"/> Facial nerve: Branches in the face</p> <p><input type="checkbox"/> Lymphatic drainage of the face</p> <p><input type="checkbox"/> Surgical importance of the deep facial vein</p>		
Parotid Region	<p>Parts, borders, surfaces, contents, relations and nervesupply of parotid gland</p> <p><input type="checkbox"/> Course of parotid duct</p>		<p>Parotid abscess</p> <p><input type="checkbox"/> Plane of dissection and main complication of superficial parotidectomy</p>
The side of the	Boundaries and subdivisions of posterior triangle		



neck Posterior Triangle	<input type="checkbox"/> Boundaries and contents of the subclavian and occipital triangles <input type="checkbox"/> Special emphasis on with nerve supply and actions <input type="checkbox"/> Sternocleidomastoid with attachments and relations, Wry neck Lymphatic drainage of head and neck		
Dissection of back	Contents of the vertebral canal Suboccipital triangle Boundaries and contents <input type="checkbox"/> Position, direction of fibres, relations, nerve supply, actions of: Semispinalis capitis, Splenius capitis		
Cranial Cavity	Cranial fossae: structures related and major foramina and structures passing through Dural venous sinuses <input type="checkbox"/> Pituitary gland	Pituitary tumours	Clinical importance of dural venous sinuses
Orbit	Attachments, nerve supply and actions of muscles of eyeball <input type="checkbox"/> Nerves and vessels in the orbit <input type="checkbox"/> Ciliary ganglion		



Anterior Triangle	Boundaries and subdivisions of the anterior triangle <input type="checkbox"/> Boundaries and contents of the muscular, carotid, digastric and submental triangles		
Cranial nerves	extra cranial course 5th, 7th and 9th nerves and upper Cervical nerves.		
Temporal and Infratemporal regions	Extent, boundaries and contents of temporal and infratemporal fossae <input type="checkbox"/> Attachments, direction of fibres, nerve supply and actions of muscles of mastication Temporomandibular joint		Dislocation of temporomandibular joint
Submandibular region	Parts, borders, surfaces, relations, nerve supply of submandibular gland <input type="checkbox"/> Course and relations of submandibular duct <input type="checkbox"/> Submandibular ganglion <input type="checkbox"/> Position, relations and nerve supply of sublingual gland		Bidigital palpability of submandibular swelling
Deep	Thyroid gland- location, parts, borders, surfaces, relations,	Thyroid	Vagus Nerve in the



<p>structures inthe neck</p>	<p>blood supply</p> <ul style="list-style-type: none"> <input type="checkbox"/> Parathyroid glands- location, blood supply <input type="checkbox"/> Trachea, Tracheostomy- structures encountered <input type="checkbox"/> Subclavian artery- Origin, parts, course, branches 	<p>swellings - anatomically relevant clinical features</p> <ul style="list-style-type: none"> <input type="checkbox"/> Awareness ofliability of injury to external and recurrent laryngeal nervesduring thyroidectomy 	<p>neck- Course andbranches</p> <ul style="list-style-type: none"> <input type="checkbox"/> Accessory Nerve-Course and supply <input type="checkbox"/> Cervical Sympathetic chain- Components, branches, area of supply <input type="checkbox"/> Deep cervical fascia- parts, extent, attachments, modifications Deep cervical lymphnodes
<p>Mout h, Phary nx, Palate</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Names, position, actions and nerve supply of muscles ofpalate and pharynx <input type="checkbox"/> Palatine tonsil- Position, relations, blood supply <input type="checkbox"/> Waldeyer’s lymphatic ring- Components and theirfunction <input type="checkbox"/> Boundaries and clinical significance of pyriform fossa 	<p>Killian’s dehiscen ce</p>	<p>Tonsillitis and tonsillecto my</p> <ul style="list-style-type: none"> <input type="checkbox"/> Adenoids <input type="checkbox"/> Paratonsillar absce



Cavity of Nose	<input type="checkbox"/> Nasal septum Epistaxis- significance of Little's area <input type="checkbox"/> Lateral wall of nasal cavity <input type="checkbox"/> Paranasal sinuses concept of referred pain		Sinusitis Maxillary sinus tumours
Larynx	Names, nerve supply and actions of intrinsic and extrinsic muscles of larynx Cartilages and ligaments <input type="checkbox"/> Sensory innervation and blood supply of larynx		Recurrent laryngeal nerve injury
Tongue	Names, nerve supply and actions of extrinsic and intrinsic muscles of tongue <input type="checkbox"/> Nerve supply and lymphatic drainage of tongue		Hypoglossal nerve palsy
Organs of hearing and	Parts, boundaries, contents, relations, blood supply and nerve supply of external ear, middle ear and Auditory tube		



Equilibrium			
Eyeball	Parts and layers of eye ball		
Prevertebra I region and Joints of Head and neck	Atlanto-occipital joint		
External features	External features of the brain and spinal cord and its meningeal coverings and blood supply		
Spinal cord	<ul style="list-style-type: none"> a) External and internal features b) Organization of grey matter into nuclei c) Coverings of spinal cord d) Ascending and descending tracts and their functions e) Upper and lower motor neurons f) Spinal segment and dermatome g) Blood supply h) Modifications of pia mater 		
Brainstem	External and internal features		



Cerebellum	Gross features and subdivisions of cerebellum. Deepnuclei, afferent and efferent connections. Cerebellar peduncles		Morphological subdivisions of cerebellum into archi,paleo and neocerebellum, Cerebello-pontine angle tumour, symptoms of cerebellar disease
Cerebrum	Gross features (gyri and sulci) of the cerebral hemisphere – superolateral, Medial and inferior surface, and the subdivisions into lobes, and blood supply. Functional areasand Brodmann’s numerals (motor, sensory, visual, auditory, speech, frontal eye field, prefrontal cortex)		



	Horizontal section of cerebrum Midsagittal section of cerebrum		
White fibres of Cerebrum	Association, commissural and projection fibres		
Ventricles of the brain	Features of lateral, third and fourth ventricle. Choroidplexus, Circulation of Cerebro-Spinal Fluid (CSF)		
Blood supply of brain and spinal cord	Blood supply of brain and spinal cord		



7. TEXT BOOKS:

Gross Anatomy

1. Cunningham's Manual of Practical Anatomy Volumes 1, 2 and 3 15th edition by GJ Romanes
2. Clinical Oriented Anatomy 7th edition by Moore KL, Agur AMR and Dalley AF
3. Textbook human anatomy(Head and Neck), Inderbir singh
4. A Textbook of Human Anatomy, 2000 by T.S. Ranganathan

Neuroanatomy

1. Clinical Neuroanatomy 7th edition 2009 by Richard S. Snell
2. Essentials of Human Anatomy Neuroanatomy 4th edition 2012 by AK Datta
3. Textbook of Clinical Neuroanatomy 2nd edition Vishram Singh
4. Illustrated Textbook of Neuroanatomy 12th edition by GP Pal

Histology

1. Inderbir Singh's Textbook of Human Histology with Colour Atlas and Practical Guide 7th edition, 2014 by VasudevaNeelam
2. Wheater's Functional Histology: A Text and Colour Atlas, 6th Edition by Barbara Young, Geraldine O'Dowd, PhillipWoodford
3. Textbook of Histology 2008 by GP Pal

Embryology

1. Langman's Medical Embryology 13th edition by T.W. Sadler.
2. Larsen's Human Embryology 5th Edition 2014 by Schoenwolf, Bleyl, Brauer and Francis-West
3. The Developing Human: Clinically Oriented Embryology 9th edition, 2012 by Keith L. Moore
4. Human Embryology 10th edition by IB Singh

13. REFERENCE BOOKS

1. Gray's Anatomy 41st Edition 2016 Standing S
2. Emery Medical Genetics
3. SNELL (Richard S.) Clinical Anatomy for Medical Students,

Ed. 5, Little Brown & company, Boston.

4. RJ LAST'S Anatomy- McMinn, 9th edition.

5. ROMANES(G.J.) Cunningham Manual of Practical Anatomy: Head & Neck & Brain Ed.15. VOL. III, Oxford MedicalPublication.

6. WHEATER, BURKITT & DANIELS, Functional Histology, Ed. 2, Churchill Livingstone.

7. SADLER, LANGMAN'S, Medicals Embryology, Ed.6.

8. JAMES E ANDERSON, Grant's Atlas of Anatomy, Williams & Wilkins.

9. WILLIAMS, Gray's Anatomy, Ed.38. , Churchill Livingstone.



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- Self-assessment & willingness to update the knowledge & skills from time to time
- Involvement in simple research projects
- Minimum computer proficiency to enhance knowledge and skills
- Refer patients for consultation and specialized treatment
- Basic study of forensic odontology and geriatric dental problems

2. GENERAL HUMAN PHYSIOLOGY

1. GOAL

The broad goal of teaching Human Physiology to undergraduate Dental students is to provide comprehensive knowledge of the normal functions of the organ systems of the body, to facilitate an understanding of the physiological basis of health and disease.

2. OBJECTIVES

a. KNOWLEDGE AND UNDERSTANDING:

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

- Explain the normal functioning of all the organ systems and their interactions for wellco-ordinated total body function.
- Assess the relative contribution of each organ system towards the maintenance of the milieu interior.
- 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 :

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

c. ATTITUDE:

To develop the attitude to serve the rural community.d. INTEGRATION:

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

e. KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area/ personal care as per universal protection, and disposal of medical wastes in the appropriate modes.

Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

f. COMPUTER PROFICIENCY:

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses, and online courses. The following validation is required and must be completed during the first year of study.

i). Technological Requirements for all Graduate Students

ii). A laptop or desktop computer that supports the following requirements

- a). Operating system requirements
- b). Internet browser requirements
- c). Reliable and consistent access to the internet
- d). Antivirus software

which is current and consistently updated).

Microsoft Office

f). Adobe Reader (or equivalent to view PDF files)

3. COMPETENCIES

i. General skills:

- Apply knowledge & skills in day to day practice



- Apply principles of ethics
- Analyze the outcome of treatment
- Evaluate the scientific literature and information to decide the treatment
- Participate and involve in professional bodies
- ii. Practice Management :
 - Evaluate practice location, population dynamics & reimbursement mechanism
 - Co-ordinate & supervise the activities of allied dental health personnel
 - Maintain all records
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- iii. Communication and Community Resources:
 - Assess patients goals, values and concerns to establish rapport and guide patient care
 - Able to communicate freely, orally and In writing with all concerned
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- iv. Patient Care – Diagnosis:
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 - Performing thorough clinical examination
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- v. Patient Care - Treatment Planning:
 - Integrate multiple disciplines into an individual comprehensive sequence treatment plan using diagnostic andprognostic information
 - Ability to order appropriate investigations
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 - Perform basic cardiac life support
 - Management of pain including post operative



- Administration of all forms of local anaesthesia
 - Administration of intra muscular and venous injections
 - Prescription of drugs, pre operative, prophylactic and therapeutic requirements
 - Uncomplicated extraction of teeth
 - Transalveolar extractions and removal of simple impacted teeth
 - Minor oral surgical procedures
 - Management of oro-facial infections
 - Simple orthodontic appliance therapy ,
 - Taking, processing and interpretation of various types of intra oral radiographs
 - Various kinds of motivative procedures using different materials available
 - Simple endodontic procedures
 - Removable and fixed prosthodontics
 - Various kinds of periodontal therapy
- vi. Competencies specific to the subject

4. TEACHING HOURS

Lecture Hours – 120 hour

- General Physiology	- 8 hours
- Blood	- 16 hours
- Muscle and Nerve	- 7 hours
- Gastrointestinal tract	- 16 hours
- Excretion, Body temperature and functions of skin	- 9 hours
- Endocrinology	- 14 hours
- Reproduction	- 7 hours
- Cardiovascular system	- 10 hours
- Respiratory system	- 10 hours
- Central Nervous system	- 15 hours
- Special senses	- 8 hours

Practical Hours – 60 hours

5. TEACHING METHODOLOGY

The objectives of teaching General human Physiology can be achieved by various teaching techniques such as:

- a) Lectures
- b) Lecture Demonstrations
- c) Practical exercises
- d) Audio visual aids
- e) Seminar & Small group discussions with regular feed back from the students
- f) Integrated Teaching
- g) Symposium and continuing medical education programmes



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6. THEORY SYLLABUS

TOPIC	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
Homeostasis and Feedback System	Describe the concept of maintenance of internal environment <ul style="list-style-type: none"> Recognize that negative feedback is the most common type of physiological control 	State and describe examples of negative feedback <ul style="list-style-type: none"> State and describe instances of positive feedback in human physiology 	
Cell Membrane	Describe with diagram the fluid mosaic model		



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<p>Membrane Transport</p>	<p>Classify transport mechanisms as Passive and active with examples and differentiate between them.</p> <ul style="list-style-type: none"> • List and describe the following passive transport processes with examples: • Simple diffusion of respiratory gases through lipid film • Diffusion of ions through ion channels • Sodium, potassium, calcium and chloride channels • Non-gated channels, voltage gated, ligand-gated channels and mechanogated channels • Facilitated diffusion – Glucose transporters (GluTs) • Osmosis • Describe the following active transport processes: • Primary active transport: • sodium-potassium pump, • Secondary active transport: sodium-glucose co- 	<p>Describe the differences between channel and carrier-mediated transport processes</p> <p>State Fick's law of diffusion</p> <ul style="list-style-type: none"> • Describe the following active transport processes: • Primary active transport: • Proton pumps - V type H ATPase, H/K ATPase • Secondary active 	
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	<p>transport (SGLT) and sodium-amino acidco-transport</p> <ul style="list-style-type: none"> Describe the following transport processes by formation of membrane vesicles Endocytosis • Exocytosis 	<p>transport: sodium hydrogen exchangers, sodium calcium exchangers, Na/2Cl/K symport</p>	
Membrane Potential	<p>Describe the mechanisms involved in genesis of resting membrane potential (RMP) in a prototype cell</p> <ul style="list-style-type: none"> Recognise the RMP in a nerve or cardiac cell Nernst or equilibrium potential 'Equilibrium potential' Action potentials in neuron, skeletal muscle cell, Sino atrial node and cardiac ventricular cell 	<ul style="list-style-type: none"> Patch Clamp Technique Cathode Ray Oscilloscope 	
Blood Introduction	<ul style="list-style-type: none"> Describe the normal composition of blood Describe the composition of plasma State the difference between plasma and serum. 		



<p>Plasma Proteins (Integration with Biochemistry)</p>	<ul style="list-style-type: none"> • State the site of production, normal range and describe the functions of Albumin • Discuss causes for decrease in serum Albumin levels with specific examples of disease conditions • Explain what is oncotic pressure • Discuss the production, various types and role of Globulins (alpha, beta and gamma globulins) 		
<p>Erythrocyte Sedimentation Rate (ESR):</p>	<ul style="list-style-type: none"> • Define and state normal values for ESR in men and women • Describe the factors influencing ESR (factors) • Discuss the significance of ESR in disease states 		
<p>RBC</p>	<ul style="list-style-type: none"> • Describe the physical characteristics of red blood cells • List causes and give explanation for physiological variations of the normal RBC count • Explain the functions of RBCs • List the changes in sites of erythropoiesis with age 		



	<ul style="list-style-type: none"> • Illustrate the major changes that take place during the stages of erythropoiesis. • Describe the factors regulating/affecting erythropoiesis, • Discuss the normal life span and destruction of RBCs 		
Hemoglobin	<ul style="list-style-type: none"> • State the components of Hb, the various types of Hb and normal range of Hb in men and women • Briefly discuss the synthesis of haemoglobin • what is reduced hemoglobin. • Define and describe cyanosis • Discuss the types of jaundice • Abnormal Hemoglobin 		
Anaemia	<ul style="list-style-type: none"> • Define anaemia • Classify anaemia based on etiology and morphology • Discuss the principles of treating anemias • Describe major symptoms, signs and effects of anemia 		



Platelet	<ul style="list-style-type: none"> • Describe the formation, structure, life span & removal of platelets • State the normal platelet count • Describe the functions of platelets. • Discuss the causes and effects of thrombocytopenia 		
Hemostasis	<ul style="list-style-type: none"> • Describe the processes involved in hemostasis such as: <ul style="list-style-type: none"> • vasoconstriction • Platelet plug formation • Clotting or coagulation pathways • Clot retraction • Describe anticlotting and fibrinolytic mechanisms in the body • List anticoagulants and their mechanism of action • Explain various causes for abnormal hemostasis 		



	<ul style="list-style-type: none"> • List the clotting factors and Explain the pathways of coagulation • Explain various causes for abnormal hemostasis • Perform and interpret simple tests of hemostasis like bleeding time by Duke's method and clotting time by capillary method of Wright on oneself by collecting blood using finger prick method using aseptic method • Explain Lee and White's method for determining clotting time 		
<p>Blood groups & Blood banking</p>	<ul style="list-style-type: none"> • Describe the importance of blood groups • Explain the genetic determination of blood groups • Describe the ABO system of blood grouping • State the frequency of different blood groups • Describe the Rh system of blood grouping • Explain the mechanism and consequence of ABO and Rh incompatibility • Explain the condition Erythroblastosis Fetalis, state preventive measure and treatment option for the same. 		



Body fluids	<ul style="list-style-type: none"> • List the different body fluid compartments, - state the volume, osmolarity and electrolyte composition of each of the following compartments • Total body water, extracellular, intracellular, plasma, intravascular • Describe the term transcellular fluid • Measurement of volumes of compartments • Describe the Starling's forces that govern fluid exchange across the membranes separating the various compartments • Define Donnan effect and equilibrium • Use the Concept of electro neutrality in the fluid compartments to calculate 'Anion gap' 		
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	<ul style="list-style-type: none"> • Define anion gap as the term referring to unmeasured anions in plasma. 		
WBC	<ul style="list-style-type: none"> • State the normal Total and Differential count • Classify types of WBC as granulocytes, agranulocytes • Describe the morphology and functions of neutrophils, eosinophils, basophils, mast cells; Lymphocytes, monocytes. • Perform and interpret total leucocyte on their own blood / provided blood using aseptic precautions • List Conditions in which total leucocyte counts is increased or decreased. • List conditions in which counts of each type of WBC are increased or decreased • Describe the various cells that constitute the monocyte - macrophage system and state their function 		
Leucopoiesis	<ul style="list-style-type: none"> • Outline the process of maturation of white blood cells 		
Lymph	<ul style="list-style-type: none"> • Describe the formation and composition of lymph • Illustrate the lymphatic circulation. • Discuss functions of lymph. 		



Reticulo endothelial system	Functions of reticulo endothelial system		
Skeletal Muscle Morphology	<ul style="list-style-type: none"> • Describe and draw the structure of sarcomere marking actin filament, myosin filament, I band, A band, H band, Z line and sarcomere • Describe the functions of contractile and regulatory proteins involved in muscle contraction • Draw and describe the structure of the sarco-tubular system 		



Neuromuscular junction	<ul style="list-style-type: none"> • Draw and Describe the structure of the neuromuscular junction • Describe the events involved in neuromuscular transmission • Describe the pathophysiology of diseases affecting the neuromuscular junction like myasthenia gravis • Describe the mechanism of action of cholinesterase inhibitors • Motor Unit 		
Muscle Contraction	<ul style="list-style-type: none"> • Describe the molecular Basis of muscle contraction, events involved in excitation contraction coupling. • Explain the types of Muscle contraction • Describe the sliding filament theory of muscle contraction Role of ATP and calcium pumps in the mechanism of relaxation of the muscle • Describe the Factors affecting the force of contraction 		
Smooth Muscle	<ul style="list-style-type: none"> • Structure, distribution, types, molecular mechanism of contraction 		



Factors modulating smooth muscle contraction And Properties	<ul style="list-style-type: none"> List the various factors that modulate smooth muscle contraction like stretch, sympathetic nervous system, circulating substances etc. Describe the special properties of smooth muscle like latch-bridge mechanism and plasticity 		
Digestive System Introduction to GIT,			
Salivary Glands	<p>Name the Salivary Glands composition</p> <ul style="list-style-type: none"> Functions of saliva. 	<p>Deficient salivation</p> <p>–</p> <p>Xerostomia</p>	



	<ul style="list-style-type: none"> Describe the regulation of salivary, secretion 		
Stomach	<p>Describe the composition and functions of gastric secretion</p> <ul style="list-style-type: none"> Describe the mechanism of gastric acid Secretion <p>Discuss regulation of gastric secretion</p>	<p>proton pump inhibitor</p> <p>Pernicious anemia</p>	
Exocrine Pancreas	<p>Exocrine Pancreas- Describe the composition and functions of pancreatic secretion</p> <p>Explain the regulation of pancreatic secretion</p>	<p>Reason for the alkaline pH of pancreatic secretion and its importance</p>	
Liver & Gall Bladder	<p>Describe the composition and functions of Bile</p> <ul style="list-style-type: none"> Regulation of secretion 	<ul style="list-style-type: none"> Gall Stones Jaundice 	
Liver & Gall Bladder	<p>Describe the composition and functions of Bile</p> <ul style="list-style-type: none"> Regulation of secretion 		
Small Intestine	<p>Discuss the secretions of small intestine and their functions & regulation of secretion</p>	<p>Malabsorption syndrome</p>	
Large intestine	<p>Explain the functions of large intestine and formation of faeces</p>	<p>dietary fibre</p> <ul style="list-style-type: none"> Constipation 	



GI Motility	Mastication, deglutition, vomiting gastric filling and emptying, movements of small intestine, large intestine, defaecation	State what is basic electrical rhythm of the gastrointestinal tract and its role	
Excretory System Function al Anatomy of Kidney Structure of Nephron	Structure & functions of kidney and its functional Renal circulation • Describe the structure of the juxtaglomerular apparatus.		



Concentration of Urine	<p>Countercurrent Mechanism</p> <ul style="list-style-type: none"> • Countercurrent Multiplier • Countercurrent Exchanger • Role of Urea 		
Regulation of Acid base Balance	<p>Blood buffers</p> <p>Role of Respiratory system and kidneys in maintaining acid base balance</p>	Anion gap	
Micturition	Describe the innervation of Bladder and reflex pathway of micturition	cystometrogram	
Endocrinology Introduction to Endocrinology	<ul style="list-style-type: none"> • Define Hormone • Classify and list the hormones based on chemical nature • Mechanism of negative and positive feedback regulation of hormone release 	<ul style="list-style-type: none"> • Describe the mechanism of action of hormones including the receptors and second messengers 	
Hypothalamus	<ul style="list-style-type: none"> • Describe the relationship between hypothalamus and pituitary including the Hypothalamohypophyseal tract and the hypothalamohypophyseal portal circulation • List the various releasing and inhibiting hormones released by the hypothalamus 		



<p>Pituitary Gland</p>	<ul style="list-style-type: none"> • List the various types of secretory cells of Anterior and Posterior Pituitary • List the Hormones secreted by the anterior and posterior pituitary. Growth hormone: • List the important actions of growth hormone, its effects on growth and metabolism • Describe the regulation of growth hormone secretion • List important stimuli that increase or decrease the secretion of GH • Prolactin: • Describe the actions and regulation of prolactin 	<ul style="list-style-type: none"> • Describe the physiological basis and important features of abnormalities of growth hormone secretion like - Gigantism, acromegaly and pituitary dwarfism • Describe the mechanism of action of Growth hormone (JAK-STAT Pathway) 	
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	<p>secretion</p> <ul style="list-style-type: none"> • List the features of excess Prolactin secretion • Antidiuretic hormone (ADH) • Explain the synthesis, release and mechanism, functions and regulation of actions of ADH • Discuss the disorders of ADH secretion <ul style="list-style-type: none"> - Diabetes Insipidus • Oxytocin • Explain the synthesis, release mechanism, functions and regulation of Oxytocin List the functions of Oxytocin • Role in milk ejection reflex and parturition 	<ul style="list-style-type: none"> • Explain how Insulin like growth factor (IGF) or Somatomedin mediates the actions of growth hormone • Types of Diabetes Insipidus • Panhypopituitarism • Sheehan's Syndrome • Postpartum Pituitary Necrosis 	
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<p>Thyroid Gland (Horizontal and Vertical Integration)</p>	<ul style="list-style-type: none"> • Explain the functional Anatomy of Thyroid Gland • List the steps involved in the synthesis of thyroid hormones • Explain the mechanism of release of Thyroid Hormone • Explain the transport actions of thyroid hormone • Describe the regulation of thyroid hormone secretion • List the causes and features of Hypo secretion of thyroid hormones - Myxedema and Cretinism, Goitre and features of Hypothyroidism • List the causes and features Hypersecretion of thyroid hormones – Gigantism and Acromegaly • Calcitonin • Secretion and action of Calcitonin 	<ul style="list-style-type: none"> • Explain the physiological basis for Simple Goitre • List the differences between dwarfism and cretinism 	
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	<p>Glucocorticoids and sex steroids</p> <ul style="list-style-type: none"> • Discuss the causes and features of Cushing's Syndrome and Addison's Disease • Adrenal medulla: • Synthesis and physiological effects of epinephrine and nor-epinephrine on various systems of the body • Factors that regulate the secretion of adrenal medullary hormones 	<p>hormone synthesis</p> <ul style="list-style-type: none"> • Diseases related to Mineral ococorticoi ds • Conn's Syndrome • Aldosterone Escape • Atrial Natriuretic Peptide (ANP) 	
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<p>Endocrine Pancreas</p>	<ul style="list-style-type: none"> • Name the different cells present in the Islets of Langerhans • Physiological stimulus for Insulin secretion • List the target cells of Insulin and the cells that do not require insulin action for glucose uptake • Mention the mechanism of action of Insulin on its receptor • List the important actions of insulin • List the various factors that regulate insulin secretion • Describe the features of hypersecretion of Insulin and Hypoglycemia • Glucagon • List the important actions of glucagon 	<ul style="list-style-type: none"> • Describe the steps in the biosynthesis of Insulin and the origin of the C-peptide (Connecting peptide) • Diabetes Mellitus: • Discuss the Pathophysiology of Diabetes mellitus • List the hormones that raise blood sugar level 	
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<p>Reproductive System Sex Determination</p>	<ul style="list-style-type: none"> • Differentiate between Genetic sex, Gonadal sex and phenotypic sex. • Describe the role of SRY gene and testis determining factor in development of gonads • Describe the role of testosterone and Mullerian inhibiting substance in the development of male and female internal genitalia 	<ul style="list-style-type: none"> • Discuss the role of dihydrotestosterone in the development of external genitalia 	
<p>Male</p>	<ul style="list-style-type: none"> • Describe the functional anatomy of the male 	<ul style="list-style-type: none"> • Outline the steps 	



<p>Reproductive Physiology</p>	<p>reproductive tract (Testis seminiferous tubules, Sertoli cells, Leydig cells, Blood Testis barrier, Epididymis, Vas deferens, Seminal vesicle, Prostate gland).</p> <ul style="list-style-type: none"> • Describe the blood- testis barrier and its function • Discuss factors that regulate Spermatogenesis • Describe the structure of spermatozoa • Describe the source, mechanism of action and functions of testosterone and dihydrotestosterone • State the source and functions of inhibin Discuss the hypothalamic and pituitary control on testicular function and Feed back control of testicular hormones on hypothalamus and pituitary • Describe the role of prostate, seminal vesicles in reproductive function • Describe the mechanisms that cause erection and ejaculation • State what is capacitation and discuss the changes that occur during capacitation 	<p>involved in spermatogenesis</p> <ul style="list-style-type: none"> • State the composition of semen and recognize use of semen analysis as a test to evaluate infertility • Discuss about abnormalities of the male reproductive system: <ul style="list-style-type: none"> • Hypogonadism • Cryptorchidism 	
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<p>Puberty Menopause Pituitary Gonadotropins (FSH,LH) and Prolactin</p>	<ul style="list-style-type: none"> • Describe the mechanism of action functions and regulation of secretion of pituitary gonadotropins and prolactin • Explain the changes that occur during puberty and describe the mechanism of onset of puberty • Define menopause and describe the physiological changes during menopause 	<ul style="list-style-type: none"> • Discuss causes of precocious and delayed puberty 	
<p>Female reproductive system</p>	<ul style="list-style-type: none"> • Describe the Functional anatomy of the female reproductive system • Outline the stages of Oogenesis • State differences between oogenesis and spermatogenesis • Describe the development of ovarian follicles (Stages of follicle development, ovulation, 	<ul style="list-style-type: none"> • Differences between oogenesis and spermatogenesis • Discuss the physiological basis of use of synthetic estrogens 	



	<p>luteinisation, luteal regression)</p> <ul style="list-style-type: none"> Describe the control of follicular 	<p>and progestins as oral contraceptives</p>
	<p>development, ovulation and luteinisation (role of FSH, estrogen and LH)</p> <ul style="list-style-type: none"> Describe the process of follicle attrition List the hormones produced by the ovary Illustrate the synergistic role of thecal and granulosa cells in steroidogenesis Discuss the mechanism of action and functions of estrogen and progesterone Describe the feedback regulation of ovarian function Describe the physiological changes occurring in ovaries, uterus, cervix, vagina and breast during menstrual cycle Discuss and illustrate the hormonal changes during the menstrual cycle (changes in FSH, LH, estrogen and progesterone) 	<ul style="list-style-type: none"> Describe the mechanism of ovulation State the tests for ovulation and their physiological basis Common causes of anovulatory cycles (physiological, PCOD) Protein hormones produced by the ovary and state their source and functions Identify common causes of anovulatory cycles (physiological, PCOD)



<p>Physiology of</p>	<ul style="list-style-type: none"> • Outline the process of fertilization implantation and placental formation 	<ul style="list-style-type: none"> • Physiology cal basis 	
<p>Pregnancy</p>	<ul style="list-style-type: none"> • Discuss the importance of corpus luteum of pregnancy • Discuss the functions of placenta. • Discuss the secretion and function of hCG from the placenta. • Describe the role of hormonal and mechanical factors influencing labor • Describe the changes that occur in the various organ systems in the mother during pregnancy 	<ul style="list-style-type: none"> • of immunological tests for pregnancy based on hCG • Parturition • Source and functions of relaxin 	



Lactation	<ul style="list-style-type: none"> • Describe the Role of estrogen and progesterone in breast development • Describe the mechanism that causes initiation of lactation after delivery • Describe the role of Prolactin and prolactin inhibitory factor (Dopamine) in lactation • Describe the Milk ejection reflex 	<ul style="list-style-type: none"> • Role prolactin inhibitory factor (Dopamine) in lactation • Discuss the effect of lactation on menstrual cycle 	
Contraception	<ul style="list-style-type: none"> • Classify male & female contraceptive methods-(temporary and permanent) • Describe the physiological basis of the various methods of contraception 	<ul style="list-style-type: none"> • Details of contraceptives devices, side effects 	
Cardiovascular System Introduction to CVS	Functional anatomy and innervation of heart		



<p>Conducting system of HeartSA Node</p>	<p>.Origin and propagation of cardiac impulse ventricular cell action potential(fast AP).</p> <ul style="list-style-type: none"> • Describe how the action potential leadsto an increase in cytosolic calcium concentration • Describe excitation-contractioncoupling • State the basic concepts of the slidingfilament theory of contraction 	<ul style="list-style-type: none"> •Intrinsic rate of theSA node and influence of autonomic nervous system,hormones and temperature. • Sinus arrhythmia, sinus bradycardia, sinus tachycardia • Record respiration with a stethograph or respiration belt transducer 	
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		exchanger (NCX)	
Cells of conducting pathway	<ul style="list-style-type: none"> • State the type of: • AV node AP - similar to SA nodal cell (slow AP) • His Bundle cell: fast AP • Purkinje fibres: fast AP 		
Properties of Cardiac Muscle	<ul style="list-style-type: none"> • Automaticity • Excitability • Conductivity • Contractility 		
Cardiac Cycle	<ul style="list-style-type: none"> • Describe with a diagram, the chronological relationship of the following events shown on the same time axis: • ECG • Valvular events • Heart sounds • Pressure curves: Left ventricular pressure, Atrial pressure and aortic pressure • Ventricular Volume curve: volume changes in ventricles, JVP Arterial pulse potential. 	<ul style="list-style-type: none"> • Concept of Murmurs • Timing of Murmurs • State the timing of murmurs in various valvular and congenital heart defects • Cardiac Catheterization 	



ECG	<ul style="list-style-type: none"> • Describe the 12 Leads in which ECG is recorded. • State the rationale of recording from multiple leads. • Identify the lead which is commonly used to monitor patients continuously. • Describe the P, QRS, T and U waves of an ECG in lead II configuration and describe the electrical events responsible for these waves • Describe PR and QT intervals and state what they represent • Describe the significance of ST segment being on the isoelectric line in a normal ECG • Record an ECG in a human subject in all 12 leads • Calculate rate from a normal ECG tracing 	<ul style="list-style-type: none"> • Hyperkalemia • Ventricular tachycardia • State the causes for PR prolongation • Describe the types of Heart block as represented by ECG changes • Arrhythmias 	
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	<ul style="list-style-type: none"> • Identify if every QRS complex is preceded by a P wave and if every P wave is followed by a QRS complex • State in what conditions the above will not happen 	<ul style="list-style-type: none"> • His bundle electrogram 	
Cardiac Output	<ul style="list-style-type: none"> • Definition of Stroke Volume, Cardiac Index, EDV,ESV, and EF • Discuss the determinants of cardiac output • Describe the regulation of cardiac output • Discuss high output and low output states 	<ul style="list-style-type: none"> • Methods of Measuring Cardiac Output 	
Heart Rate	<ul style="list-style-type: none"> • Innervation of Heart – Parasympathetic and Sympathetic • Normal Values • Regulation of Heart Rate • Factors affecting Heart Rate 	<ul style="list-style-type: none"> Tachycardia Bradycardia Arrhythmias 	



<p>Blood Pressure</p>	<ul style="list-style-type: none"> • Define the following terms: • Mean arterial blood pressure, Systolic pressure, Diastolic pressure, pulse pressure • Describe the determinants of blood pressure • Discuss the short-term (neural and hormonal) and long term (renal) mechanisms regulating blood pressure (with special reference to shock and exercise). • Demonstrate the method of measurement of blood pressure using a sphygmomanometer. • Describe the principle of measuring blood pressure by sphygmomanometry • Discuss other methods of measuring blood pressure by sphygmomanometer • Cardiovascular changes during exercise and postural changes 	<ul style="list-style-type: none"> • Hypertension • Hypotension • Hypertension • Hypertension 	
<p>Cardiovascular homeostasis</p>	<ul style="list-style-type: none"> • Features and regulation of the following circulations: • Coronary Changes in blood flow during different phases of cardiac 		



Coronary circulation	<ul style="list-style-type: none"> • Features and regulation of the following circulations: • Coronary <p>Changes in blood flow during different phases of cardiac cycle Methods for measuring coronary blood flow sympathetic regulation versus local metabolic factors in the regulation of the regional circulations mentioned above.</p>	Angina pectoris Myocardial infarction	
Hypertension	<ul style="list-style-type: none"> • State the normal ranges for systolic and diastolic blood pressures in the various age groups • Define hypertension 	<ul style="list-style-type: none"> • Discuss the risk factors for essential hypertension and causes of secondary hypertension 	
Respiratory System Functional Anatomy	<ul style="list-style-type: none"> • Functional Anatomy of the respiratory tract • Functions of nose and para-nasal sinuses • Conducting zone and respiratory zone • Pulmonary vasculature • Structure of alveolus & alveolo capillary membrane 	Examination of RS	
Muscles of Respiration	<ul style="list-style-type: none"> • Muscles of Inspiration and Expiration • Accessory Muscles of respiration 		



Surface Tension Surfact	<ul style="list-style-type: none">• Surface Tension in air liquid interface• Law of Laplace• Role of surfactant	<ul style="list-style-type: none">• Respiratory Distress Syndrome	
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	<ul style="list-style-type: none"> • State the recoil nature of Lungs and chest wall • State the values of intra alveolar pressure, Intrapleural pressure • Discuss the changes in alveolar and intra pleural pressures during respiration • Identify the sites of air way resistance • Indicate changes in airway resistance withinspiration and expiration • Explain the action of autonomic nervous system on bronchial tone • List histamine as a bronchoconstrictor • Recognise that airway resistance is increased in obstructive lung diseases • Define lung compliance and relate it to clinical conditions in which it is altered • State clinical conditions in which work of breathing is increased 		
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<p>Lung Volumes and Capacities</p>	<ul style="list-style-type: none"> • Define the lung volumes and capacities; state thenormal values and discuss their physiological variations • Explain the recording of the Spirogram with a diagram and recognize the volumes and capacitieswhich cannot be measured by spirometry • Record the lung volumes and capacities of anormal subject using a spirometer • Discuss the physiological significance of the Residual volume & functional residual capacity • Describe the forced expiratory spirogram and describe FEV1, FVC and the FEV1/FVC ratio andits variations in obstructive and restrictive lung diseases. • Define peak expiratory flow & state its normal value • Record peak expiratory flow in abnormal subject 	<ul style="list-style-type: none"> • List the common causes Pathology & clinical features of obstructive and restrictive lung diseases. • Asthma • COPD • Emphysema • Chronic bronchitis • State the physiologicalbasis of tests to differentiate them. • Recognize the flow-volume curves • Methods of 	
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	<ul style="list-style-type: none"> Record FEV1, FVC and calculate the FEV1/FVC ratio in a normal subject Interpret altered values of absolute lung volumes, peak expiratory flow and FEV1/FVC ratio in restrictive and obstructive lung diseases Define minute ventilation, anatomical dead space, physiological dead space & alveolar ventilation Discuss the effect of changes in respiratory rate and tidal volume on alveolar ventilation 	<p>determining FRC and RV Helium dilution method</p> <ul style="list-style-type: none"> Whole body plethysmography Measurement of deadspace 	
Alveolar Ventilation	<ul style="list-style-type: none"> Total ventilation = Tidal Volume x Respiratory Rate Dead Space and Classification Alveolar Ventilation Factors affecting alveolar ventilation 	Measurement of DeadSpace	



Gas Exchange	<ul style="list-style-type: none"> • Discuss the factors that affect rate of gas exchange at lung & tissue level, with application to clinical conditions State Fick's law of diffusion • Discuss normal composition of atmospheric, tracheal and alveolar air and recognize the conditions which can affect it • Discuss the normal partial pressures of gases in blood entering and leaving lung • Explain oxygen uptake and carbon dioxide elimination by lungs & tissues and state the normal rates of the same • Define respiratory exchange ratio and state its normal values • State normal time taken for gas equilibration & its application in exercise • State the physiological causes for normal alveolar-arterial oxygen difference • Explain the dependence of carbon dioxide elimination on ventilation • Define physiological shunt 	<ul style="list-style-type: none"> • Define Type I respiratory failure and state the common causes • Explain Type I respiratory failure due to unequal V/Q distribution even when total ventilation and perfusion may be normal • State the Alveolar gas equation and discuss its application • Recognize that arterial PCO₂ is equal to alveolar PCO₂ and that arterial PCO₂ can be used in the alveolar gas equation 	
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		<ul style="list-style-type: none">• State the causes for abnormal Alveolar – arterial oxygen difference• Distinguish between intrapulmonary and extrapulmonary right to left shunts.	
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<p>Transport of Oxygen</p>	<ul style="list-style-type: none"> • Explain the forms of oxygen transport in blood • Discuss hemoglobin affinity for oxygen • Explain & illustrate oxygen hemoglobin dissociation curve and discuss the factors affecting it and the physiological advantages of the curve • Explain Bohr effect • Discuss oxygen carrying capacity of blood • Differentiate between oxygen content of blood & % oxygen saturation of hemoglobin • Define hypoxemia and hypoxia; explain the physiological basis of types of hypoxia with examples • Define cyanosis and differentiate between conditions in which it occurs and may not occur 	<p>State the physiological basis of oxygen therapy as treatment for the different types of hypoxias</p>	
<p>Transport of Carbon dioxide</p>	<ul style="list-style-type: none"> • Explain the forms of carbon dioxide transport in blood • Explain the role of chloride shift and Haldane effect 		



<p>Regulation of Respiration</p>	<ul style="list-style-type: none"> • Express the concept of the sensors, central controller in brain & effectors in the respiratory control system • Describe the location and functions of the respiratory centres in brain; describe the current explanation for the basic rhythm of respiration • Describe the effects of neural inputs on respiration in terms of the voluntary 	<ul style="list-style-type: none"> • State the normal values of arterial blood gases (ABG) and interpret altered values 	
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	<p>cortical input, limbic input, peripheral afferent inputs (Heringbreiter reflexes, J</p>	<p>• State the causes of</p>	
	<p>receptor input, proprioceptor input, and other peripheral inputs)</p> <ul style="list-style-type: none"> Express the aim of chemical control of respiration; explain the role of peripheral and central chemoreceptors; explain the feedback control of ventilation to regulate gas exchange & maintain normal levels of arterial blood gases and pH Discuss and compare the influence of arterial carbon dioxide and oxygen on ventilation in health and in disease Describe Cheyne-stokes breathing, state its causes, explain the physiological and pathophysiological mechanisms that produce it; state the abnormality in Biot's breathing Demonstrate the effect of apnoea & hyperventilation on respiration; demonstrate the effect of breathing through a tube and the effect of speech & cough on respiration 	<p>asphyxia</p>	
<p>Pulmonary Function Tests</p>	<ul style="list-style-type: none"> Spirometry Arterial Blood Gas Analysis Peak Flow Meter Pulseoxymetry 		
<p>Neuronal organization at spinal cord level</p>	<p>Neural Tissue Nerve Fibres Electrical properties of the nerve cell membrane</p>	<p>Numerical classification of sensory fibres</p> <ul style="list-style-type: none"> Mechanism of 	

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Synapse, receptors, reflexes, sensations and tracts	Define the structure properties of synapse: classification of reflexes ascending and descending tracts, Types of sensations	Pathway for proprioception	
Physiology of pain	Pathway for transmission of pain, fast pain & slow pain, referred pain	Endogenous Analgesic system and gate control theory	
Cerebellum Thalamus Hypothalamus, Cerebral cortex	Structure, functions, connections and applied aspects of cerebellum, thalamus, hypothalamus, cerebral cortex	cerebellar lesions cerebellar function tests, thalamic syndrome, corpus callosum	
CSF	• Describe the composition, Secretion, Circulation, Drainage and Functions	• Papilledema • Hydrocephalus	
Autonomic nervous system	Organization of sympathetic and parasympathetic nervous system.		



Special Senses Vision, Hearing, Taste and Smell	Fundamental knowledge of Vision, Hearing, Taste and Smell		
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Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics.

7. PRACTICALS

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

PROCEDURES

- a. Enumeration of Red Blood Cells
- b. Enumeration of White Blood Cells
- c. Differential leucocyte counts
- d. Determination of Haemoglobin
- e. Determination of blood group
- f. Determination of, bleeding time and clotting time
- g. Examination of pulse
- h. 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 gastrocnemius
sciatic preparation. Simple muscle curve, effects of two successive stimuli, effects of increasing strength of stimuli, effects of temperature, genesis of fatigue and tetanus. Effect of after load and free load on muscle contraction, calculation of workdone.
- Electrocardiography: Demonstration of recording of normal Electro cardiogram
- Clinical examination of cardiovascular and respiratory system.

VIVA - 10 MARKS

	Examination	Internal Assessment	Viva	Total
Theory	35	5	10	50
Practicals	45	5	-	50
Total				100

1. FORMATIVE / INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of twoexaminations shall be considered. The Internal Assessment marks to be submitted to the university, once in every three months. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall besent to the University once in every 3 months.

Topics for each Assessment

- General Physiology, Blood, Nerve and Muscle Physiology.
- Gastro intestinal Tract.

- c. Cardiovascular System.
- d. Respiratory System.
- e. Excretory System, Endocrinology and Reproductive System.
- f. Central Nervous System And Special Senses.

2. RECORD NOTE / LOG BOOK

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

3. TEXT BOOKS

- i) A.K. Jain ;Human Physiology for BDS students
- ii) Chauduari ;Concise Medical Physiology

4. REFERENCE BOOKS

- i) Guyton ; Textbook of Physiology
- ii) Berne & Levey; Physiology, 2nd edition
- iii) West-Best & Taylor's, Physiological basis of Medical Practise, 11th edition.



BIOCHEMISTRY

1. GOAL

The broad goal of the teaching of undergraduate students in biochemistry is to make them understand the scientific basis of the life processes at the molecular level and to orient them towards the application of the knowledge acquired in solving dental oriented clinical problems.

2. OBJECTIVES

KNOWLEDGE AND UNDERSTANDING

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

- i. describe the molecular and functional organization of a cell and list its subcellular components;
- ii. delineate structure, function and inter-relationships of biomolecules and consequences of deviation from normal;
- iii. summarize the fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is altered;
- iv. describe digestion and assimilation of nutrients and consequences of malnutrition;
- v. integrate the various aspects of metabolism and their regulatory pathways;
- vi. explain the biochemical basis of inherited disorders with their associated sequelae;
- vii. describe mechanisms involved in maintenance of body fluid and pH homeostasis;
- viii. outline the molecular mechanisms of gene expression and regulation, the principles of genetic engineering and their application in dentistry
- ix. summarize the molecular concepts of body defence and their application in dentistry
- x. outline the biochemical basis of environmental health hazards, biochemical basis of cancer and carcinogenesis
- xi. explain the principles of various conventional and specialized laboratory investigations and instrumentation analysis and interpretation of a given data relevant to dentistry
- xii. suggest experiments to support theoretical concepts and clinical diagnosis.

SKILLS:

At the end of the course, the student should be able to : (1) make use of conventional techniques/instruments to perform

biochemical analysis relevant to clinical screening and diagnosis; (2) analyze and interpret investigative data; (3) demonstrate the skills of solving scientific and clinical problems and decision making in dentistry.

ATTITUDE:

At the end of the course, the student should be able to understand the biochemical basis of the health and diseases.

INTEGRATION:

The knowledge acquired in biochemistry should help the students to integrate molecular events with structure and function of the human body

KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area/ personal care as per universal protection, and disposal of medical wastes in the appropriate modes.

Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

COMPUTER PROFICIENCY

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes. Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses, and online courses. The following validation is required and must be completed.

- i. Technological Requirements for all Graduate Students
- ii. A laptop or desktop computer that supports the following requirements
 - a. Operating system requirements
 - b. Internet browser requirements
 - c. Reliable and consistent access to the internet
 - d. Antivirus software which is current and consistently updated
 - e. Microsoft Office
 - f. Adobe Reader (or equivalent to view PDF files)

3. COMPETENCIES

- i. General skills:
- Apply knowledge& skills in day to day practice



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- Apply principles of ethics
- Analyze the outcome of treatment
- Evaluate the scientific literature and information to decide the treatment
- Participate and involve in professional bodies
- Self-assessment & willingness to update the knowledge & skills from time to time
- Involvement in simple research projects
- Minimum computer proficiency to enhance knowledge and skills
- Refer patients for consultation and specialized treatment
- Basic study of forensic odontology and geriatric dental problems
- ii. Practice Management :
 - Evaluate practice location, population dynamics & reimbursement mechanism
 - Co-ordinate & supervise the activities of allied dental health personnel
 - Maintain all records
 - Implement & monitor infection control and environmental safety programs
 - Practice within the scope of one's competence
- iii. Communication and Community Resources:
 - Assess patients goals, values and concerns to establish rapport and guide patient care
 - Able to communicate freely, orally and In writing with all concerned
 - Participate in improving the oral health Of the individuals through community activities.
- iv. Patient Care – Diagnosis:
 - Obtaining patient's .history in a methodical way
 - Performing thorough clinical examination
 - Selection and interpretation of clinical, radiological and other diagnostic information
 - Obtaining appropriate consultation
 - Arriving at provisional, differential and final diagnosis
- v. Patient Care - Treatment Planning:
 - Integrate multiple disciplines into an individual



comprehensive sequence treatment plan using diagnostic and prognostic information

- Ability to order appropriate investigations

- Recognition and initial management of medical emergencies that may occur during dental treatment
- Perform basic cardiac life support
- Management of pain including post operative
- Administration of all forms of local anaesthesia
- Administration of intra muscular and venous injections
- Prescription of drugs, pre operative, prophylactic and therapeutic requirements
- Uncomplicated extraction of teeth
- Transalveolar extractions and removal of simple impacted teeth
- Minor oral surgical procedures
- Management of oro-facial infections
- Simple orthodontic appliance therapy ,
- Taking, processing and interpretation of various types of intra oral radiographs
- Various kinds of restorative procedures using different materials available
- Simple endodontic procedures
- Removable and fixed prosthodontics
- Various kinds of periodontal therapy
- To sensitize the students on the ethical issues in the form of Lectures.
- Introduction to ethics.
- Ethics of the individual.
- Profession ethics.
- Research ethics

vi. Competencies Specific to the subject



4. TEACHING HOURS

Theory classes: Total: 70 hours.

S. no	Topic	Number of hours
1	Cell	1
2	Chemistry of carbohydrates	3



3	3	Chemistry of lipids	3	Chemis
4	4	Chemistry of proteins	4	Chemis
5	5	Chemistry of nucleic acids	5	Chemis
6	6	Vitamins	6	Vitamin
7	7	Minerals	7	Minera
8	8	Nutrition	8	Nutritio
9	9	Enzymes	9	Enzyme
10	10	Bioenergetics	10	Bioener
11	11	Carbohydrate metabolism	11	Carboh
12	12	Lipid metabolism	12	Lipid m
13	13	Protein metabolism	13	Protein
14	14	Integration of metabolism	14	Integrat
15	15	Hemoglobin, Immunoglobulins & plasma proteins	15	Hemog
16	16	Nucleotide metabolism & medical genetics	16	Nucleo
17	17	Homeostatic mechanisms in the body (pH, acid base, water and electrolyte balance)	17	Homeo electrol
18	18	Hormones	18	Hormo
19	19	Muscle ,Bone and connective tissue	19	Muscle
20	20	Metabolism of xenobiotics & oxygen toxicity	20	Metabo
21	21	Function tests	21	Function
22	22	Importance of ethical issues in laboratory medicine	22	Importa



5. TEACHING METHODOLOGY


Lectures, tutorials, seminars, small group discussions, integrated teaching modules, use of charts (paper-based clinicalscenarios) for case discussions, practical exercises and demonstrations



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	<p>Exocytosis and endocytosis</p> <p>Chemistry of Carbohydrates: Definition, biological importance and classification.</p> <p>Monosaccharides - Isomerism, anomerism.Sugar derivatives,</p> <p>Disaccharides.</p> <p>Polysaccharides. Components of starch and glycogen.</p> <p>Chemistry of Lipids : Definition, biological importance and classification.</p> <p>Fats and fattyacids. Introduction to compound lipids.</p> <p>Hydrophobic and hydrophilic groups.Cholesterol. Bile salts.</p> <p>Micelle.</p> <p>Chemistry of Proteins: Biological importance. Classification and properties of amino acids & proteins. Peptides.</p> <p>Introduction to protein structure.</p> <p>Denaturation. Fibrous protein: Collagen and elastin. Glycosaminoglycans.</p> <p>Classification, separation & functions of Plasmaproteins</p> <p>Chemistry of Nucleic acids: Biological importance of nucleic acids.Outline structure of DNA and RNA.</p>	<p>Glycosaminoglycans</p>	
<p>Macro Nutrients and Digestion</p>	<p>Digestion and absorption of carbohydrates, proteins & lipids</p>		<p> PRINCIPAL J.K.K.NATTRAJA DENTAL COLLEGE & HOSPITAL KUMARAPALAYAM - 638 183.</p>

<p>Micro Nutrients</p>	<p>Vitamins :Definition, classification,daily requirement, sources,biochemical functions</p>	<p>Introduction to antivitamins</p>	
	<p>anddeficiency symptoms of Vitamin A, Vitamin D, Vitamin E, Vitamin K, Vitamin B and Vitamin C.</p>	<p>and hypervitaminosis.</p>	



THEORY SYLLABUS

	<p>Minerals: Classification, sources, absorption, functions and daily requirement of Calcium, phosphorus, Iron, Iodine and Fluoride.</p> <p>Nutrition: Energy needs: Basal metabolic rate. Dietary fibres. Nitrogen balance. Essential amino acids. Protein calorie malnutrition .</p>	<p>Iodine: source, absorption & functions.</p> <p>Other trace elements.</p> <p>Balanced diet.</p>	
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Energy Metabolism	<p>Electron Transport Chain And Oxidative Phosphorylation Components of respiratory chain Oxidative Phosphorylation & mechanism of ATP generation, Inhibitors & uncouplers of ETC, & Clinical aspects</p> <p>Carbohydrate Metabolism: Glycolysis, pyruvate oxidation, citric acid cycle and Gluconeogenesis. Lactate metabolism .</p> <p>Introduction to glycogenesis, glycogenolysis. Importance of pentose phosphate pathway. Formation of glucuronic acid. Regulation of blood glucose. Diabetes mellitus and related disorders. Evaluation of glycemic status.</p> <p>Lipid Metabolism: Beta oxidation of fatty acids, Ketone body formation and utilisation, Outlines of cholesterol synthesis and breakdown.</p>	<p>Glycogen storage disorders, glucose 6-phosphate dehydrogenase deficiency</p> <p>fatty acid synthesis, lipogenesis and</p>	
Special aspects of Metabolism	<p>Importance of pentose phosphate pathway.</p> <p>Formation of glucuronic acid.</p> <p>Phosphocreatine formation. Transmethylation.</p>	<p>Biogenic Amines.</p> <p>Introduction to other functions of amino</p>	



		acids including onecarbon transfer. Detoxication: Typicalreactions. Examplesof toxic compounds. Oxygen Toxicity.	
Biochemical Genetics and Protein Synthesis	Structure and functions of DNA & RNA.	Antimetabolites and antibiotics interferingin replication, transcription and translation. Introduction to cancer, viruses andoncogen.	



<p>Enzyme and Metabolic Regulation</p>	<p>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. Serum enzymes in diagnosis Hormones: Brief introduction to thyroid hormones.</p>	<p>Introduction to second messengers, cyclic AMP, calcium ion, inositol triphosphate. Hyperthyroidism and hypothyroidism: Biochemical</p>	<p>Mechanism of action of steroid hormones, epinephrine, glucagon and insulin in brief.</p>
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	Acid base regulation & electrolyte balance: Normal pH of blood and its regulation.	evaluation. Approaches to treatment.	
Structural Components and Blood Proteins	Connective tissue: Collagen and elastin, Bone structure, Introduction to cytoskeleton. Haemoglobin & Immunoglobulins: Structure & functions of Heme & Immunoglobulins. Heme degradation. Other plasma proteins	Introduction to heme synthesis.	Myofibril and muscle contraction. Plasma lipoproteins.
Medical Biochemistry	a) Regulation of blood glucose, Diabetes mellitus & related disorders, Evaluation of glycemic index. b) Hyperthyroidism and hypothyroidism: Biochemical evaluation. Approaches to treatment. c) Hyperlipoproteinemias and atherosclerosis. d) Jaundice: Classification and evaluation. Liver function tests: Plasma protein pattern, serum enzymes levels. e) Kidney function tests & gastric function tests. f) Disorders of Acid base balance & Electrolyte balance. Ethics: - To sensitise the students on the ethical issues in the form of Lectures. - Introduction to ethics.		



Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics

6. PRACTICALS:

Hours

1. Qualitative analysis of carbohydrates-	
Identification of reducing & non reducing sugar	8
2. Colour reactions of proteins and amino acids	8
3. Normal constituents of urine-Demonstration-i) organic constituents	
ii) inorganic constituents	4
4. Abnormal constituents of urine	11
5. Analysis of saliva including amylase by qualitative methods	4
6. Blood glucose estimation – GOD/POD method	4
7. Serum total protein estimation - Biuret method	4
8. Urine creatinine estimation Demonstration	2

CHARTS – Discussion of clinical case scenarios

1. Paper electrophoresis charts/clinical data evaluation	2
2. Glucose tolerance test profiles	4
3. Serum lipid profiles	1
4. Profiles of hypothyroidism and hyperthyroidism	2
5. Acid base disorder	2

60

hours

8. THEORY EXAMINATION

Essay	1 × 10 marks =	10 marks
Short Notes	3 × 5 marks =	15 marks
Short answers	5 x 2 marks =	10 marks
	Total =	35 marks

9. PRACTICAL /CLINICAL EXAMINATION

- Quantitative estimation – 20
Marks Quantitative
estimation of analyst-
Glucose
Protein
- Qualitative analysis of abnormal constituents in urine- 15 marks
- Chart 6 marks
2 Charts 3 marks each.
- OSPE - 4 marks
2 Performance stations 2 marks each.

Total – 45 Marks

Viva -10Marks

	Examination	Internal Assessment	Viva	Total
Theory	35	5	10	50
Practicals	45	5	-	50
Total				100

10. FORMATIVE / INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical)

held at least 3times in a particular year and best of two examinations shall be considered. The Internal Assessment marks to be submitted to the university, once in every three months. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in every 3 months.

Topics for each Assessment

1. Cell & chemistry of carbohydrates, lipids and proteins
2. Enzymes, vitamins and minerals
3. Metabolism of carbohydrates, lipids and proteins
4. Hemoglobin, immunoglobulin, Nutrition and acid base disorders
5. Hormones, connective tissue, metabolism of xenobiotics and oxygen toxicity
6. Molecular biology

11. RECORD NOTE / LOG BOOK

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

12. Recommended Books:

1. D.M Vasudevan ,Text book of Biochemistry for Dental students
2. Ambika Shanmugam's Text book of Biochemistry

13. Reference Books:

1. Harper's Illustrated Biochemistry
2. Lippincotts Illustrated reviews
3. Text book of Biochemistry with clinical correlations 1997, T.N. Pattabiraman
4. Basic and applied Dental Biochemistry, 1979, R.A.D. Williams & J.C.Elliot.



3. DENTAL ANATOMY, EMBRYOLOGY AND ORAL HISTOLOGY

1. GOAL

To produce a dental graduate and clinician who is competent in examining, understanding and treating common oral disorders/diseases, alleviate pain, swelling, stomatodynia, stomatopyrosis, dysphagia and dysarthrosis using the best available evidence as per current knowledge and understanding of common oral diseases process; to employ reliable diagnostic modalities including but not limited to radiology, sialogram and to refer to a competent specialist in case of oral diseases with uncommon presentations, signs and symptoms.

2. OBJECTIVES

KNOWLEDGE AND UNDERSTANDING:

- To acquire an understanding of how cells, tissues, and organs develop and function in order to gain a clear perspective of these structures as a basis for understanding oral biology/ecology
- To develop a comprehension of the principles of embryogenesis and human development with emphasis on the face and structures of the oral cavity
- To understand, comprehend, describe, compare, and illustrate the histologic characteristics of oral tissues in health and diseased states
- To develop a professional vocabulary of terminology related to the head and neck, the oral complex, and the teeth so as to apply in clinical scenario
- To identify, locate, and relate the gross anatomical structures of the head and neck to include various teeth, the bones of the skull, musculature, major nerves, glands and the circulatory and lymphatic systems.
- To identify the histologic and anatomic features of the extra-oral and intraoral structures.
- To compare and contrast the human dentition in relationship to location, function, and morphology
- To identify, comprehend, describe the sequence and eruption patterns of primary and permanent teeth and their implications on future oral



and overall health

- To understand the oral physiology, unique biochemical basis behind of oral musculature, glands and movement

SKILLS:

- Able to carve and reproduce the morphology of human permanent teeth in wax blocks
- Able to identify different oral hard tissues in clinical situations
- Able to differentiate normal from abnormal and diseased states
- Able to identify various types of human teeth based on their morphology
- Able to appreciate the influence of age, gender and race on oral and para-oral structures
- Able to locate the different areas/surfaces of the teeth
- Able to understand the implications of the disease process and ageing on normal oral structures
- Able to appreciate the eruption and shedding pattern of human teeth
- Able to appreciate and integrate the concept of occlusion, range of human jaw movements in preclinical and clinical situations
- Able to use effectively the terminologies and anatomical terms for clinical and patient communications

KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area / personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

COMPUTER PROFICIENCY

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes. Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses, and online courses. The following validation is required and must be completed during the first year of study.

- i. Technological Requirements for all Graduate Students



- ii. A laptop or desktop computer that supports the following requirements
 - a. Operating system requirements
 - b. Internet browser requirements
 - c. Reliable and consistent access to the internet
 - d. Antivirus software which is current and consistently updated
 - e. Microsoft Office

3. COMPETENCIES

- i. General skills:
 - Apply knowledge & skills in day to day practice
 - Apply principles of ethics
 - Analyze the outcome of treatment
 - Evaluate the scientific literature and information to decide the treatment
 - Participate and involve in professional bodies
 - Self-assessment & willingness to update the knowledge & skills from time to time
 - Involvement in simple research projects
 - Minimum computer proficiency to enhance knowledge and skills
 - Refer patients for consultation and specialized treatment
 - Basic study of forensic odontology and geriatric dental problems
- ii. Practice Management :
 - Evaluate practice location, population dynamics & reimbursement mechanism
 - Co-ordinate & supervise the activities of allied dental health personnel
 - Maintain all records
 - Implement & monitor infection control and environmental safety programs
 - Practice within the scope of one's competence
- iii. Communication and Community Resources:
 - Assess patients goals, values and concerns to establish rapport and guide patient care
 - Able to communicate freely, orally and In writing with all concerned
 - Participate in improving the oral health Of the individuals



through community activities.

iv. Patient Care – Diagnosis:

- Obtaining patient's .history in a methodical way
- Performing thorough clinical examination
- Selection and interpretation of clinical, radiological and other diagnostic information
- Obtaining appropriate consultation
- Arriving at provisional, differential and final diagnosis



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v. Patient Care - Treatment Planning:

- Integrate multiple disciplines into an individual comprehensive sequence treatment plan using diagnostic and prognostic information
- Ability to order appropriate investigations
- Recognition and initial management of medical emergencies that may occur during dental treatment
- Perform basic cardiac life support
- Management of pain including post operative
- Administration of all forms of local anaesthesia
- Administration of intra muscular and venous injections
- Prescription of drugs, pre operative, prophylactic and therapeutic requirements
- Uncomplicated extraction of teeth
- Transalveolar extractions and removal of simple impacted teeth
- Minor oral surgical procedures
- Management of oro-facial infections
- Simple orthodontic appliance therapy ,
- Taking, processing and interpretation of various types of intra oral radiographs
- Various kinds of restorative procedures using different materials available
- Simple endodontic procedures
- Removable and fixed prosthodontics
- Various kinds of periodontal therapy

vi. Competencies specific to the subject

To gain knowledge about the microscopic configuration of normal histological structure of both soft and hard tissues.



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4. TEACHING METHODOLOGY

I. LECTURE

II. DEMONSTRATION

III. GROUP DISCUSSION

IV. SEMINAR PRESENTATION BY THE STUDENTS

5. THEORY SYLLABUS

TOPIC	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
Introduction to tooth morphology	<ul style="list-style-type: none"> ➤ Human dentition : types and functions ➤ Notation systems : Palmer’s, FDI system, Universal and Victor-Haderup system ➤ Tooth surfaces, their junctions – line angles and point angles ➤ Definition in terms used in dental morphology Contact areas and embrasures – clinical significance 	<ul style="list-style-type: none"> ➤ Dental formula 	Evolution of human dentition
Morphology of permanent teeth	<ul style="list-style-type: none"> ➤ Description of individual teeth, along with their endodontic anatomy and including a note on their chronology of development, differences between similar classes of teeth and identification of individual teeth. ➤ Variations and anomalies commonly seen in individual teeth. 		

	➤ Identification of individual deciduous teeth		
Occlusion	➤ Definition, factors influencing occlusion –basal bon, arch, individual teeth, external and internal forces and sequence of eruption	➤ Inclination of individual teeth – compensatory curves ➤ Centric relation and centric occlusion – protrusive, retrusive and lateral occlusion	➤ Introduction to and classification of malocclusion ➤ Clinical significance of normal occlusion
ORAL EMBRYOLOGY	Brief review of development of face, jaws, lips, palate and tongue with applied aspect		
Development of teeth	➤ Epithelial mesenchymal interaction, ➤ Detailed study of different stages of development of crown, root and supporting tissue of teeth and detailed study of formation of calcified tissues. ➤ Applied aspects of disorders in development of teeth.	Deviation or aberration in tooth formation	Exposure to microscopical slides



Eruption of deciduous and permanent teeth	<ul style="list-style-type: none"> ➤ Mechanisms in tooth eruption ➤ Theories and histology of eruption, formation of Dentogingival junction, role of gubernacular chord in eruption of permanent teeth. Clinical or applied aspect of disorders of eruption. 	Physiological toothmovement – Preeruptive, Eruptive and Posteruptive tooth movements	
Shedding of teeth	<ul style="list-style-type: none"> ➤ Factors and mechanism of shedding of deciduous teeth 	Root resorption and resorptive cell	



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ORAL HISTOLOGY Enamel	Detailed microscopic study	Age changes	➤ Fluoride applications ➤ Etching ➤ Clinical and forensic significance
Dentin	➤ Detailed microscopic study ➤ Dentin hypersensitivity ➤ Reaction of pulp tissue to varying insultson exposed dentin		➤ Clinical and forensic significance
Cementum	Detailed microscopic study	➤ Hypercementosis ➤ Repair	Clinical and forensic significace
Pulp	➤ Detailed microscopic study ➤ Functions ➤ Age changes and Pulp calcification	Pulp anatomy – pulpcavity, pulp chamber, pulp horn,pulp canal, apical and lateral foramen	Clinical significance



<p>Periodontal ligament and Alveolar bone</p>	<ul style="list-style-type: none"> ➤ Detailed microscopic study ➤ Functions ➤ Age changes 	<p>Histological changes in periodontal ligament and bone in normal and orthodontic tooth movement</p>	<ul style="list-style-type: none"> ➤ Applied aspects of alveolar bone resorption
<p>Oral mucosa</p>	<ul style="list-style-type: none"> ➤ Detailed microscopic study ➤ Variation in structure in relation to functional requirements ➤ Mechanisms of keratinisation ➤ Clinical parts of gingiva ➤ Dentogingival and Mucocutaneous junctions ➤ Lingual papillae 	<p>Age changes and clinical considerations</p>	



Salivary glands	<ul style="list-style-type: none"> ➤ Detailed microscopic study of acini and ductal system. ➤ Age changes and clinical considerations. 		
TM Joint	<ul style="list-style-type: none"> ➤ Review of basic anatomical aspects, microscopic study and clinical considerations. 		
ORAL PHYSIOLOGY <ul style="list-style-type: none"> • Saliva 	<ul style="list-style-type: none"> ➤ Composition of saliva – variations, formation of saliva ➤ Functions ➤ Role of saliva in dental caries and applied aspects of hyper and hypo salivation. 	Mechanism of secretion, salivary reflexes, brief review of secretomotor pathway	
<ul style="list-style-type: none"> • Mastication 	Peculiarities of masticatory muscles	Masticatory cycle, masticatory reflex and neural control of mastication	Masticatory force and its measurement, need of mastication
<ul style="list-style-type: none"> • Deglutition 	<ul style="list-style-type: none"> ➤ Stages of deglutition, swallow in infants 	neural control of deglutition and dysphagia	



<ul style="list-style-type: none"> Calcium, phosphorus and fluoride metabolism 	<p>Source, requirements, absorption, distribution, function and excretion, clinical considerations</p>	<p>hypocalcemia and hypercalcemia, hyperphosphatemia and hypophosphatemia and fluorosis</p>	
<ul style="list-style-type: none"> Theories of mineralisation 	<p>Definition, mechanism, theories and their drawbacks</p>	<p>Applied aspects of physiology of mineralisation</p>	<p>Pathological considerations – calculus formation</p>



Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics. Cadaver ethics.

6. PRACTICALS:

Drawing and wax carving of permanent tooth except maxillary second, mandibular first, maxillary second and third molars. Microscopic study of tooth germ, enamel, dentin, pulp, cementum, periodontal ligament, alveolar bone, salivary glands and oral mucosa including papillae and taste buds.

7. THEORY EXAMINATION (3 Hours)

- I. Elaborate on : 2 x 10 = 20 marks
- II. Write Notes on: 10 x 5 = 50 marks

70 marks

8. PRACTICAL / CLINICAL EXAMINATIONS

Scheme for practical examination—spotters/carving/microscopic identification of slides - 90 marks.

Carving - 30 Marks

Spotters and microscopic identification of slides - 60 Marks.

Total - 90 Marks

Viva – 20 marks

Viva – emphasis on tooth numbering systems, chronology of eruption, nerve and blood supply, mechanism of dental pain and dentine sensitivity, calcium and phosphate metabolism, bone, shedding and eruption of teeth with molecular basis.

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100
Total				200

1. FORMATIVE / INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3 times in a particular year and best of two examinations shall be considered. The Internal Assessment marks to be submitted to the university, once in every three months. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in every 3 months.

2. RECORD NOTE / LOG BOOK :

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

3. TEXT BOOKS :

- (i) Recommended books (Orban's Oral histology & embryology) and (Wheeler's Dental anatomy, physiology and occlusion). Suggested books (Ten Cate's Oral Histology).
- (ii) Orban's oral histology and embryology – S.N. Bhaskar 10th Ed
- (iii) Ten Cate's Oral histology _A Nanci 8th ed
- (iv) Oral development and histology – James and Avery
- (v) Wheeler's dental anatomy, physiology and occlusion – Major.M. Ash
- (vi) Dental anatomy -its relevance to dentistry – Woelfel and Scheid
- (vii) Applied physiology of mouth – Lavelle
- (viii) Physiology and biochemistry of mouth - Jenkins

4. REFERENCE BOOKS :

- (i) Fundamentals of Oral Histology and Physiology.
- (ii) Sicher and DuBrul's Oral Anatomy.
- (iii) Orban's Oral Histology & Embryology – S.N.Bhaskar
- (iv) Oral Development & Histology - James & Avery
- (v) Wheeler's Dental Anatomy, physiology & Occlusion – Major.M.Ash
- (vi) Dental Anatomy – its relevance to dentistry – Woelfel & Scheid
- (vii) Applied Physiology of the mouth – Lavelle
- (viii) Physiology & Biochemistry of the mouth - Jenkins



4. GENERAL PATHOLOGY

1. GOAL

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

Apply the scientific study of disease processes, which result in morphological and functional alterations in cells, tissues and organs to the study of pathology and the practice of dentistry.

2. OBJECTIVES

a. KNOWLEDGE AND UNDERSTANDING:

- To demonstrate and analyze pathological changes at macroscopic and microscopic levels and explain their observations in terms of disease processes.
- To integrate knowledge from the basic sciences, clinical medicine and dentistry in the study of Pathology.
- To demonstrate understanding of the capabilities and limitations of morphological pathology in its contribution to medicine, dentistry and biological research.
- To demonstrate ability to consult resource materials outside lectures, laboratory and tutorial classes.

b. SKILLS:

- A dental graduate should be able to identify the abnormal diseases like tumor, non tumours and also to arrive what are the investigations needed for the diagnosis of the diseases.
 - Carry out certain investigations and ability to interpret lab findings.
- ###### c. ATTITUDE:

- A dental student must be willing to apply the knowledge

gained in pathology in the best interest of the patient and the community.

- Maintain a high standard of professional ethics in patient care and also in carrying out the diagnostic modalities.
- Willing to update knowledge in pathological conditions and diagnostic investigations from time to time.

d. INTEGRATION

The dental student must be able to integrate the pathological aspects with the diseases so that it helps to understand the disease nature and management of the disease.

e. COMPUTER PROFICIENCY

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes. Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses and online courses. The following validation is required and must be completed.

- i. Technological Requirements for all Graduate Students
- ii. A laptop or desktop computer that supports the following requirements
 - a. Operating system requirements
 - b. Internet browser requirements
 - c. Reliable and consistent access to the internet
 - d. Antivirus software which is current and consistently updated
 - e. Microsoft Office
 - f. Adobe Reader (or equivalent to view PDF files)

f. KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area / personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

3. COMPETENCIES

1. General skills

2. Practice Management
3. Communication and Community Resources
4. Patient Care – Diagnosis
5. Patient Care - Treatment Planning
6. Competencies specific to subject

4. TEACHING HOURS

Lecture hours - **55**

Practical hours - **55**

Total hours **110 hours**

5. TEACHING METHODOLOGY

Lectures, symposiums, vertical and horizontal integrated teachings, viva voce, CMEs etc. The objectives of teaching General Pathology can be achieved by various teaching techniques such as :

- a) Lectures
- b) Lecture Demonstrations
- c) Practical exercises
- d) Audio visual aids
- e) Small group discussions with regular feedback from the students
- f) Integrated Teaching
- g) Symposium and continuing medical education programmes



6.THEORY SYLLABUS

TOPIC	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
Introduction	<p>Cellular responses to stress & noxious stimuli, cellular adaptation of growth & differentiation (hyperplasia, hypertrophy, atrophy & metaplasia)</p> <p>Cell injury and cell death (cause & mechanism of reversible & irreversible injury)</p> <p>Morphology of cell injury (reversible & necrosis), examples of cell injury and necrosis (ischemic, hypoxic, reperfusion and chemical injuries)</p>	<p>Historical aspects; definition of terms; introduction to pathology, its applications and role in patient management.</p>	



	Apoptosis and sub-cellular responses to injury Intracellular accumulation, calcification & cellular aging;(Lipid, protein, glycogen and pigment accumulation; pathologic calcification; ageing)		
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<p>Inflammation/Repair</p>	<p>Introduction to body's immune response (innate & adaptive immunity; cells and tissues of immune system; cytokines; structure & function of HLA)</p> <p>General features of inflammation; history; stimuli for acute inflammation; vascular events; cellular events -leucocyte adhesion and transmigration</p> <p>Continuation of cellular events (chemotaxis, phagocytosis, defects of leucocyte function); termination of acute inflammatory response; outcome of acute inflammation; morphological patterns of acute inflammation;</p> <p>Chemical mediators (vasoactive amines; plasma proteins; AA metabolites; PAF; cytokines; chemokines;leucotrienes; NO; free radicals & neuropeptides)</p> <p>Chronic inflammation (cause, morphological features;cells of chronic inflammation; granuloma; systemic effects of inflammation; consequences of excessive/defective inflammation)</p> <p>Repair (healing; scar formation; cutaneous woundhealing);</p> <p>Repair (continued) (healing at special sites; factors</p>		
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Haemodynamic disturbances	Oedema, Hypotension, congestion, haemorrhage & haemostasis Thrombosis & embolism Infarction, Shock		
Disorders of Immunity	Disorders of immunity – mechanisms of hypersensitivity, Graft Rejection Autoimmunity – SLE Primary & secondary immunodeficiency Amyloidosis	Rheumatoid arthritis, systemic sclerosis, Sjogren's, MCD,	
Neoplasia	Definition, nomenclature, biology of tumour growth, differences between benign & malignant tumours Tumour spread & epidemiology Molecular basis of Neoplasia (essential alterations for malignant transformation, oncogenes, suppressor genes) Evasion of apoptosis; defects in DNA repair, telomerase and angiogenesis; invasion & metastasis; dysregulation of genes) Carcinogenesis (carcinogenic agents, molecular basis of carcinogenesis) Host defense, tumour immunity, clinical features, and laboratory diagnosis.		
Infectious	Mycobacterial infections – tuberculosis HIV & Hepatitis	Typhoid, syphilis	General principles



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diseases	Viruses	and others Fungal & parasitic infections	(categories, transmission & dissemination of microbes, mechanisms of microbial disease, immune evasion, infections in immunosuppressed hosts, tissue response to microbes) Pathology of common viral & bacterial infections(CMV, EBV, HPV, viruses, gram positive & negative bacterial infections)
Nutritional		Nutritional diseases	



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RBC & bleedin g disorder s	Development of haematopoietic cells, bone marrow,classification of anaemia Iron deficiency anaemia, Megaloblastic anaemia Bleeding disorders – classification, disorders ofplatelets Coagulation disorders		
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proliferative disorders including leucocytes
myelofibrosis Hodgkin Lymphoma Non-neoplastic

	Blood banking	disorders of lymphnode, spleen & thymus; classification of lymphoma	
Systemic Pathology	Atherosclerosis Hypertension, vasculitis	Congenital anomalies, aneurysms, tumors.	
The Heart	Ischemic heart disease & myocardial infarction Rheumatic fever; Infective endocarditic	Congenital heart disease, diseases of the myocardium, tumors of the heart; diseases of the pericardium	
Head and neck	Benign and malignant lesions of head and neck including oral cavity, salivary glands		
Kidney	Nephrotic syndrome – pathogenesis and pathology	Normal structure, congenital anomalies, cystic disease, laboratory tests in renal disease.	

Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; Environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment and public health ethics.

Instruments:

- i. RBC Pipette
- ii. WBC Pipette
- iii. ESR Westergrens tube

- iv. SAHLI'S hemoglobinometer
- v. PCV tube
- vi. Bone marrow biopsy needle
- vii. Bone marrow aspiration needle

8. PRACTICAL EXAMINATIONS- experiments, slides and OSPE

Lab experiments 45 marks

Major experiment – Hematology -

Peripheral smear/ DC - 15 Marks,

45 Minutes

Urine analysis

- 10 Marks, 30 Minutes

Minor experiment(OSPE)

- 10 Marks, 20 Minutes (for Hb%)

Spotters

- 10 Marks, 20 minutes

Total 45 marks

	Examination	Internal Assessment	Viva	Total
Theory	35	5	10	50
Practicals	45	5	-	50
Total				100

9. FORMATIVE/INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations shall be considered. The Internal Assessment marks to be submitted to the University, once in every three months. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in every 3 months.

Topics:

- i. Cell injury and adaptations, Inflammation wound healing
- ii. Hemodynamic changes Neoplasia
- iii. Infectious diseases Nutritional disorders
- iv. Disorders of circulations, Immunity, Diseases of oral cavity
- v. Diseases of the salivary glands, Bones, cardiovascular system
- vi. Hematology (RBC, WBC AND PLATELETS, LYMPHNODE, SPLEEN AND THYMUS)

10. RECORD NOTE / LOG BOOK:

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

11. TEXT BOOKS

- i. Robbins BASIC PATHOLOGY – by Kumar, Abbas and Aster- 1st South Asia edition
- ii. Text book of Pathology By Harsh Mohan 7th Edition
- iii. Andersons pathology Volume 1 And 2 by Ivan Damjanov & James Linder
- iv. 3. Wintrobe's Clinical Hematology by Lee, Bithell, Forster.

12. REFERENCE BOOKS:

- i. Robbins – Pathologic Basis of Diseases By Kumar and Kotran 10th Edition.
- ii. Ackermann Surgical Pathology
- iii. Microbiology – Prescott, et al.
- iv. Microbiology – Bernard D. Davis, et al.
- v. Clinical & Pathogenic Microbiology – Barbara J Howard, et al.
- vi. Mechanisms of Microbial diseases – Moselio Schechter, et al.



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MICROBIOLOGY

1. GOAL

To introduce the students to the exciting world of microbes and to provide an understanding of various branches of Microbiology, in order to deal with the etiology, pathogenesis, laboratory diagnosis, treatment, control and prevention of infections in dental practice.

2. OBJECTIVES

a. KNOWLEDGE AND UNDERSTANDING:

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

- i. Understand the basics of various branches of Microbiology and able to apply the knowledge relevantly.
- ii. 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.
- iii. Understand and practice various methods of Sterilisation and disinfection in dental clinics.
- iv. Have a sound understanding of various infectious diseases and lesions in the oral cavity.
- v. Awareness of Health care associated infections and their prevention in dental practice

b. SKILLS

- i. Student should have acquired the skill to diagnose, differentiate various oral lesions.
- ii. Should be able to select, collect and transport clinical specimens to the laboratory.
- iii. Should be able to carry out proper aseptic procedures in the dental clinic.
- iv. Interpretation of antimicrobial susceptibility tests and to make right choice of antibiotic based on spectrum of infection and ensure appropriate use to avoid antibiotic resistance.

c. ATTITUDE:

- i. To apply knowledge in the interest of the individual patient and community.
- ii. Maintain high standards of professional ethics in patient care and in carrying out diagnostic tests.
- iii. To update knowledge from time to time with regard to



diagnostics and immunoprophylaxis.

d. INTEGRATION:

At the end of integrated teaching the student shall acquire integrated knowledge from different disciplines which includes etiology, morphology, pathogenesis, clinical features, laboratory diagnosis, treatment, prevention and control of infectious diseases.

e. KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY

Knowledge about asepsis – disinfection and sterilisation : of instruments , clinical area/ personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

f. COMPUTER PROFICIENCY:

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses and online courses. The following validation is required and must be completed.

- i. Technological Requirements for all Graduate Students
- ii. A laptop or desktop computer that supports the following requirements
 - a) Operating system requirements
 - b) Internet browser requirements
 - c) Reliable and consistent access to the internet
 - d) Antivirus software which is current and consistently updated
 - e) Microsoft Office
 - f) Adobe Reader (or equivalent to view PDF files)

3. COMPETENCIES

1. General skills
2. Practice Management
3. Communication to Community Resources
4. Patient Care – Diagnosis



5. Patient Care - Treatment Planning
6. Competencies specific to the subject

4. TEACHING METHODOLOGY

The objectives of teaching microbiology can be achieved by various teaching techniques such as

- a) Lectures
- b) Lecture Demonstrations
- c) Practical exercises
- d) Audio visual aids
- e) Small group discussions with regular feed back from the students
- f) Integrated Teaching
- g) Symposium and continuing medical education programmes.



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5. THEORY SYLLABUS

TOPIC	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
Introduction, History	Noble laureates and their contributions to medical microbiology, Detailed contributions of Louis Pasteur, and Robert Koch		
	Morphology physiology, classification of bacteria, different methods of staining		
	Sterilization and disinfection including sterilization controls		



	Different types of culture media and culture techniques including anaerobic culture methods.	Bacterial genetics and drug resistance in bacteria	
	Specimen Collection, Transport processing and Identification of bacteria		Testing of disinfectants
	Infection-source, mode of transmission and types of infectious disease		



Immunology	<p>1.Immunity</p> <p>2.Antigen</p> <p>3.Immunoglobulins</p> <p>4.Structure and functions of immune system</p> <p>5.Antigen -Antibody reactions</p> <p>6.Immune response</p> <p>7.Hypersensitivity</p> <p>8. Auto immunity, classification with special referenceto autoimmune disorders involving oral cavity.</p> <p>9.Immunodeficiency disorders-various types and disorders relevant to dentistry</p> <p>10.Immunology of transplantation and malignancy</p>	Complement system Immunohaematology	Flow cytometry in the diagnosis of malignancies Vaccines againsttumors
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<p>Systematic bacteriology</p>	<p>1. Gram positive cocci - Staphylococcus, Streptococcus with special reference to Viridansgroup, Pneumococcus</p> <p>2. Gram negative cocci – Meningococcus andGonococcus</p> <p>3. Corynebacterium diphtheria including immunoprophylaxis</p> <p>4. Clostridium – Gas Gangrene, Tetanus and foodpoisoning</p> <p>5. Mycobacteria- M.tuberculosis and M.lepr</p>	<p>Enterobacteriaceae Vibrio cholera</p>	<p>MDR and XDRTB</p> <p>Agents of Bioterrorism</p>
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	7.Spirochaetes- Treponema, Borrelia vincenti 8.Actinomycetes 9.Normal flora of oral cavity		
Virology	1.General properties, resistancecultivation of viruses, host virus interactions with special reference to interferon2.Laboratory diagnosis , Viral vaccines 3.Herpes virus 4.Measles , Mumps and Rubella5.Rabies virus 6.Hepatitis B and Hepatitis C virus,HBV vaccine7.Human Immunodeficiency virus	Bacteriophage structure and significance Cultivation of viruses	Influenza A andB viruses
Mycology	1.Introduction,classification, Laboratory diagnosis2.Candidosis,Rhinosporidiosis 3.Systemic mycoses and associated oral lesions.	Opportunistic fungalinfections	Antifungal susceptibility testing methods
Parasitology	1.Introduction , different modes of transmission andprevention 2.Entamoeba histolytica, Entamoeba gingivalis3.Malarial parasites 4.Leishmania including L.brasiliensis 5.Common helminthic infections – Tape worms,Ascaris lumbricoides, Ancylostoma duodenale, Trichuris trichura and Enterobius vermicularis.	Protozoa Giardia intestinalis, Trichomonas species. Wuchereria bancrofti	Parasitic infections in HIV



Applied Microbiology	1.Standard precautions 2.Infection control measures in dental setting 3.Significance of antibiotic susceptibility testing ,itsinterpretation 4.Bio medical waste management guidelines5..Vaccination for Health care providers 6..Needle stick injury and post exposure prophylaxis7.Blood borne infections	STD infections Infective endocarditis Emerging and Re emerging infections	Antibiotic resistance (MRSA,ES BL etc.)
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Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses on issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics.

In microbiology, the maintenance of confidentiality is very important for the laboratory to gain confidence from the patients. Confidentiality is mandatory in certain tests like HIV testing as the results may lead to alienation from the family thus causing mental agony to the patient. Counselling has to be given both before and after testing in HIV /AIDS setting.

Written consent has to be always obtained from the patient for any procedure that can potentially harm the individual particularly invasive techniques.

Quarantining of people is done under special circumstances. By adhering to ethical guidelines, members of the medical profession can help and ensure that quarantine and isolation measures achieve their public health goals and maximally promote the well-being of individuals.

- i. Simple stain, Hanging drop
- ii. Grams stain
- iii. Ziehl Neilsen’s stain

Demonstrations

- i. Microscopy-Different types, parts, maintenance and usage
- ii. Sterilization and disinfection
- iii. Culture media including anaerobic culture media and transport media
- iv. Anaerobic culture methods
- v. Biochemical reactions in the identification of bacteria
- vi. Virus models

6. THEORY EXAMINATION

Part B – Microbiology:

Essay	1 X 10	=	10 Marks
Short Notes	3 X 5	=	15 Marks
Short Answers	5 X 2	=	10 Marks
Total		=	----- 35 Marks -----

Note: Essay from Systematic Bacteriology/Virology, General bacteriology Immunology
Short Notes from Systematic bacteriology, Virology, Mycology,
Parasitology, Applied Microbiology Short Answers from General
bacteriology, Immunology, Systematic bacteriology, Virology,
Mycology, Parasitology and Applied Microbiology.

7. PRACTICAL EXAMINATION

Contents	Marks	Time duration
Spotters (10x 2marks each)	20	30mts
Gram staining (GPC,GNB,MIXTURE)	10	45 mts
Ziehl Neilsen's staining	10	60mts
*OSPE	5	45mts
Total	45marks	180mts(3hrs)

*OSPE Exercises Eg. Hand washing Technique Bio medical waste segregation
OR any other relevant topic of choice

Note : For OSPE, key to be prepared and made available to the examiners .

Viva – Marks 10

To be conducted in the afternoon with appropriate time interval.

	Examination	Internal Assessment	Viva	Total
Theory	35	5	10	50
Practicals	45	5	-	50
Total				100

8. FORMATIVE /INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations shall be considered. The Internal Assessment marks to be submitted to the university, once in every three months. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in every 3 months.

9. RECORD NOTE / LOG BOOK

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

10. TEXT BOOKS

i. Text book of Microbiology –

R.Ananthanarayan & C.K.Jayaram

Paniker.ii Medical Microbiology

– David Greenwood etal.

iii. Textbook of parasitology – K.D.Chatterjee

iv. Paniker’s Text book of Medical Parasitology

11. 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 Schaechter, etal.
- v. Immunology –Donald M Weir
- vi. Immunology 3rd edition – Evan Roitt , etal.
- vii. Oral microbiology and infectious diseases –Burnett and Scherpviii.Jawetz text book of



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5. GENERAL AND DENTAL PHARMACOLOGY AND THERAPEUTICS

1. GOAL

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

2. OBJECTIVES

a) KNOWLEDGE AND UNDERSTANDING:

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

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

b) SKILLS:

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

- i. Prescribe drugs for common medical and dental ailments.
- ii. Appreciate adverse reactions and drug interactions of commonly used drugs
- iii. Observe experiments designed for study of effects of drugs.
- iv. Critically evaluate drug formulations and be able to interpret the clinical pharmacology of marketed preparations commonly used in dentistry.



c) ATTITUDE:

To develop the attitude to serve the rural community

d) INTEGRATION:

Practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical departments

e) KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area / personal care as per universal protection and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

f) COMPUTER PROFICIENCY

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes. Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses, and online courses. The following validation is required and must be completed.

- i. Technological Requirements for all Graduate Students
- ii. A laptop or desktop computer that supports the following requirements
 - a) Operating system requirements
 - b) Internet browser requirements
 - c) Reliable and consistent access to the internet
 - d) Antivirus software which is current and consistently updated
 - e) Microsoft Office
 - f) Adobe Reader (or equivalent to view PDF files)



3. COMPETENCIES

1. General skills
2. Practice Management
3. Communication and Community Resources
4. Patient Care – Diagnosis
5. Patient Care - Treatment Planning
6. Competencies Specific to the subject

4. TEACHING METHODOLOGY

The objectives of teaching can be achieved by various teaching techniques such as :

- a) Lectures
- b) Lecture Demonstrations
- c) Practical exercises
- d) Audio visual aids
- e) Small group discussions with regular feed back from the students
- f) Integrated Teaching
- g) Symposium and continuing medical education programmes.

5. THEORY SYLLABUS

- New drug development- clinical trials, biomedical ethics;
- Pharmacoeconomics;
- Pharmacovigilance



SYSTEMIC PHARMACOLOGY

TOPIC	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
1.	GENERAL PHARMACOLOGY	DRUGS ACTING ON CARDIOVASCULAR SYSTEM	VITAMINS: Water soluble vitamins, vitamin D, vitaminK, vitamin E, implications ofvitamins in clinical dentistry.
2.	ANTIBIOTICS	DRUGS ACTING ON CENTRAL NERVOUS SYSTEM	VACCINES
3.	NSAIDS	DIURETICS	
4.	DRUGS ACTING ON GI TRACT	DRUGS ACTING ON BLOOD	
5.	LOCAL ANESTHETICS	GENERAL ANESTHETICS	
6.	DRUGS ACTING ON AUTONOMIC NERVOUS SYSTEM	ANTINEOPLASTIC AGENTS	
7.	INSULIN AND ORAL HYPOGLYCAEMIC DRUGS		
8.	CORTICOSTEROIDS		



9.	ANTISEPTIC S AND DISINFECTA NTS		
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Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics.

6. PRACTICALS

Procedures and demonstrations:

To familiarize the student with prescription writing and dispensing. Rational of drug combinations of marketed drugs

7. THEORY EXAMINATION

Elaborate on 2x10= 20 marks

Write notes 10x5 = 50 marks

Total = 70 marks

Viva 20 marks

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100
Total				200

8. FORMATIVE / INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations shall be considered. The Internal Assessment marks to be submitted to the university, once in every three months. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in every 3 months.

Theory 10 marks

Practicals 10 marks

Total 20 marks

9. RECORD NOTE / LOG BOOK

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/ teaching materials as specified in Dental Council of India regulation for the students during clinical /practical training and examinations.

10. TEXT BOOKS

- i. Tripathi K D – Essentials of medical pharmacology
- ii. R S Satoskar- Pharmacology and Pharmacotherapeutics
- iii. Bertam G Katzung- Basic and clinical pharmacology

11. REFERENCE BOOKS

- i. Goodman and Gilman- The Pharmacological basis of Therapeutics.
- ii. R.S.Satoskar, Kale Bhandarkar's Pharmacology and Pharmacotherapeutics, 10th Edition, Bombay Popular Prakashan1991.
- iii. Bertam G Katzung, basic and Clinical pharmacology 6th ed.Appleton & Lange 1997.
- iv. Lauerence D.R. Clinical Pharmacology 8th ed. Churchill Livingstone 1997.
- v. Satoskar R.S. & Bhandarkar S.D., Pharmacology and Pharmacotherapeutics part I & part ii, 13th Popular PrakashanBombay 1993.
- vi. Tripathi K.D., Essentials of Medicla Pharmacology 4th ed Jaypee Brothers 1999



6. DENTAL MATERIAL

1. GOAL

The dental graduates during training in the institutions should acquire adequate knowledge, necessary skills and such attitudes which are required for carrying out all the activities appropriate to general dental practice involving the prevention, diagnosis and treatment of anomalies and diseases of the teeth, mouth, jaws and associated tissues. Aim of the course is to present basic chemical and physical properties of dental materials as they are related to its manipulation to give a sound educational background about the various materials. The broad goal of the teaching of undergraduate students in Dental Materials aims at providing adequate fundamental knowledge about the materials available in the Dental science. .

2. OBJECTIVES

The objectives are dealt under three headings namely (a) knowledge and understanding (b) skills and (c) attitudes.

a. KNOWLEDGE AND UNDERSTANDING:

The graduate should acquire the following during the period of training --- Adequate knowledge of the scientific foundations on which dentistry is based and good understanding of various relevant scientific methods, principles of biological functions and should be able to evaluate and analyse scientifically various established facts and data. To understand the evolution and development of science of dental materials. To know about the manipulation technique of various restorative materials.

b. SKILLS:

A graduate should be able to demonstrate the following skills necessary for practice of dentistry. To develop skills in the management of various materials in dentistry. Students should know about the physical and chemical properties of the dental materials.

c. ATTITUDE:

A graduate should develop during the training period the following attitudes. Willing to apply current knowledge of dentistry in the best interest of the



patients and the community. Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life. Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community. Willingness to participate in the continuing education programmes to update knowledge and professional skills from time to time. To help and to participate in the implementation of National Health Programmes.

d. INTEGRATION:

e. KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY:

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area / personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

f. Computer Proficiency

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes. Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses, and online courses. The following validation is required and must be completed

- i. Technological Requirements for all Graduate Students
- ii. A laptop or desktop computer that supports the following requirements
 - a) Operating system requirements
 - b) Internet browser requirements
 - c) Reliable and consistent access to the internet
 - d) Antivirus software which is current and consistently updated
 - e) Microsoft Office
 - f) Adobe Reader (or equivalent to view PDF file)



3. COMPETENCIES

1. General skills
2. Practice Management
3. Communication and Community Resources
4. Patient Care – Diagnosis
5. Patient Care - Treatment Planning
6. Competencies specific to the subject

4. TEACHING HOURS

Teaching hours for first and second years- Theory and

Practical are shown in the Tables-ITABLE - I Subjects and

Hours of Instruction (B.D.S Course)

TOTAL TEACHING HOURS FOR FIRST AND SECOND B.D.S

Sl No	Subject	Lecture Hours	Practical Hours	Clinical Hours	Total HOURS
1.	Dental Materials	80	240	-	320

Subjects and Hours of Instruction for First year B.D.S

Sl No	Subject	Teaching Hours	Practical Hours	Clinical Hours	Total
1.	Dental Materials	20	40	-	60

Subjects and Hours of Instruction for Second year B.D.S

Sl No	Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
1.	Dentalmaterial	60	200	--	260

5. THEORY SYLLABUS

TOPICS	Must know	DESIRABLE TO KNOW	NICE TO KNOW
Introduction Structure of matter, and principles of adhesion Important Physical properties	<p>Brief History of the development of the science of Dental Materials. Aim of studying the subject of Dental Materials.</p> <p>Scope and requirements of Dental materials .</p> <p>Spectrum of materials - Classification</p> <p>Clinical and laboratory applications</p> <p>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.,</p> <p>Hue, value, chrome. and translucency</p> <p>physical properties based on laws of optics, dealing with phenomena of light, vision and sight. Thermal</p>	<p>Change of state</p> <p>Interatomic bonds</p> <p>Crystalline structure</p> <p>Non crystalline solids and their structure</p>	



<p>applicable todental. Materials</p>	<p>conductivity & coefficient of thermal expansion, 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 6reep, flow, colour, three dimensional colour</p>		
<p>Biological considerati ons in use of dental materials.</p>	<p>- hue, values, chrome., Munsell system, metamerisim, fluorescence. Classification of materials from perspective ofbiological compatibility</p>	<p>Micro leakage, Thermal changes, Galvanism, toxic effect of materials</p>	<p>Biological evaluation for systemic toxicity, skin irritation,mutagenicity and carcinogenicity.</p>
<p>Gypsu m & gypsum product s</p>	<p>Gypsum - its origin, chemical formula. Dental plaster, Dental stone, Die stone, highstrength, high expansion stone. Application and manufacturing procedure of each,macroscopic and microscopic structure of each. Commercial names. Chemistry of setting, setting reaction, theories of setting, gauging water,</p>	<p>Recent methods or advanced methods.</p>	<p>Disinfection of dental materialsfor infection control. Any recent advancements in</p>



	Microscopic structure of setmaterial. Setting time: working time and		material and mixing devices.
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<p>Impressi on material s used in dentistr y</p>	<p>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. ADA classification of gypsum products Description of impression plaster and dental investment Manipulation Disinfection : infection control, liquids, sprays, radiation Method of use of disinfectants Storage of material -shelf life Impression plaster, Impression compound, Zinc oxide eugenol impression paste & bite registration paste incl., non eugenol paste, Hydrocolloids, reversible and irreversible, Elastomeric impression materials. Polysulphide, Condensation silicones, Addition silicones, Polyether. 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, Type of impression trays required,</p>	<p>Visible light cure polyether urethane dimethacrylate, Historical background , development Of each impression material,</p>	
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	<p>Adhesion, toTray, manipulation, instruments &equipment's required. Techniques of impression, storage</p>		
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<p>Synthetic resins used in dentistry.</p>	<p>of impression, Working time, setting time, flow, accuracy, strength, flexibility, tear strength, dimensional stability, compatibility with cast & die materials incl., electroplating, Biological properties: tissue reaction Shelf life & storage of material, Infection control - disinfection, Advantages and disadvantages of each material. Classification of resins, Dental resins. Requirements of dental resins, applications, polymerisation, polymerisation mechanism. Stages in addition polymerisation, inhibition of polymerisation, copolymerisation, molecular weight, crosslinking, plasticisers. Physical properties of polymers, polymer structure types of resins. ACRYLIC RESINS: Mode of polymerisation: Heat activated, Chemically activated, Light activated, Mode of supply, application, composition, polymerisation reaction of each. Physical properties of denture</p>	<p>Historical background and, development of material. Miscellaneous resins & techniques: Repair resins, Relining and rebasing. Infection control in detail, Biological properties and allergic</p>	<p>Short term and long-term soft-liners, temporary crown and bridge, resins, Resin impression trays, Tray materials, Resin teeth, materials in maxillofacial prosthesis, Denture cleansers. Composites of posterior teeth, Prosthodontics resins for veneering. Repair of composite. Extended application for composites: Resins for restoring eroded teeth, Pit and fissure sealing,</p>
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	<p>base resin.Composite</p> <p>RESTORATIVE RESIN: Mode of supply, Composition, Polymerisation mechanisms: Chemically activated, Light activated, Dual cure:Degree of conversion, Polymerisation</p> <p>Shrinkage Classification of Composites: Application,composition and properties of each.</p> <p>Biocompatibility ,-- micro leakage, pulpal reaction,pulpal protection</p> <p>Manipulation of composites:</p>	<p>'reactions.</p> <p>Measurement of bond strength and micro leakage</p> <p>Amalgam Bonding</p> <p>Pit and fissure sealants.</p>	<p>Resin inlay system</p> <p>Indirect & direct, Core build up, Orthodontic applications.</p>
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	<p>Techniques of Insertion of Chemically activated, light, activated, dual cure Polymerisation, Finishing and polishing of restoration, Direct Bonding: Need for bonding, Acid' etch technique,, Enamel bonding,Dentin bonding agents. Mode of bonding, Bond strength, Sandwich technique its indication and procedure.</p>	<p>Restorative Resins Depth of cure Degree of conversion, DualCure resins</p>	<p>Restorative Resins Curing lamps Depth of cure Reduction of residual stresses</p>
<p>Metal and alloys</p>	<p>Structure and behaviour of metals, Classification of casting alloys: By function &description. Alloys for crown & bridge, metal ceramic & removable partial denture. Composition,, function,constituents and application. Dental Amalgam Composition, Manufacturing of alloypowder, Amalgamation, Dimensional Stability, Strength Creep, Clinical performance, Proportioning, Trituration, Condensation ,Carving and finishing, Dimensional Change, Mercury hygiene Properties of pure gold Classification and forms of DFGRemoval of surface impurities</p>	<p>Historical background, desirable properties of casting alloys Factors affecting success of amalgam Side effects of mercury Repair of amalgam restoration History, Compaction</p>	<p>An alternative to metal casting process. Cad-cam process for metal & ceramic inlays</p>
<p>Direct filling</p>		<p>Direct gold</p>	

gold

restor
ation

<p>Dental casting alloys</p>	<p>Classification of casting alloys: By function &description. Recent classification High noble (HN); Noble (N) andpredominantly base metal (PB). Alloys for crown & bridge, metal ceramic & removable partial denture. Composition,function, constituents and application, each alloy both noble and' base metal. Propertiesof alloys: Melting range, mechanical properties, hardness, and elongation, modulus ofelasticity, 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</p>	<p>Historical background, desirable propertiesof casting alloys.</p>	<p>Alternatives to. cast metal technology: direct filling gold, amalgam, mercury free, Condensable intermetallic compound - an alternative tometal casting process. CAD-CAM process for metal & ceramic inlays - without need for impression of teeth or casting Procedure, pure titanium, mostbio compatible. metal 'which are difficult to cast can be made into crowns with the aid ofCAD- CAM technology</p>
<p>Dental waxes including inlay casting wax</p>	<p>Introduction and importance of waxes. Sources of natural waxes and their chemical nature. Classification of Waxes: Properties of Dental wax,Inlay wax. Mode of supply composition, Ideal requirements.Properties: melting range,</p>		<p>Another method of making copings - by copy milling (without casting Procedures Manipulation of inlay wax: Instruments & equipment required.</p>



	thermal expansion, mechanical properties, flow & residual stresses, ductility. Dental Wax: Inlay wax: Mode:Classification & composi	.	Impression wax for corrective impressions, Bite registration wax.
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<p>Dental casting investments.</p>	<p>Ideal requirements: Properties of inlay wax: Flow, thermal properties Wax distortion & its causes.</p> <p>Definition, requirements, classification Gypsum bonded - classification. Phosphate bonded, 'Silicabonded'.</p> <p>Mode of Supply:, Composition, application, setting mechanism, setting time & factors controlling it.</p> <p>Expansions : Setting expansion, Hygroscopic Setting expansion, & thermal expansion :</p> <p>Factors affecting. Properties: Strength, porosity, and fineness & storage. Technical considerations:</p> <p>Need of joining dental appliances, temperature, and application. Mode of supply of solders, Composition and selection, Properties.</p>		<p>Casting procedure, Preparation of die, Wax pattern, spruing, investing, and control of shrinkage compensation, wax burnout, and heating the invested ring, casting. Casting machines, source of heat for melting the alloy. Defects in casting.</p>
<p>Soldering, brazing and welding</p>	<p>Tarnish & corrosion resistance mechanical properties, microstructure of soldered joint Fluxes & Anti fluxes: Definition, Function, Types, commonly used fluxes & their selection</p> <p>Welding: Definition, application, requirements, and procedure.</p> <p>Applications and different alloys used mainly for orthodontics purpose</p>	<p>Technique of Soldering & Brazing : free hand soldering and investment, steps and Procedure.</p>	<p>weld decay - causes and how to avoid it.</p> <p>Laser welding.</p> <p>Titanium alloys, application, composition, properties, welding, Corrosion resistance</p>



Wrought basemetal alloys	1. Stainless steel 2. Cobalt chromium nickel 3. Nickel titanium 4. Beta titanium		
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<p>Dental cements</p>	<p>Properties required for orthodontic wires, working range, springiness, stiffness, resilience, Formability, ductility, ease of joining, corrosion resistance, stability in oral environment, biocompatibility</p> <p>Stainless steels: Description, type, composition & properties of each type.</p> <p>Sensitisation & stabilisation, Mechanical properties - strength, tensile, yield strength, KHN. Braided & twisted wires their need ;Solders for stainless steel, Fluxes, Welding 1. Wrought cobalt chromium nickel alloys, composition, allocation, properties, heat treatment, Physical properties</p> <p>2. Nickel - Titanium alloys, shape, memory & superelastic</p> <p>Application, classification (general and individual), setting mechanism, mode of supply, Properties, factors affecting setting, special emphasis on critical procedures of manipulation and protection of cement, mode of adhesion, biomechanism of caries inhibition. Agents for pulpal protection.</p> <p>Definition & Ideal requirements. Fluoride releasing cements Luting cements</p> <p>Agents for</p>		<p>Modifications and recent advances,</p> <p>Principles of cementation.</p> <p>Special emphasis on cavity liners and cement bases and luting agents.</p>
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	pulp protection Zinc Phosphate cement		
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<p>Dental ceramics</p> <p>Abrasion & polishing agents</p>	<p>Resin Cements</p> <p>Zinc oxide</p> <p>eugenol cement</p> <p>Calcium Hydroxide</p> <p>General applications. Dental ceramics: properties definition, classification,application, mode of supply, manufacturing procedure, methods of strengthening.Properties of fused ceramic: Strength and factors affecting, modulus of elasticity, surface hardness, wear resistance, thermal properties, specific gravity, chemical stability, aesthetic properties, biocompatibility, technical considerations.</p> <p>Metal Ceramics (PFM): Alloys - Types and composition of alloys. Ceramic - Type and Composition.</p> <p>Definition of abrasion and polishing. Need of abrasion and polishing. Types of abrasives: Finishing, polishing & cleaning. Types of abrasives:Diamond, Emery, aluminium oxides garnet, pumice, Kieselgurh, tripoli, rouge, tin oxide, chalk, chromic</p>	<p>Historical background.</p> <p>Methods of strengthening.</p> <p>Metal Ceramics (PFM).Metal Ceramic Bond.Metal Ceramic Bond - Nature of bond.</p> <p>Bonding using electro deposition, foil copings, bonded platinum foil, swaged gold alloy foilcoping.</p> <p>Technical considerations of porcelain and porcelain fused metal restorations.</p> <p>Technical consideration - Material and</p>	<p>Recent advances - all porcelain restorations, Manganese core, injection moulded, cast able ceramics,glass infiltrated alumina core ceramic (In ceram), ceramic veneers, inlays and on lays, and CAD - CAM ceramic.</p>
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		procedure used forabrasion and polishing,	
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<p>Die and counter die materials</p> <p>Mechanics of cutting</p> <p>Dental implants</p>	<p>Desirable characteristics of an abrasive, Rate of abrasion, Size of particle, pressure, Grading of abrasive & polishing agents. Binder, Polishing materials & procedures</p> <p>Types - Gypsum products, Electroforming, Epoxyresin, Amalgam.</p> <p>Burs and points.</p>		<p>Evolution of dental implants, -types and materials.</p>
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Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics

BIO-ETHICS

- 1) Respect human life with dignity
- 2) Refrain from supporting crimes against humanity
- 3) Treat the sick with compassion
- 4) Protect the privacy of the patient
- 5) Educate the public
- 6) Fight for socio economical changes
- 7) Teaching and mentoring those who follow us



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6. PRACTICAL

Practical Exercises: 240 Hours Demonstration of manipulation of all materials Exercises to be done by each student:

- a. Manipulation of Gypsum- Materials and Alginate - identify setting time and working time and working time with reference to proportion, water temp, and spatulation time.
- b. Self-cure and heat cure acrylic resin manipulation and curing.
- c. Cements - manipulation and studying setting time and working time for luting, base & restoration. Zinc oxide eugenol, zinc phosphate, glass ionomer .
- d. Silver Amalgam - manipulation, trituration.

7. THEORY EXAMINATIONS: (3 Hours)

Elaborate on 2 X 10 = 20 marks

Write Notes 10 X 5 = 50 marks

Total 70 marks

Note : One Elaborate on Question from Conservative Dentistry topics and one Elaborate on Question from Prosthodontic topics

Write Notes : Four Questions from conservative and four questions from Prosthetic topics and two questions from Metallurgy and orthodontia.

II Exercise to be done by each FIRST B.D.S student:

- a. Impression material Manipulation - 20 hours
- b. Gypsum products - 20 hours

I. Exercise No.1

Any one exercise of the following 25 Marks

- i. Manipulation of Dental plaster and stone
- ii. Manipulation of alginate impression material

- iii. Manipulation of Zinc Oxide Eugenol impression paste
- iv. Manipulation of heat cure acrylic resin

II. Exercise No. 2

25 Marks

Manipulation of any one of the following Dental Cements.

- a. ZOE (Luting and Filling consistency)
- b. Zinc Phosphate Cement (Luting and Base consistency)
- c. Glass Ionomer Cement Type I/II (Luting/Filling consistency)

2-5 Minutes may be allotted for each mixing exercises Viva 20 Marks

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100
Total				200



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8. FORMATIVE / INTERNAL ASSESSMENT:

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations shall be considered. The Internal Assessment marks to be submitted to the university, once in every three months. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall besent to the University once in every 3 months.

9. RECORD NOTE / LOG BOOK:

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

10. TEXT BOOKS

Name of the Book & Title	Author	Edn	Yr. of Publ.	Publ.'s Name Place of Publ.
Science of Dental Materials	Kennet. J. Anusavice	11th	2007	W.B. Sunder's Company, USA
Notes on Dental Materials	E.C. Combe	06th	1992	Churchill Livingstone, UK Oxford
Applied Dental Material	John. F. Mc. Cabe	07th	1992	Blackwell Scientific pub. London
Text Book of Dental Material	Craig. O. Brien	06th	1996	Mosby, USA
Restorative Dental	Craig.	11th	2002	Mosby, USA



1. Amalgam Alloy Powder
2. Mercury
3. Amalgam Capsule
4. Acid Etchant
5. Dentin Bonding Agent
6. Cavity Varnish
7. Dentin Conditioner
8. Composite Resin
9. Zinc Oxide Eugenol Cement
10. Modified Zinc Oxide Eugenol Cement (Irm – Intermediate Restorative Material)
11. Zinc Phosphate Cement
12. Zinc Polycarboxylate Cement
13. Glass Ionomer Cement Type I
14. Glass Ionomer Cement Type II
15. Calcium Hydroxide
16. Inlay Wax
17. Base Metal Alloy Pellets
18. Casting Ring
19. Gypsum Bonded Investment
20. Phosphate Bonded Investment
21. Dental Bur
22. Wooden Wedges
23. Gutta Percha Points
24. Gutta Percha Sticks
25. Motor And Pestle
26. Glass Slab
27. Cement Spatula
28. Agate Spatula



Prosthodontics spotters

1. plaster of paris
2. die stone
3. dental stone
4. gypsum bonded investment
5. zinc oxide eugenol impression paste
6. rubber base materials
7. alginate
8. impression compound
9. low fusing compound
10. sticky wax
11. shellac base plate
12. modelling wax
13. heat cure resin
14. self cure resin
15. metal pellets
16. casting ring
17. stainless steel wire
18. acrylic trimmers
19. separating media
20. acrylic teeth set
21. cotton puff
22. wollen puff
23. metal ceramic bridge



Miscellaneous

1. Infection control
2. Artificial tooth material.
3. Separating media
4. Die spacers
5. Tray adhesives
6. Petroleum jelly
7. Articulating paper
8. Pressure indicating paste
9. Endodontic materials
10. Comparative studies between metallic and nonmetallic denture base Bioglass
11. Sprues
12. Setting expansion, hygroscopic expansion, thermal expansion
13. Dentifrices.

13. REFERENCE BOOK:

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



7. PRE CLINICAL CONSERVATIVE DENTISTRY

1. GOAL

The IInd year BDS undergraduate students during the training in the preclinical conservative dentistry should acquire adequate knowledge, skills and attitude which are required for carrying out appropriate activities in dental practice which involves diagnosis treatment and prevention of disease of teeth. During the training program they should be able to identify and use instruments which are used in conservative dentistry and Endodontics. They should also be aware of various restorative procedures with emphasize on tooth conservation.

2. OBJECTIVES

The objectives are dealt under following headings

a. KNOWLEDGE AND UNDERSTANDING:

The student should acquire adequate knowledge during this period of training. Knowledge of the scientific foundation of conservative dentistry and understanding of various treatment procedures carried out in conservative dentistry with emphasize on biological principal to be followed during these treatment procedures and to acquire knowledge of various instruments and materials used in restorative procedures .They should also be aware of various manipulative techniques of restorative material.

b. SKILLS:

The students should be able to demonstrate the following skills which are necessary for practice in conservative dentistry To develop skills in manipulation of various materials used in conservative dentistry. To develop skills in preparation of various cavities and to perform various restorative procedures.

c. INTEGRATION:

The dental student must be able to identify the healthy and diseased state of the teeth, thereby enabling them to better understand the diseased state and to plan an ideal treatment protocol for the same.

d. KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area / personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

e. COMPUTER PROFICIENCY

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes. Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses, and online courses. The following validation is required and must be completed.

- i. Technological Requirements for all Graduate Students
- ii. A laptop or desktop computer that supports the following requirements
 - a. Operating system requirements
 - b. Internet browser requirements
 - c. Reliable and consistent access to the internet
 - d. Antivirus software which is current and consistently updated
 - e. Microsoft Office
 - f. Adobe Reader (or equivalent to view PDF files)

3. COMPETENCIES

1. General skills
2. Practice Management
3. Communication and Community Resources
4. Patient Care – Diagnosis
5. Patient Care - Treatment Planning
6. Competencies Specific to the Subject

4. TEACHING HOURS

During IInd year BDS

Lecture	25 hours
Practical	200 hours
Total	225 hours

5. TEACHING METHODOLOGY

Audio Visual Aids: LCD projectors

Identification of instruments used in preclinical dentistry.

Demonstration of various
procedures in conservative
dentistry. Demonstration of
endodontic procedures in
single rooted teeth.

6. THEORY SYLLABUS

TOPIC	MUST KNOW	DESIRABLE KNOW	NICE TO KNOW
1.	Introduction to conservative dentistry		
2.	Definition and scope of conservative dentistry and Endodontics		
3.	Classification of cavities		
4.	Nomenclature		
5.	Various chair side positions		
6.	Tooth numbering		



7.	Dental caries		
8.	Restoration -Definition and objectives		
9.	Instrument classification ,nomenclature design formula ofhand cutting instrument, grasps and rests		
10.	Rotary cutting instruments, bur design, abrasives and various speeds in rotary instruments. Principle of cavity preparation for (a) Silver amalgam (b)Cast gold inlays (c)Compos ite resin (d)Glass ionomer		
11.	Matrices, Retainers and wedges		
12.	Separators -Different methods of separation		
13.	Finishing and polishing of restorations		
14.	Management of deep carious lesions- pulp capping andpulpotomy		
15.	Access cavity preparation and brief introduction of instruments used endodontics.		
17.			Infection control
18.			Conservative aesth eticprocedures



19.			Bleaching
20.			Complex amalg amrestorations
21.			Direct filling gold

Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics.

7. PRACTICALS:

Practical exercise: 200 hours

Preparation of 1 inch cube in plaster of paris-4 Nos Preparation of geometric cavities in prepared cubes.

Preparation of tooth models in plaster and preparation of cavities and restoration with modelling wax

- a) Incisors -3 Nos
- b) Premolars- Upper Premolars -2 Nos; Lower Premolars- 2Nos
- c) Molars - Upper Molars 4 Nos; Lower Molars-4Nos

Preparation of Cavities on Extracted Natural Teeth Class I, Class II and MOD and Class V

Demonstration:

Demonstration of class III, class V and incisal edge restoration on extracted teeth with composite resin Finishing and polishing of the restorations

Identification and manipulation of cavity varnishes, bases like zinc phosphate, zinc poly carboxylate, zinc oxide eugenol cement

Identification and demonstration of placement of different types matrix retainers, matrices and tooth separators. Demonstration of light cure composite and glass ionomer Restoration .

Endodontics:

- (a) Pulp capping direct indirect on extracted teeth
 - (b) Pulpotomy on extracted posterior teeth
 - (c) Root canal access cavity opening on upper Central Incisor (extracted teeth)
- Demonstration of instrumentation and obturation of root canal

(d) 8. Theory Examination

- (e) No Theory Examination

(f) 9 .PRACTICAL EXAMINATIONS:

(g) Practical exercise:

- (h) Preparation of class II cavity for Silver amalgam in maxillary or mandibular molar tooth (typhodont tooth)

S.no	Excercise	Marks	Time
1	Cavity Preparation	30	45 Minutes
2	Base and Matrix	10	15 Minutes
3	Restoration and Finishing	20	30 Minutes
	Total	60 marks	

Viva – voce - 20 Marks

SCHEME OF EXAMINATION:

Internal assessment - 20 marks

Practical - 60 marks

Viva voce - 20 marks

Totaltu - 100 marks

10. FORMATIVE/INTERNAL ASSESSMENT:

The continuing assessment examination held at least 3times in a particular year and best of two examinations shall be considered. The Internal Assessment marks to be submitted to the university, once in every three months. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in every 3 months.

11. RECORD NOTE / LOG BOOK:

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical / practical training and examinations.

12. TEXT BOOKS:

TEXT BOOKS RECOMMENDED

NAME OF THE BOOKS, AUTHOR, PUBLISHER

Sturdevant's Art and Science of Operative Dentistry, ELSEVIER

Pre - Clinical Manual of Conservative Dentistry, Dr.V.Gopikrishna, ELSEVIER

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8. PRE CLINICAL PROSTHODONTICS & CROWN & BRIDGE

1. GOAL

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

2. OBJECTIVES

a. KNOWLEDGE

i) Adequate knowledge of the scientific foundations on which dentistry is based and good understanding of various relevant scientific methods, principles of biological functions, ability to evaluate and analyse scientifically various established facts and deals.

ii) Adequate knowledge of the development, structure and function of the teeth, mouth and jaws and associated tissues both in health and disease and their relationship and effect on general state of health and also bearing on physical and social well being of the patient.

iii) Adequate knowledge of clinical disciplines and methods which provide a coherent picture of anomalies, lesions and diseases of the teeth, mouth and jaws and preventive diagnostic and therapeutic aspects of dentistry.

iv) Adequate clinical experience required for the general dental practice.

v) Adequate knowledge of the constitution, biological functions and behaviour of persons in health and sickness as well as the influence of the natural and social environment on the state of health in so far as it affect dentistry

b. ATTITUDE

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

i. Willingness to apply the current knowledge of dentistry in the

best interest of the patient and community.

- ii. Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life.
- iii. Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community.
- iv. Willingness to participate in the CPED programmes to update knowledge and professional skill time to time.
- v. Help and participate in the implementation of the national oral health policy.

c. SKILLS

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

- i. Diagnose and manage various common dental problems encountered in general dental practice keeping in mind the expectations and the right of the society to receive the best possible treatment available wherever possible.
- ii. Prevent and manage complications if encountered while carrying out various surgical and other procedures.
- iii. Carry out certain investigative procedures and ability to interpret laboratory findings.
- iv. Promote oral health and help prevent oral disease where possible.
- v. Control pain and anxiety among the patients during dental treatment.

d. INTEGRATION

Integrated knowledge about all the divisions in Prosthodontics (CD,RPD,FPD,IMPLANTS etc)

e. KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area / personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal

f. COMPUTER PROFICIENCY

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes. Basic operative skills in analysis of data and knowledge of multimedia.



Students should utilize a combination of traditional classroom courses, and online courses.

The following validation is required and must be completed.

- i. Technological Requirements for all Graduate Students
- ii. A laptop or desktop computer that supports the following requirements
 - a. Operating system requirements
 - b. Internet browser requirements
 - c. Reliable and consistent access to the internet
 - d. Antivirus software which is current and consistently updated
 - e. Microsoft Office
 - f. Adobe Reader (or equivalent to view PDF files)

3. COMPETENCIES

1. General skills
2. Practice Management
3. Communication and Community Resources
4. Patient Care – Diagnosis
5. Patient Care - Treatment Planning
6. Competencies Specific to the Subject

4. TEACHING HOURS

During Ist Year BDS - 100

Practical hours During IInd

year BDS

Lecture	25 hours
Practical	200 hours
Total	225hours



5.TEACHING METHODOLOGY

The objectives of teaching microbiology can be achieved by various teaching techniques such as

- a) Lectures
- b) Lecture Demonstrations
- c) Practical exercises
- d) Audio visual aids
- e) Small group discussions with regular feed back from the students
- f) Integrated Teaching
- g) Symposium and continuing medical education programmes and Computer Aided Study

6.THEORY

I. Introduction to Prosthodontics - Scope and Definition

A. Masticatory apparatus and function:

1. Maxillae & Mandible with & without teeth.
2. Muscles of mastication and accessory muscles of mastication.
3. Brief anatomy of TMJ.
4. Mandibular movements.
5. Functions of teeth.

B. Various branches of Prosthodontics and prosthesis:

1. Scope & limitation.
2. Appliances v/s prosthesis.
3. Dental prosthesis v/s non-dental prosthesis.

C. Effect of loss of teeth:

1. On general health.
2. On masticatory apparatus.
3. Need of replace lost teeth.

D. Outline of Prosthodontics:

1. Types of Prosthesis.
2. Requirements of prosthesis- Physical, biological, esthetic consideration

II. Introduction to components of Prosthesis

A. Complete Denture Prosthesis:

1. Various surfaces (Border and surface anatomy).
2. Components - Base and Teeth.

B. Removable Partial Denture:

1. Classification.
2. Major and minor Connectors.
3. Direct retainers.
4. Rests.
5. Indirect retainers.
6. Denture base.
7. Artificial teeth.

C. Fixed Partial Denture:

1. Classification.
2. Retainers.
3. Pontics.
4. Connectors.

III. All related definitions and terminologies from glossary

1. Model
2. Cast
3. Impression
4. Occlusion rim
5. Temporary denture base
6. Permanent denture base
7. Occlusion
8. Face Bow & Articulator



9. Jaw relation - orientation, vertical and centric
10. Christensen's phenomenon
11. Key of occlusion
12. Balanced occlusion

IV. Introduction to mouth preparation - in brief

A. Complete Dentures

1. General considerations
2. Pre-prosthetic surgery

B. Removable partial dentures

1. General considerations
2. Occlusal rest preparation
3. Modifying contours of the abutments
4. Guide planes
5. Elimination of undercuts

C. Fixed Partial Dentures

1. Principles of tooth preparation - in brief
2. Retainers in brief

V. Introduction to all steps involved in fabrication of Prosthesis

Clinical Steps in brief and laboratory steps in detail

A. Impression Making

1. Definition and requirements and types of impressions
2. Various materials used for different impressions
3. Different theories of impression making

B. Impression Trays

1. Definition, classification, materials, advantages and disadvantages
2. Selection of trays
3. Special trays



4. Spacer design
- C. Introduction to jaw relation record
1. Definition and type
 2. Temporary denture base - Indications, Advantages, Disadvantages, materials used
 3. Occlusion rims - materials, shape, dimensions
 4. Clinical procedures of jaw relation recording in brief
- D. Articulators and Face bow
1. Basic out line
 2. Need for articulators
 3. Definition, classification, parts, advantages, disadvantages of articulators
 4. Definitions, classification, parts, advantages, disadvantages and purpose of face bow transfer
 5. Demonstration of face bow transfer to an articulator on a dummy.
- E. Selection of Teeth
1. Various guidelines for selection of teeth including dentogenic concept
 2. Arrangement of teeth in detail with various factors of esthetics, overjet, overbite etc
- F. Occlusion
1. Balanced Occlusion - need and advantages
 2. Various factors of balanced occlusion
- G. Try in Procedures
1. Anterior try - in
 2. Posterior try - in
 3. Waxing, carving, polishing and final try - in
- H. Processing Procedures
1. Flasking
 2. Dewaxing



3. Packing
4. Curing
5. Finishing and polishing of acrylic dentures

VI. Casting Procedures

1. Preparation of die
2. Wax pattern
3. Investing
4. Burnout
5. Casting
6. Finishing and polishing

Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics.

7. PRACTICAL EXERCISES

1. Preparation of special trays
 2. Preparation of temporary and permanent denture bases
 3. Preparation of occlusion rims
 4. Orientation of occlusion rims on articulator
 5. Arrangement of teeth
 6. Processing of complete dentures
-
1. Arrangement of teeth - Must Know
 2. Surveying of partially edentulous models and preparing modified master cast - Desirable to Know
 3. Preparing of wax patterns spruing, casting and finishing (in



batches of students not more than 8)

- Desirable to Know

4. Preparation of plaster models of various preparation of teeth to receive retainers for FPD

- Desirable to Know

5. Prepare wax patterns for minimum of 3 unit FPD and investing, casting and porcelain facing (for Batch of 8 students) - Desirable to Know

Note:

1. Students shall submit one processed denture mounted on an articulator to present on university practical exam along with record book.

2. Exercises of RPD and FPD to be submitted in groups along with the record book

8. Theory Examination

No Theory Examination

9. Practical Examination:

A. Practical Exercise: (Duration-3 hrs) : 60 Marks

Arrangement of teeth in class I relation, Waxing, Carving, Polishing

B. Viva-Voce 20 Marks

C. Internal Assessment 20 Marks

10. FORMATIVE/INTERNAL ASSESSMENT:

The continuing assessment examination held at least 3 times in a particular year and best of two examinations shall be considered. The Internal Assessment marks to be submitted to the university, once in every three months. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in every 3 months.

11. RECORD / LOG BOOK:

Record shall be maintained and assessed periodically by faculty



and HOD. Institution shall provide adequate teaching number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

12. TEXT BOOKS

1. Essential of Complete Denture Prosthodontics - Winkler
2. Prosthodontic Treatment for Edentulous Patients - Zarb Bolender
3. Clinical Removable Partial Denture - Stewart
4. Fundamentals of Fixed Prosthodontics - Shillingburg
5. Text Book of Prosthodontics - Deepak Nallaswam

13. REFERENCE BOOKS

1. Impression Techniques for Complete Denture - Bernard Levin
2. Removable Partial Prosthodontics - Mc Cracken
3. Contemporary Fixed Partial Denture - Rosenstiel
4. Syllabus of Complete denture by – Charles M. Heartwell Jr. and Arthur O. Rahn.
5. Boucher’s “Prosthodontic treatment for edentulous patients”
6. Essentials of complete denture prosthodontics by – Sheldon Winkler
7. Maxillofacial prosthetics by – Willam R. Laney
8. McCracken’s Removable partial prosthodontics
9. Removable partial Prosthodontics by – Ernest L. Miller and Joseph E. Grasso.



9. GENERAL MEDICINE

1. GOAL

The broad goal of the teaching of undergraduate BDS students in General Medicine aims at providing comprehensive knowledge of the both the normal physiology as well as the abnormal pathology to provide a basis for understanding the clinical manifestations in the various disease presentations

2. OBJECTIVES

a. KNOWLEDGE and UNDERSTANDING:

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

- i. Describe the etiology, pathogenesis, clinical signs and symptoms and complications of various disease processes
- ii. Know of the various pre-requisite settings for the various diseases to occur including a knowledge of the various co-morbidities especially lifestyle diseases such as Hypertension, Diabetes Mellitus.
- iii. Awareness of the oral manifestations of various systemic disorders
- iv. Knowledge of the medical conditions requiring screening and evaluation prior to dental procedures
- v. To be aware of BLS steps in cases of medical emergencies while undergoing dental procedures

b. SKILLS:

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

- i. Take a proper history from the patient
- ii. Do a complete general physical examination including build and nourishment
- iii. Assess the vitals-recording the details of Pulse, recording the BP, temperature, checking capillary blood glucose and oxygen saturation
- iv. Look for cyanosis, clubbing, pallor, icterus, pedal edema, lymphadenopathy, rashes, ecchymosis
- v. Able to examine the CVS, RS, abdomen and the facial nerve
- vi. Interpret the elicited signs and symptoms of various systemic disease processes

vii. Interpreting lab reports such as importance of CBC, RFT, ECG, BT, CT, PT, INRetc

c. ATTITUDE:

i. Willingness to apply the current knowledge of dentistry in the best interest of the patient and community

ii. Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community

d. INTEGRATION:

From the integrated teaching of other clinical sciences, the student shall be able to describe the various signs and symptoms and interpret the clinical manifestation of disease processes. Horizontal integration can be done in common with basic science departments, and vertical integration can be done with clinical departments. For example, horizontal integration can be the interpretation of lab results with Biochemistry and biopsy reports with Pathology; and vertical integration can be the study of oropharyngeal pathology of along with ENT and oral surgical procedures with General surgery

e. KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area/personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

3. COMPETENCIE

1. General skills
2. Practice Management
3. Communication and Community Resources
4. Patient Care – Diagnosis
5. Patient Care - Treatment Planning
6. Competencies specific to the subject

4. TEACHING HOURS -----

Lecture Hours - 60 hrs

Practical Hours - 90 hrs

Total - 150 hrs

5. TEACHING METHODOLOGY

Theory (Teaching-Learning methods)_

- Didactic Lecture- with a problem solving approach, with discussions of relevant clinical problems.
- Interactive Lecture (include buzz groups, self-assessment questions, quizzes, MCQs, One minute paper)
- Seminar
- Symposium
- Role play and discussion on medical ethics topics
- Self-directed learning

6. THEORY SYLLABUS

TOPIC	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
Aim Of Medicine	Know about signs symptoms Diagnosis, differential diagnosis investigation treatment and prognosis		

Infections	Mumps, measles Herpes zoster/ varicella Herpes Simples HIV/AIDS Oral Hairy leucoplakia Hand, foot and mouth disease Swine flu	rubella EBV infections— Infectious mononucleosi s Nasopharyngeal Ca	chikungunya Yellow fever
	Syphilis Diphtheria Enteric fever Leptospirosis	Sepsis	PUO
	Hansen's disease Tuberculosis		
	Dengue Malaria	Amoebiasis Filariasis	
	Candidiasis	Mucormycosis	
Vitamin & micronutrient Deficiencies	B1,B2, B3, B6,B12 Vitamin C and D Fluoride Zinc Iron	Vitamin K Selenium Chromium	Balanced diet PEM
Endocrine	Diabetes Mellitus Acromegaly Calcium metabolism and Parathyroid Addison's disease Cushing's disease Hypothyroidism Hyperthyroidism		
CVS	Acute Rheumatic fever Rheumatic valvular heart disease Infective Endocarditis Hypertension Ischemic heart disease Common Arrhythmias	Bronchiectasis Lung abscess Pleural effusion Pneumothorax Bronchogenic Ca	

	Congestive cardiac failure		
RS	COPD Bronchial asthma Pulmonary TB Pneumonia		
Renal system	Acute renal failure Chronic Renal failure Nephritis Nephrotic syndrome	Diarrhoea Dysentery Amoebiasis Malabsorption	
GIT	Stomatitis Gingival hyperplasia Dysphagia Acid peptic Disease GERD Jaundice Acute hepatitis Chronic Hepatitis Cirrhosis of liver Ascites		
Haematology	Anaemias Bleeding and clotting disorders Leukemias and lymphomas Agranulocytosis Splenomegaly Generalized lymphadenopathy Oral manifestations of Haematological disorders	Meningitis	
CNS	Facial palsy Facial pain including trigeminal neuralgia Headache including migraine Epilepsy Lower cranial nerves	Acute pulmonary edema ARDS	Examination of comatose patient
Critical Care	Syncope Cardiac Arrest CPR Shock		

Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment and public health ethics.

7. PRACTICALS---- PROCEDURES/ CLINICAL DEMONSTRATIONS

1. System wise case presentation
2. Demonstration of clinical signs
3. Small group discussion of clinical manifestations, diagnosis, differential

diagnosis, investigations and treatment
LIST OF DEMONSTRATIONS IN PRACTICALS

1. Demonstration of BLS
2. Confirming cardiac arrest
3. Checking carotid pulse
4. Manual Inline stabilization of cervical spine
5. Establishing airway patency during CPR
6. Applying chest compression in CPR

8. THEORY EXAMINATION (3 Hours)

Elaborate on : 2 x 10 = 20 Marks

Write notes on: 10 x 5 = 50 Marks

Total = 70 marks

9. PRACTICALS / CLINICAL EXAMINATION

Long case ---- 1 ----- 50 Marks

Short case-----1 ----- 30 Marks

Spotter ----- 10 Marks

Total marks= 90 Marks

Long Case

-----Complete case sheet writing including

-----History Taking

-----General Examination

-----Examination of system involved as the case may be

List of spotters for practical examination--- For example---

Facial palsy ----- Unilateral / bilateral facial palsy
Herpes Oral pigmentations of systemic diseases

Cervical

Lymphadenopathy

Cyanosis Clubbing /

koilonychia
Pallor Icterus

Examination to include in VIVA Questions in various systems including

Instruments---use for systemic evaluation and procedures-- For example

1. BP apparatus
2. IV cannula
3. Pulse oximeter
4. Thermometer
5. Glucometer
6. Ryle tube
7. Urinary catheter
8. AMBU bag
9. Endotracheal tube
10. Lab reports --- CBC, BT, CT, PT, aPTT, INR

Drugs & medications used in various medical emergencies in the dental procedures for example

1. Management of hypotension with IV saline
2. Management of cardiogenic shock with Inj Adrenaline & Inj Atropine

3. Management of seizures with Inj Diazepam / Inj Phenytoin
4. Inj Soda bicarb
5. Inj Hydrocortisone
6. Management of pulmonary edema with Inj Morphine / Inj Furosemide
7. Management of hypocalcemia with Inj Calcium gluconate
8. Management of bleeding with Inj Vit K /Inj Adrenochrome
9. Management of hypoglycemia with Inj 25 % dextrose
10. Management of asthma with bronchodilators

Viva marks= 20Marks

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100
Total				200

10. FORMATIVE / INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations should be considered. The Internal Assessment marks to be submitted to the University, once in every threemonths. The marks scored by the students shall be displayed on the Notice board, a copy forwarded by HOD shall be sent to the University once in every 3months

11. RECORD NOTE / LOG BOO

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

12. TEXT BOOKS

- i. Davidson's Principle and Practice of Medicine
- ii. Hutchison's clinical methods

10. GENERAL SURGERY

1. GOAL

The students should gain the knowledge and insight into the basic surgical principles, common surgical conditions of Head & Neck and its management.

2. OBJECTIVES

KNOWLEDGE AND UNDERSTANDING

At the end of the third BDS in General surgery the undergraduate student is expected to

1. Know the surgical anatomy , physiology and pathological basis of diseases of head and neck
2. Know the basic surgical principles
3. Know the common surgical conditions of Head & Neck
4. Know eliciting History and to do Clinical examination and to arrive at a Provisional diagnosis
5. Know about Radiological and blood investigations to arrive at a diagnosis

SKILLS

1. Know the interpretation of Radiological films of Head and Neck
2. Know the Operative procedures, Post operative complications and Post operative management
3. To differentiate between Benign and Malignant diseases of Head & Neck
4. Know to perform minor surgical procedures such as Draining an Abscess and taking a Biopsy

ATTITUDE

1. Willingness to apply the current knowledge of dentistry in the best interest of the patient and community
2. Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community

INTEGRATION

By emphasizing on the relevant information and sound knowledge of Basic Science, 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 clinical examination

of the patient.

This insight is gained in a variety of ways:

1. Lectures and small group teachings
2. Clinical Demonstrations
3. Observing Surgical procedures in theatres
4. Charts and models for Common surgical conditions

KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area/ personal care as per Universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

COMPUTER PROFICIENCY

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes, Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses, and online courses. The following validation is required and must be completed.

1. Technological Requirements for all Graduate Students
2. A laptop or desktop computer that supports the following requirements
 - Operating system requirements
 - Internet browser requirements
 - Reliable and consistent access to the internet
 - Antivirus software which is current and consistently updated
 - Microsoft Office
 - Adobe Reader (or equivalent to view PDF file)

3. COMPETENCIES

1. General skills
2. Practice Management
3. Communication and Community Resources
4. Patient Care – Diagnosis
5. Patient Care - Treatment Planning

6. Competencies specific to the subject

4. TEACHING METHODOLOGY

- Combination of Lectures
- Small group seminars, tutorials
- Observing treatment in out patient department and in General wards
- Observing Operative procedures in theatres
- Audio visual aids

5. THEORY SYLLABUS INCLUDING

BIOETHICS, DENTAL JURISPRUDENCE

THEORY SYLLABUS

TOPIC	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
		History of surgery	
	General Principles of Surgery		
Wounds	Classification, types, healing, Repair, Treatment	Medicolegal aspect and Complications	
Inflammation	Acute and chronic infections of softtissues, causative organisms and complications & treatment Transmissible viral infections		
Shock & hemorrhage	Definition, Classification, causes Clinical features and Management	Blood groups, Transfusion, bloodproducts	Hemophilias

Sinus Fistulae			
Diseases of lymph atic Syste m	TB, Secondaries	Lymphoma	Leukemia
Diseases of OralCavity	Infections, Premalignant malignantdiseases of oral cavity, Salivary gland		
Diseases of larynx& Nasopharynx		Infective and malignantdiseases	
Trachea	Tracheostomy		
Nervous system	Facial nerve, Trigeminal neuralgia	Principles of peripheralnerve injuries, regeneration, treatment	
Fractures	Mandible, Le Fort fracture	General principles of fractures, clinical presentation and treatment	Newer methods
Principles of operative surgery	Minor surgical procedures	Asepsis, Antiseptics	Sterlisation
		Principles of anaesthesiaPrinciples	Sutures, Drains,

		of tissue replacement	Diathermy Laser
Anomalies of Development of Face	Cleft lip and cleft palate		
Thyroid and Parathyroid	Thyroid disorders Malignancy	Parathyroid Disorders	

Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics.

6. CLINICAL HOURS

- Clinical demonstration in OPD – 40 Hours
 - Bedside clinics – 35 Hours
 - Operation Theatre observation – 10 Hours
 - Demonstration of emergency trauma care – 5 Hours
- Total - 90 Hours**

7. PRACTICAL EXAMINATION

Long case: one case : 1 x 50 marks = 50 marks Short case: one case: 1 x 30 marks = 30 marks

OSCE : two stations : 2 x 5 marks = 10 marks

Total : 90 Marks

Criteria to be followed during General Surgery practical examination:

Duration of Long Case : 45 minutes

Candidate should write Case sheet with Provisional Diagnosis,

Investigations and Treatment Duration of Short case: 15

minutes

Only Physical Examination of patient is sufficient OSCE duration – Each station 3 minutes

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100
Total				200

8. FORMATIVE/INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations should be considered. The Internal Assessment marks to be submitted to the University, once in every threemonths. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in every 3 months.

Topics for each assessment:

- I. History of Surgery, General Principles of Surgery, Wounds, Inflammation, Infections, Transmissible viral infections:
- II. Shock & Hemorrhage, Tumours, Ulcers, Cysts, Sinus and Fistulae, Diseases of lymphatic system, Diseases of oralcavity, Diseases of larynx, Nasopharynx Nervous system, Fractures, Principles of operative surgery, Anomalies of Development of Face, Diseases of Thyroid and Parathyroid, Swellings of Jaw, Biopsy

9. RECORD NOTE / LOG BOOK

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases as specified in Dental Council of India regulation for the students during clinical training and examinations.

11. ORAL PATHOLOGY AND ORAL MICROBIOLOGY

1. GOAL

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

2. OBJECTIVES

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

a. KNOWLEDGE AND UNDERSTANDING:

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

b. SKILLS:

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

- Diagnose and manage various common dental problems encountered in general dental practice keeping in mind the expectations and the right of the society to receive the best possible treatment available wherever possible.
- Prevent and manage complications if encountered while carrying out various surgical and other procedures.
- Carry out certain investigative procedures and ability to interpret laboratory findings.
- Promote oral health and help prevent oral diseases where possible.
- Control pain and anxiety among the patients during dental treatment.

c. ATTITUDE:

- Willingness to apply the current knowledge of dentistry in the best interest of the patient and community.
- Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life.
- Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community.
- Willingness to participate in the CPED Programmes to update knowledge and professional skill from time to time.
- Help and participate in the implementation of the national oral health policy.

d. INTEGRATION:

The knowledge gained from learning core basic and clinical science in medicine and dentistry are applied in the context of Oral Pathology for the following purpose:-

- ii. To understand the process of disease mechanism and consequential outcome.
- iii. To interpret radiological and/or laboratory features to make reliable pathological diagnosis, and thereby, to manage human health and disease.
- iv. In addition by integration of sound basic knowledge into clinical practice will enable students to develop and advance their skills for the betterment of patient care by applying scientific method either for critical appraisal of evidence based medicine or to pursue independent research relevant to medical/dental practice

1. COMPETENCIES

1. General skills
2. Practice Management
3. Communication and Community Resources
4. Patient Care – Diagnosis
5. Patient Care - Treatment Planning
6. Competencies specific to the subject

4. TEACHING HOURS

a) Lecture Hours – 25 hours (2nd BDS)

120 hours (3rd BDS)

Total 145 hours

5. TEACHING METHODOLOGY

- i. Class room lecture
- ii. Slide demonstration
- iii. Tutorials
- iv. Problem-solving

6. THEORY SYLLABUS

TOPIC	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
1.Introduction :		A bird's eye view of the different pathological processes involving the oral cavity & oral cavity involvement in systemic diseases to be brought out. Interrelationship between General	

		Medicine, General Surgery and Oral Pathology is to be emphasised.	
2.	Developmental disturbances of teeth, jaws and soft tissues of oral and paraoral region : Introduction to developmental disturbances—Hereditary, Familial mutation, Hormonal etc. causes to be highlighted.	<ul style="list-style-type: none"> Developmental disturbances of teeth-Etiopathogenesis, clinical features, radiological features and histopathological features as appropriate. The size, shape, number, structure and eruption of teeth and clinical significance of the anomalies to be emphasized. Forensic Odontology. Developmental disturbances of the jaws-size and shape of the jaws. Developmental disturbances of oral and paraoral soft tissues-lip and palate-clefts, tongue, gingival, mouth, salivary glands and face 	
Dental caries	- Definition - Clinical features - Clinical types	Caries preventive measures.	

	<ul style="list-style-type: none"> - Diagnosis - Caries microbiology Aetiopathogenesis- Theories of caries with emphasis on ecologic plaque hypothesis, specific and non-specific plaque hypothesis. •Histopathology •Immunology Complication/sequences of dental caries. 		
<p>Pulp and periapical pathology and osteomyelitis.</p>	<ul style="list-style-type: none"> • Aetiopathogenesis and their interrelationship. • Clinical features • Types of pulpitis • Microbiology • Radiology • Histopathology • Periapical diseases • Definition, classification, clinical 		

	<p>features and diagnosis of osteomyelitis.</p> <ul style="list-style-type: none"> • Sequelae of periapical abscess– summary of space infections, systemic complications and significance. 		
Periodontal disease	<ul style="list-style-type: none"> • Aetiopathogenesis and interrelationships • Clinical features • Radiology • Microbiology • Histopathology 	Basic immunological mechanisms of periodontal disease to be highlighted.	

	<ul style="list-style-type: none"> •Gingivitis •Desquamative gingivitis •Gingival enlargements •Periodontitis 		
<p>Microbial infection of softtissue: Microbiology, defence mechanism s Including immunological aspects, oral manifestati on, Histopathology and laboratory diagnosis of common bacterial, viral and fungal infections namely:-</p>	<p>BACTERIAL Tuberculosis, syphilis, ANUG and its complications, Cancrum Oris. Actino mycosis</p> <p>VIRAL •Herpes Simplex infections •Varicella Zoster •Measles •Mumps •Epstein-Barr virus •HIV infection</p> <p>FUNGAL •Relevant superficial mycosis</p> <p>APHTHOUSULCERS</p>	Relevant deep mycosis	

Common non-inflammatory diseases involving jaws:		Aetiopathogenesis, clinical features, radiological and laboratory values in diagnosis of <ul style="list-style-type: none"> •Osteogenesis imperfecta •Rickets •Cleidocranial dysplasia •Achondroplasia •Marfan's syndrome Down's syndrome 	
Diseases of TMJoint:			Ankylosis, summary of

			different types of arthritis and other developmental malformations , traumatic injuries and myofascial pain dysfunction syndrome
Cysts of oral and paraoral region. Cysts of odontogenic origin, non-odontogenic cysts, pseudocysts of jaws and soft tissue cysts of oral and paraoral region.	<ul style="list-style-type: none"> •Epidemiology •Classification •Histogenesis •Aetiopathogenesis •Definition •Clinical features •Radiology •Histopathology Laboratory features 		

Tumors of the oral cavity	Classification of odontogenictumors, non-odontogenic tumors and Salivary gland tumors with reference to <ul style="list-style-type: none">•Epidemiology•Classification•Histo genesis•Aetiopathogenesis•Definition		
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	<ul style="list-style-type: none"> •Clinical features •Radiology •Histopathology Laboratory features 		
Odontogenic Tumors– All Lesions.			
Non – Odontogenic Tumors	Benign Epithelial <ul style="list-style-type: none"> •(Papilloma, Keratoacanthoma and Naevi). Malignant epithelial (Basal cell carcinoma, Verrucous Carcinoma, Squamous Cell Carcinoma and Malignant Melanoma).		

<p>Mesenchy Mal Tumors</p>	<p>Benign Tumors</p> <ul style="list-style-type: none"> •Fibroma •Aggressive fibrous lesions •Lipoma •Haemangioma •Lymphangioma •Neurofibroma •Schwannoma •Chondroma •Osteoma •Tori. 	<p>Malignant Tumors</p> <ul style="list-style-type: none"> •Fibrosarcoma •Osteosarcoma •Giant cell tumor •Chondrosarcoma •Angiosarcoma •Kaposi sarcoma •Lymphomas •Ewing's sarcoma 	<p>Others such as osteoid osteoma / osteoblastoma/ Osteochondroma.</p>
<p>Salivary Gland Tumors</p>	<p>Benign Tumors</p> <ul style="list-style-type: none"> •Pleomorphic adenoma 	<p>•Oncocytoma</p> <p>•Warthin tumor</p> <p>Malignant Tumors</p> <ul style="list-style-type: none"> •Adenoid cystic carcinoma •Mucoepidermoid carcinoma 	<p>•Acinic cell carcinoma</p> <p>Adenocarcinoma NOS.</p>

Tumors of disputed origin		Melanotic neuroectodermal tumor of infancy Congenital epulis Granular cell myoblastoma.	
Metastatic tumors to and from oral cavity and their routes of metastasis.			General characteristics.
Fibro-osseous/Giant cell/and related lesions	<ul style="list-style-type: none"> •Fibrous dysplasia •Cemento-osseous dysplasia •Ossifying fibroma •Paget's disease •Central giant cell granuloma •Aneurysmal bone cyst •Cherubism <p>Hyperparathyroidism</p>		

<p>Traumatic, reactive and regressive lesions of oralcavity:</p>	<ul style="list-style-type: none"> •Pyogenic granuloma, exostoses, fibrous hyperplasia,traumatic ulcer and traumatic neuroma. Attrition, abrasion, erosion, bruxism, hypercementosis, dentinal changes, pulp calcifications and resorption ofteeth. •Radiation effects of oral cavity,summarry of physical and chemical injuries including allergic reactions of the oral cavity. Healing of oral wounds and complications–Dry socket. 		
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<p>Non neoplastic salivary gland diseases.</p>	<ul style="list-style-type: none"> •Definition •Classification •Epidemiology •Pathogenesis •Clinical features •Histopathology of the following:- •Sialolithiasis •Sialosis •Sialadenitis •Xerostomia •Ptyalism 	<ul style="list-style-type: none"> •Necrotizing sialometaplasia Sjogren's syndrome. 	
<p>Systemic diseases involving oral cavity: Brief review and oral manifestations ,diagnosis and significance of common blood, nutritional, hormonal and metabolic diseases of oralcavity.</p>	<ul style="list-style-type: none"> •White blood cell diseases •Red blood cell diseases •Thyroid diseases •Hyperparathyroidism •Vitamin A •Vitamin B complex •Vitamin C deficiency •Vitamin D deficiency •Recurrent Aphthous disease 	<ul style="list-style-type: none"> •Progressive systemic sclerosis •Wegener's granulomatosis •Orofacial granulomatosis Sarcoidosis 	

Mucocutaneous lesions.	<ul style="list-style-type: none"> •Lichen •plaque •Pemphegoid •Lupus erythematosus 	<ul style="list-style-type: none"> •Psoriasis •Scleroderma •Ectodermal dysplasia •Epidermolysis bullosa White sponge nevus 	
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	•Erythema multiforme		
Diseases of nerves: Facial neuralgias	•Trigeminal •Glossopharyngeal •VII nerve paralysis		•Causalgia •Psychogenic facial pain Burning mouth syndrome.
Pigmentation of oral and paraoral region and discoloration of teeth.			
Diseases of maxillary sinus:		Traumatic injuries to sinus, sinusitis, cysts and tumors involving antrum.	
Oral Precancer-Cancer	Epidemiology Aetiology Clinical and Histopathological features TNM classification.	a) Recent advances in diagnosis, management and prevention. b) Biopsy: •Types of biopsy, •Value of biopsy, •Cytology	Histochemistry and frozen sections in diagnosis of oral diseases.

<p>Principles of Basic Forensic Odontology .</p>		<ul style="list-style-type: none"> • Introduction , definition, aims and scope. • Sex and ethnic (racial) differences intooth morphology and histological age estimation. • Determination of sex and blood groups from buccal mucosa/saliva. • DNA methods. • Bite marks, rugae pattern and lip prints. • Dental importance of poisons and 	
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		<p>corrosives.</p> <ul style="list-style-type: none"> • Overview of forensic 	
Bioethics	<ul style="list-style-type: none"> •Introduction to ethics. •Ethics of the individual. •Professional ethics. 	<ul style="list-style-type: none"> •Research ethics. •Ethical workshop of cases. 	<ul style="list-style-type: none"> •Gathering all scientific factors. •Gathering allvalue factors. •Identifying working our criteria towards decisions.

<p>Jursiprudence</p>	<ul style="list-style-type: none"> •Medical negligence and liability •Informed consent and confidentiality •Rights and duties of doctors and patients Medicaland dentaethics (as per Dentists' Act) 		<ul style="list-style-type: none"> •Fundamentals of law and the constitution •Medical legislation and statutes (Dental and Medical Council Acts, etc) •Basics of civillaw (including torts, contracts and consumer protection act) •Criminal and civilprocedure code (including expert witness requirement) •Assessment and quantification of dental injuries in courts of law
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7. PRACTICALS:

a)Procedures– Histopathological slides of relevant diseases.b)Demonstrations–
Spotters/specimens/radiographs.

8. THEORY EXAMINATION: (3 Hours)

Elaborate on 2 X 10 = 20 Marks

Write Notes on 10 X 5 = 50 Marks

70 Marks

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100
Total				200

9. FORMATIVE/INTERNALASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of twoexaminations should be considered. The Internal Assessment marks to be submitted to the University, once in every three

months. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall besent to the University once in every 3 months.

Theory Internal Assessment

– 10 marks Practical Internal

Assessment – 10 marks

Total 20 markS

10. RECORD/LOGBOOK

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching material as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

11. TEXTBOOKS

- i. Oral Pathology –Soames & Southam.
- ii. Contemporary Oral and Maxillofacial pathology–Sapp, Eversole, Wysocki.

12. REFERENCEBOOKS

- i. A Text Book of Oral Pathology – Shafer, Hine & Levy.
- ii. Oral Pathology - Regezi & Sciubba.
- iii.Oral Pathology in tropics
- Prabhu, Wilson, Johnson & Daftary.
- iv.Oral & Maxillofacial Pathology
-
Neville, Damm, Allen & Chi.
- v.Medical Ethics
- Francis.
- vi.Oral pathology - Soames & Southam

13. CRI POSTING SCHEDULE AND ORIENTATION Period of Postings

Oral Pathology & Microbiology - 15 days

12. ORAL MEDICINE AND RADIOLOGY

1. GOA

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

2. OBJECTIVES

a. Knowledge and Understanding :

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

b. Skills :

- i. Able to diagnose and manage various common dental problems encountered in general dental practice, keeping in mind the expectations and the right of the society to receive the best possible treatment available wherever possible.

ii. Acquire skill to prevent and manage complications if encountered while carrying out various dental surgical and other procedures.

c. Attitude:

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

i. Willing to apply current knowledge of dentistry in the best interest of the patients and the community.

ii. Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life.

iii. Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community.

iv. Willingness to participate in the continuing education programmes to update knowledge and professional skills from time to time.

v. To help and to participate in the implementation of national health programmes.

d. Integration:

From the integrated teaching, the student shall be able to describe the various signs and symptoms and interpret the clinical manifestation of disease processes.

Horizontal integration can be done in common with basic science departments, and vertical integration can be done with clinical departments.

e. Knowledge about infection and cross infection in dentistry:

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area/ personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

- Gain adequate knowledge of various extra-oral radiographic procedures, TMJ radiography And Sialograph

f. Computer Proficiency:

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes. Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses, and online courses. The following validation is required and must be completed.

- i. Technological Requirements for all Graduate Students
- ii. A laptop or desktop computer that supports the following requirements
 - a. Operating system requirements
 - b. Internet browser requirements
 - c. Reliable and consistent access to the internet
 - d. Antivirus software which is current and consistently updated
 - e. Microsoft Office
 - f. Adobe Reader (or equivalent to view PDF files)

3. COMPETENCIES

1. General skills
 2. Practice Management
 3. Communication and Community Resources
 4. Patient Care – Diagnosis
 5. Patient Care - Treatment Planning
 6. Competencies specific to the subject
- Should be able to Identify precancerous and cancerous lesions of the oral cavity and refer to the concerned speciality for their management
 - Should have an adequate knowledge about common laboratory investigation and Interpretation of their results.
 - Should have adequate knowledge about medical complications that can arise while treating systemically compromised patients and take prior precautions, consent from the concerned medical specialists.

- Have adequate knowledge about radiation health hazards, radiation safety and protection.
- Competent to take intra-oral radiographs and interpret the radiographic findings

4. TEACHING HOURS

MINIMUM WORKING HOURS FOR SUBJECT OF STUDY

Subject	Lecture Hours	Clinical Hours	Total Hours
Oral Medicine and Radiology	65	170	235

Minimum Working Hours- 3rd BDS

Subject	Lecture Hours	Clinical Hours	Total Hours
Oral Medicine and Radiology	20	70	90

Minimum Working Hours- 4th BDS

Subject	Lecture Hours	Clinical Hours	Total Hours
Oral Medicine and Radiology	45	100	145

Forensic Odontology shall be covered in the department of Oral Pathology and Oral Medicine

5. THEORY SYLLABUS


III BDS ORAL MEDICINE AND RADIOLOGY PRACTICALS: 70 HOURS THEORY:

20 HOURS III YEAR ORAL MEDICINE THEORY

SYSTEMIC PHARMACOLOGY

<p>Oral medicine and diagnostic aids</p> <p>Diagnostic Methods</p>	<p>(1) Definition and importance of Diagnosis and various types of diagnosis</p> <p>(2) Method of clinical examinations.</p> <p>(a) General Physical examination by inspection.</p> <p>(b) Oro-facial region by inspection, palpation and other means</p> <p>(c) To train the students about the importance, role, use of saliva and techniques of diagnosis of saliva as part of oral disease</p> <p>(d) Examination of lesions like swellings, ulcers, erosions, sinus, fistula, growths, pigmented lesions, white and red patches</p> <p>(e) Examination of lymph nodes</p> <p>(3) Investigations</p> <p>(a) Biopsy and exfoliative cytology</p> <p>(b) Hematological, Microbiological and other tests and investigations necessary for diagnosis and prognosis</p>		
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<p>Diagnosis, Differential Diagnosis</p>	<p>(1) Teeth: Developmental abnormalities, causes of destruction of teeth and their sequelae and discoloration of teeth (2) Inflammation - Injury, infection and spread of infection, fascial space infections, osteoradionecrosis. (3) Temporomandibular joint: Developmental abnormalities of the condyle. Rheumatoid arthritis, Osteoarthritis, Subluxation and luxation. (4) Periodontal diseases: Gingival hyperplasia, gingivitis, periodontitis, pyogenic granuloma (5) Common cysts and Tumors:</p>		
<p>Common cysts and Tumors: (I)CYSTS:</p>	<ul style="list-style-type: none"> • Cysts of soft tissue: Mucocele and Ranula • Cysts of bone: Odontogenic and nonodontogenic. 		
<p>(II)TUMORS:</p>	<p>Soft Tissue:</p> <ul style="list-style-type: none"> • Epithelial: Papilloma, Carcinoma, Melanoma • Connective tissue: Fibroma, Lipoma, Fibrosarcoma • Vascular: Haemangioma, Lymphangioma • Nerve Tissue: Neurofibroma, Traumatic Neuroma, 		

	<p>Neurofibromatosis</p> <ul style="list-style-type: none"> Salivary Glands: Pleomorphic adenoma, Adenocarcinoma, Warthin's Tumor, Adenoidcystic carcinoma. 		
Teeth	Developmental abnormalities, causes of destruction of teeth and their sequelae and discoloration of teeth		
Inflammation	Injury, infection and spread of infection, fascial space infections, osteoradionecrosis.		
Temporomandibular joint	Developmental abnormalities of the condyle. Rheumatoid arthritis, Osteoarthritis, Subluxation and luxation.		

Periodontal diseases	Gingival hyperplasia, gingivitis, periodontitis, pyogenic granuloma		
Common cysts and Tumors: CYSTS:	Cysts of soft tissue: Mucocele and Ranula Cysts of bone: Odontogenic and nonodontogenic.		
Soft Tissue:	<ul style="list-style-type: none"> • Epithelial: Papilloma, Carcinoma, Melanoma • Connective tissue: Fibroma, Lipoma, Fibrosarcoma • Vascular: Haemangioma, Lymphangioma • Nerve Tissue: Neurofibroma, Traumatic Neuroma, Neurofibromatosis • Salivary Glands: Pleomorphic adenoma, Adenocarcinoma, Warthin's Tumor, Adenoid cystic carcinoma. 		

Hard Tissue:	<ul style="list-style-type: none"> • Non Odontogenic: Osteoma, Osteosarcoma, Osteoclastoma, Chondroma, Chandrosarcoma, Central giant cell tumor, and Central haemangioma • Odontogenic: Enameloma, Ameloblastoma, Calcifying Epithelial Odontogenic tumor, Adenomatoid Odontogenic tumor, Periapical cemental dysplasia and Odontomas 		
Oral medicines and therapeutics Bacterial	Streptococcal, tuberculosis, syphilis, vincent's, 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		
Important common mucosal lesions	<ul style="list-style-type: none"> • White lesions: Chemical burns, leukodema, leukoplakia, fordyce spots, stomatitis nicotina palatinus, white sponge nevus, 		

	<p>candidiasis, lichen planus, discoïd lupuserythematosis</p> <ul style="list-style-type: none"> • Veiculo-bullous lesions: Herpes simplex, herpes zoster, herpangina, bullous lichen planus, pemphigus, cicatricial pemphigoiderythema multiforme. • Ulcers: Acute and chronic ulcers Pigmented lesions: Exogenous and endogenous • Red lesions: Erythroplakia, stomatitis venenata and medicamentosa, erosive lesions and denture sore mouth. • Cervico-facial lymphadenopathy 		
<p>Facial pain: Organic pain:</p>	<p>Pain arising from the diseases of orofacial tissues liketeeth, pulp, gingival, periodontal tissue, mucosa, tongue, muscles, blood vessels, lymph tissue, bone, paranasal sinus, salivary glands etc.,</p> <p>Tongue in local and systemic disorders: (Aglossia, ankyloglossia, bifid tongue, fissured tongue, scrotaltongue, macroglossia, microglossia, geographic tongue, median rhomboid glossitis, depapillation oftongue, hairy tongue,</p>		

	atrophic tongue, reactive lymphoid hyperplasia, glossodynia, glossopyrosis, ulcers, white and red patches etc.)		
Oral manifestations of: (i) Metabolic disorders:	a) Porphyria (b) Haemochromatosis (c) Histiocytosis X diseases		
(ii) Endocrine disorders:	(a) Pituitary: Gigantism, acromegaly, hypopituitarism (b) Adrenal cortex: Addison's disease (Hypofunction) Cushing's syndrome (Hyperfunction) (c) Parathyroid glands: Hyperparathyroid		



	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: (Irondeficiency, plummer – vinson syndrome, pernicious anemia) Haemolytic anemias: (Thalassemia, sickle cell anemia, erythroblastosis fetalis) Aplastic anemia, Polycythemia (b) White Blood cell diseases Neutropenia, cyclicneutropenia, agranulocytosis, infectious mononeucleosis and leukemias (c) Haemorrhagic disorders: Thrombocytopenia, purpura, hemophillia, christmas disease and von willebrand’s disease		
Disease of salivary glands:	(i) Development distrubances: Aplasia, atresia and aberration (ii) Functional disturbances: Xerostomia, ptyalism (iii) Inflammatory conditions: Nonspecific sialadenitis, mumps, sarcoidosis, heerdfort’s syndrome (Uveoparotid fever), Necrotising sialometaplasia (iv) Cysts and tumors: Mucocele, ranula, pleomorphic adenoma, mucoepidermoid		

	<p>carcinoma</p> <p>(v) Miscellaneous: Sialolithiasis, Sjogren's syndrome, Mikulicz's disease and sialosis</p>		
<p>Dermatologic al diseases with oral manifestation s:</p>	<p>(a) Ectodermal dysplasia</p> <p>(b) Hyperkeratosis palmarplantaris with periodontopathy</p> <p>(c) Scleroderma</p> <p>(d) Lichen planus including gingivitis syndrome (e) Lupus erythematosus</p>		

	<p>(f) Pemphigus</p> <p>(g) Erythema multiforme</p> <p>(h) Psoriasis</p> <p>(8) Immunological diseases with oral manifestations</p> <p>(a) Leukemia</p> <p>(b) Lymphomas</p> <p>(c) Multiple myeloma</p> <p>(d) AIDS clinical manifestations, opportunistic infections, neoplasms</p> <p>(e) Thrombocytopenia</p> <p>(f) Lupus erythematosus</p> <p>(g) Scleroderma</p> <p>(h) dermatomyositis</p> <p>(i) Submucous fibrosis</p> <p>(j) Rheumatoid arthritis</p> <p>(k) Recurrent oral ulcerations including Behcet's syndrome and Reiter's syndrome</p>		
Allergy:	Local allergic reactions, anaphylaxis, serum sickness (local and systemic allergic manifestations to food drugs and chemicals)		
Foci of oral infection and their ill			

effects on general health			
Management of dental problems in medically compromised persons:	<p>i) Physiological changes: Puberty, pregnancy and menopause</p> <p>(ii) The patients suffering with cardiac, respiratory, liver, kidney and bleeding disorders, hypertension, diabetes and AIDS. Post-irradiated patients.</p>		
	Precancerous lesions and conditions		
	Neuralgic pain due to unknown causes: Trigeminal neuralgia		
	Myofascial Pain Dysfunction Syndrome (MPDS), Bell's		

<p>Diseases of bone and Osteodystrophies:</p>	<p>Natarajapuram, NH-544 (Salem to Coimbatore Development Kumarapalayam – 638 183, Namakkal District, Tamil Nadu. PH : +91 93458 55001 +91 94887 33332, +91 93458 999 E- Mail : dental @jkkn.ac.in Web: www.jkkn.ac.in</p>	<p>Developmental Anomalies,</p>
		<p>Exostosis and tori, infantile cortical hyperostosis, osteogenesis imperfecta,Marfans syndrome, osteopetrosis. Metabolicdisorders – Histiocytosis • Endocrine – Acro-megaly and hyperparathyroidism Miscellaneous – Paget’sdisease, Mono and polyostotic fibrous dysplasia, Cherubism. • Granulomatou s diseases: Tuberculosis, Sarcoidosis, Midline lethal granuloma, Crohn’s Disease and Histiocytosis X • Miscellaneous Disorders: Burkitt lymphoma, sturge – Weber syndrome, CREST syndrome,</p>

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PRINCIPAL
J.K.K.NATTRAJA DENTAL
COLLEGE & HOSPITAL
KUMARAPALAYAM - 638 183.

<p>Nerve and muscle diseases:</p>		<p>(i) Nerves: (a) Neuropraxia (b) Neurotemesis (c) Neuritis (d) Facial nerve paralysis including Heerfordt’s syndrome, Melkerson Rosenthal syndrome and ramsayhunt syndrome (e) Neuroma (f) Neurofibromatosis (g) Frey’s syndrome (ii) Muscles: (a) Myositis ossificans (b) Myofascial pain dysfunction syndrome (c) Trismus</p>	
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Therapeutics		<ul style="list-style-type: none">• General therapeutic measures – drugs commonly used in oral medicine viz., antibiotics, chemotherapeutic agents, anti-inflammatory and analgesic drugs, astring	
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<p>Recent advancements in Field of Oral</p>	<p>(MANAGED BY J.K.K. RANGAMMAL CHARITABLE TRUST) Natarajapuram, NH-544 (Salem to Coimbatore), Kumarapalayam – 638 183, Namakkal District, Tamil Nadu. PH : +91 93458 55001 +91 94887 33332, +91 99653 63 999 E- Mail : dental @jkkn.ac.in Web: www.jkkn.ac.in</p>	<p>Procedures for post-mortem dental</p>
<p>Medicine and Oral Diagnosis Clinical significance of laboratory values Forensic examination</p>		<p>examination; maintaining dental records and their use in dental practice and post- mortem identification; jurisprudence and ethics Forensic odontology: (a) Medicolegal aspects of orofacial injuries (b) Identification of bite marks (c) Determination of age and sex</p>

ORAL RADIOLOGY			
Scope of the subject and history of origin			
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		
Biological effects of radiation			
Radiation safety and protection measures			
Principles of image production			

Radiographic techniques	(i) Intra-Oral: (a) Periapical radiographs (Bisecting and paralleltechnics) (b) Bite wing radiographs (c) Occlusal radiographs (ii) Extra-oral: (a) Lateral projections of skull and jaw bones andparanasal sinuses (c) Cephalograms (d) Orthopantomograph (e) Projections of temperomandibular joint andcondyle of mandible (f) Projections for Zygomatic arches (iii) Specialised techniques: (a) Sialography		
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	(b) Xeroradiography (c) Tomography		
Factors in production of good radiographs:	(a) K.V.P. and mAs of X-ray machine (b) Filters (c) Collimations (d) Intensifying screens (e) Grids (f) Xray films (g) Exposure time (h) Techniques (i) Dark room (j) Developer and fixer solutions (k) Film processing		
Radiographic normal anatomical landmarks			
Faculty radiographs and artefacts in radiographs			
Interpretation of radiographs in various abnormalities of			

teeth, bones and other orofacial tissue.			
		Principles of radiotherapy of orofacial malignancies and complications of radiotherapy Contrast radiography and basic knowledge of radio-active isotopes	
Radiography in			Radiographic

Forensic Odontology			age estimation and post- mortem radiographi c methods Recent advanceme ntsin Field of Oraland Maxillofaci al Radiology
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Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics.

6. PRACTICALS/ CLINICS

Orientation Postings in Oral Medicine and Radiology Introduction to clinical armamentarium

Demonstration of Patient registration

Orientation and visit to paramedical departments like

Laboratory and Pharmacy Writing of case sheets

Follow up

Demonstration of Intraoral, extraoral and Digital radiography Training in Radiation protection methods

Interpretation of Pathology

Student should undergo Basic Life Support and Biomedical waste management training

7. PRACTICAL / CLINICAL EXAMINATIONS

I. Clinicals in Oral Medicine: 60 Marks (recording of Long Case)

- a. Case History taking : 30 Marks
- b. Diagnosis & Differential Diagnosis: 10 Marks
- c. Investigations : 10 Marks
- d. Management : 10 Marks

II. Clinicals in Radiology: 30 Marks (One Intra Oral Periapical Radiograph to be taken)

- a. Technique: 10 Marks
- b. Processing: 10 Marks
- c. Interpretation: 10 Marks Viva - 20 Marks

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100
Total				200

8. TEXT BOOKS

1. Burket's Oral Medicine 12th Edition
2. Differential Diagnosis of Oral and Maxillofacial Lesions, 5e.(Norman K Wood , Paul W Goaz)
3. White and Pharoah, Oral Radiology Principles and Interpretation: First South Asia Edition
4. Essentials of Dental Radiography and Radiology, 4e. by Eric Whaites
5. Oral and Maxillofacial Pathology: First South Asia Edition by Neville
6. Shafer's Textbook of Oral Pathology - 8th Edition

9. REFERENCE BOOKS

a) Oral Diagnosis, Oral Medicine & Oral Pathology

- i. Burkit – Oral Medicine – J.B. Lippincott Company
- ii. Principles of Oral Diagnosis, Coleman, Mosby Year Book
- iii.Oral Manifestations of Systemic Diseases, Jones, W.B. Saunders company
- iv.Oral Diagnosis & Oral Medicine, Mitchell
- v. Oral Diagnosis, Kerr
- viii. Oral Pathology, Shafers
- ix. Principles and practice of Oral Medicine, Sonis.S.T., Fazio.R.C. and Fang.L

b) Oral Radiology

- i. Oral Radiology White & Goaz, Mosby year Book
- ii. Dental Radiology, Weahrman,C.V. Mosby Company
- iii. Oral Roentgenographs Diagnosis, Stafne ,W.B. Saunders Co
- iv. Fundamentals of Dental radiology, Sikri, CBS Publishing.

(c) Forensic Odontology

- i. Practical Forensic Odontology, Derek H. Clark ,Butterworth-Heinemann
- ii. Manual of Forensic Odontology, C Michael Bowers, Gary Bell

10. CRI POSTING SCHEDULE AND ORIENTATION

1. Standardized examination of patients	25 cases
2. Exposure to clinical, pathological laboratory procedures and biopsies	5 cases
3. Effective training in taking of Radiographs	2 full month
(Intra-oral)I.O. (Extra oral) E.O.	1
Cephalogram	1
4. Effective management of cases in wards	2 cases

Period of Postings

Oral Medicine & Radiology - 1 Month



13. PAEDIATRIC AND PREVENTIVE DENTISTRY

1. GOAL

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

2. OBJECTIVES

a. Knowledge and understanding:

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

b. Attitude:

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

- Willingness to apply the current knowledge of dentistry in the best interest of the patient and community.
- Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life.
- Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community.
- Willingness to participate in the CPED Programmes to update knowledge and professional skill from time to time.
- Help and participate in the implementation of the national oral health policy

c. Integration:

A graduate should have good knowledge and should be able to apply the different concepts and manage the patient as a whole.

d. Knowledge about Infection and cross infection in dentistry:

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area/ personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

4. TEACHING HOURS

	Lecture Hours	Clinical Hours
Third BDS	20	70
Fourth BDS	45	100
Total	65	170

5. TEACHING METHODOLOGY

- Lectures- powerpoint presentations, ohp sheets, interactive sessions

- Seminars
- Evaluation of clinical skills during their practical hours
- CDE programs



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Topic	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
1. Introduction to Pedodontics And Preventive Dentistry.	Definition, Scope, Objectives And Importance		
2. Growth And Development	<ul style="list-style-type: none"> • Importance of Study of Growth and Development In Pedodontics • Prenatal and Postnatal Factors In Growth and Development • Theories Of Growth And 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	<ul style="list-style-type: none"> • Development of Teeth and Associated Structures 		
Histology	<ul style="list-style-type: none"> • Eruption and Shedding of Teeth • Teething Disorders and their Management • Chronology Of Eruption Of Teeth • Differences Between Deciduous And Permanent Teeth • Importance Of First Permanent Molar 		
5. Dental Radiology	Dental Radiology Related To Pedodontics		



Related To Pedodontics			
6. Oral Surgical Procedures In Children	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Historical Background • Definition, Etiology And Pathogenesis • Caries Pattern In Primary, Young Permanent And Permanent Teeth In Children • Rampant Caries, Early Childhood Caries and Extensive Caries: Definition, Etiology, Pathogenesis, Clinical Features, Complications And Management • Role of Diet and Nutrition In Dental Caries • Dietary Modifications and 		

	<p>DietCounseling</p> <ul style="list-style-type: none"> • Caries Activity Tests, Caries Prediction, Caries Susceptibili 		
8. Gingival And Periodontal Diseases In Children	<ul style="list-style-type: none"> • Normal Gingiva and Periodontium InChildren • Definition, Etiology and Pathogenesis • Prevention And Management of Gingivaland Periodontal Diseases 		
9. Child	<ul style="list-style-type: none"> • Definition 		

	<ul style="list-style-type: none"> • Theories of Child Psychology • Psychological Development of Children With Age • Principles of Psychological Growth and Development While Managing Child Patient • Dental Fear And Its Management • Factors Affecting Child's Reaction To Dental Treatment 		
10. Behaviour Management	<ul style="list-style-type: none"> • Definitions • Types of Behavior Encountered In The Dental Clinic • Non-Pharmacological And Pharmacological Methods Of Behavior Management 		
11. Pediatric Operative Dentistry	<ul style="list-style-type: none"> • Principles of Pediatric operative Dentistry • Modifications Required For Cavity Preparation In Primary And Young Permanent Teeth • Various Isolation Procedures • Restorations Of Decayed Primary, Young Permanent And Permanent Teeth In Children Using Various Restorative 		

	<p>Materials Like Glass Ionomer, Composites And Silver Amalgam.</p> <ul style="list-style-type: none"> Stainless Steel, Polycarbonate And Resin Crowns 		
12. Pediatri c Endodo ntics	<ul style="list-style-type: none"> Principles And Diagnosis Classification Of Pulpal Pathology In Primary, Young Permanent And Permanent Teeth 		

	<ul style="list-style-type: none"> • Management of Pulpally Involved Primary, Young Permanent and Permanent Teeth: Direct And Indirect Pulp Capping, Pulpotomy, Pulpectomy, Apexogenesis And Apexification • Obturation Techniques And Materials Used For Primary, Young Permanent and Permanent Teeth In Children 		
13. Traumatic Injuries In Children	<ul style="list-style-type: none"> • Classification And Importance • Sequelae And Reaction of Teeth To Trauma • Management Of Traumatized Teeth 		
14. Preventive and Interceptive Orthodontics	<ul style="list-style-type: none"> • Definitions • Problems Encountered During Primary and Mixed Dentition Phases and their Management • Serial Extractions • Space Management 		
15. Oral Habits In Children	<ul style="list-style-type: none"> • Definition, Etiology And Classification • Clinical Features Of Digit Sucking, Tongue Thrusting, Mouth Breathing and Various Secondary Habits 		

	<ul style="list-style-type: none"> Management Of Oral Habits In Children 		
16. Dental Care Of Children With Special Needs	Definition, Etiology, Classification, Behavioural and Clinical Features and Management of Children With: Physically Handicapping Conditions, Mentally Handicapping Conditions, Medically Compromising Conditions And Genetic Disorders.		
17. Congenital	Definition, Classification, Clinical Features And		



Abnormalities In Children	Management		
18. Dental Emergencies In Children And Their Management	Dental Emergencies In Children and their Management		
19. Dental Materials Used In Pediatric Dentistry	Dental Materials Used In Pediatric Dentistry		
20. Preventive Dentistry	<ul style="list-style-type: none"> • Definition • Principles And Scope • Types Of Prevention • Different Preventive Measures Used In Pediatric Dentistry Including Pit and Fissure Sealants and Caries Vaccine 		
21. Dental Health Education And School Dental Health Programs	Dental Health Education And School Dental Health Programs		

22. Fluorides	<ul style="list-style-type: none"> • Historical Background • Systemic And Topical Fluorides • Mechanism Of Action • Toxicity And Management • Defluoridation Techniques 		
23. Case History Recording	Outline Of Principles Of Examination,Diagnosis And Treatment Planning		
24. Setting up of Pedodontics Clinic		<ul style="list-style-type: none"> • Genetics • Growth and development with regard to advancedtheory and its applications to 	<ul style="list-style-type: none"> • Pediatric dentalimplants in children • Applicati ons oflasers in pediatric Dentistry • Regenerative



		<p>patient management</p> <ul style="list-style-type: none"> • Manage mentof child abuse and neglect • Modifica tionsof spacemaintainer sand space management in children • Adva ncedOral surgical consideratio ns inyoung child • Adva nced behavior management strategies • Ethics- Introduction, ethicsof an individual, profession ethics, research 	<p>Endodontics for primaryteeth</p> <ul style="list-style-type: none"> • Orthopaed ic appliances for children • Managemen t andCorrective surgical procedures for children with cleft lip and palate
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		ethics, gathering all scientific factors, gathering all value factors, identifying areas of value conflict, setting of priorities and working our criteria towards decisions.	
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Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics

6. 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.

8. THEORY EXAMINATION (3 Hours)

Elaborate on 2 x 10 = 20 Marks

Write notes on 10 x 5 = 50 Marks

70 Marks

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100
Total				200

9. FORMATIVE /INTERNAL ASSESSMENT:

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations should be considered. The Internal Assessment marks to be submitted to the University, once in every threemonths. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall besent to the University once in every 3 months.

Theory Internal assessment - 10 Marks
Practical Internal assessment -10 Marks

To assess the clinical knowledge of the student and to understand their ability to manage child patients efficiently.

10. RECORD NOTE/LOG BOOK

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

11. TEXT BOOKS

1. Pediatric Dentistry (Infancy through Adolesences) - Pinkharn.
2. Clinical Use of Fluorides - Stephen H. Wei.
3. Understanding of Dental Caries - NikiForuk.
4. Handbook of Clinical Pedodonties - Kenneth. D.
1. Dentistry for the Child and Adolescence - McDonald.
2. Pediatric Dentistry -Damle S. G.
3. Behaviour Management - Wright
4. Traumatic Injuries - Andreason.
5. Textbook of Pedodontios – ShobhaTandon

12. REFERENCE BOOKS

1. Paediatric Dentistry (Infancy through Adolesences) – Pinkham.
2. Kennedy's Pediatric Operative Dentistry - Kennedy & Curzon.
3. Occlusalguidance in Paediatric Dentistry -- Stephen H. Wei.

4. Clinical Use of Fluorides - Stephen H. Wei.
5. Paediatric Oral & Maxillofacial Surgery - Kaban.
6. Paediatric Medical Emergencies - P. S. Whatt.
7. Understanding of Dental Caries – Niki Forutk.
8. An Atlas of Glass Ionomer cements - G. J. Mount.
9. Clinical Pedodontics - Finn.
10. Textbook of Pediatric Dentistry - 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 Adolescent – Mc. Donald.
16. Pediatric Dentistry – Damle S.G.
17. Behaviour Mangement – Wright.
18. Pediatric Dentistry - Mathewson.
19. Traumatic Injuries – Andreason
20. Occlusal guidance in Pediatric Dentistry - Nakata.
21. Pediatric Drug Therapy - Tomare
22. Contemporary Ortodontics - 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.

13. CRI POSTING SCHEDULE AND ORIENTATION

During their posting in Pedodontics the Dental graduates shall perform:

- | | |
|--|---------|
| 1. Topical application of fluorides including varnish | 5Cases |
| 2. Restorative procedures of carious deciduous teeth in
Children. | 10Cases |
| 3. Pulpotomy | 2Cases |
| 4. PuIpectomy | 2Cases |
| 5. Fabrication and insertion of space maintainers | 1Case |
| 6. Oral habits breaking appliances | 1Case |

Period of Postings

Pedodontics - 1 Month



14. ORTHODONTICS AND DENTOFACIAL ORTHOPAEDICS

1. GOAL

Practice respective speciality efficiently and effectively, backed by scientific knowledge and skill;

- exercise empathy and a caring attitude and maintain high ethical standards;
- continue to evince keen interest in professional education in the speciality and allied specialities whether inteaching or practice;
- willing to share the knowledge and skills with any learner, junior or a colleague;
- to develop the faculty for critical analysis and evaluation of various concepts and views and to adopt the mostrational approach

2. OBJECTIVES

The objective of the Under graduate training is to train a student so as to ensure higher competence in both general and special area of interest and prepare him or her for a career in teaching, research and speciality practice. A student must achieve a high degree of clinical proficiency in the subject and develop competence in research and its methodology in the concerned field. The objectives to be achieved by the candidate on completion of the course may be classified as under :

- Knowledge and Understanding
- Skills
- Attitude
- Knowledge about infections and cross infections in Dental Practice – HIV and Hepatitis control
- Computer Proficiency

a. KNOWLEDGE:

- (i) Demonstrate understanding of basic sciences relevant to speciality;
- (ii) Describe aetiology, pathophysiology, principles of diagnosis and management of common problems within the speciality in adults and children;

(iii) Knowledge by self study and by attending courses, conferences and seminars pertaining to speciality;

b. SKILLS:

- I. take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the condition;
- II. acquire adequate skills and competence in performing various procedures as required in the speciality.

c. ATTITUDE:

HUMAN VALUES, ETHICAL PRACTICE AND COMMUNICATION ABILITIES.

- I. adopt ethical principles in all aspects of practice;
- II. foster professional honesty and integrity;
- III. deliver patient care irrespective of social status, caste, creed, or religion of the patient;
- IV. develop communication skills, to explain various options available and obtain a true informed consent from the patient;
- V. provide leadership and get the best out of his team in a congenial working atmosphere;
- VI. apply high moral and ethical standards while carrying out human or animal research;
- VII. be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed;
- VIII. respect patient's rights and privileges including patient's right to information and right to seek a second opinion

d. INTEGRATION:

Students should have a holistic understanding of each of the pathological situation and be able to frame a comprehensive treatment plan and deliver treatment to the limitations of what she/ he is trained and efficient and at the same time refer to the concerned specialists thereafter for opinion / further management .

e. KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY :

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area/ personal care as per universal protection, and disposal of medical wastes in the appropriate

modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

f. COMPUTER PROFICIENCY

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes. Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses, and online courses. The following validation is required and must be completed.

- i. Technological Requirements for all Graduate Students
- ii. A laptop or desktop computer that supports the following requirements
 - a. Operating system requirements
 - b. Internet browser requirements
 - c. Reliable and consistent access to the internet
 - d. Antivirus software which is current and consistently updated
 - e. Microsoft Office
 - f. Adobe Reader (or equivalent to view PDF files)

3. COMPETECIES

1. General skills
2. Practice Management
3. Communication and Community Resources
4. Patient Care – Diagnosis
5. Patient Care - Treatment Planning

Competencies specific to the subject.

4. TEACHING HOURS

	Lecture Hours	Clinical Hours
3 rd Year	20	70
4 th Year	30	100

5. TEACHING METHODOLOGY

Use of active methods of learning should be encouraged, which would enable students to develop personality, communication skills and other qualities which are necessary, such as:

1. Group discussions,
2. Seminars,
3. Role play,
4. Field visits,
5. Demonstrations,
6. Peer interactions etc.,

Make maximum efforts to encourage integrated teaching and de-emphasize compartmentalisation of disciplines so as to achieve horizontal and vertical integration in different phases

6. THEORY SYLLABUS

Undergraduate program in Orthodontics is designed to enable the qualifying dental surgeon to diagnose, analyse and treat common orthodontic problems by preventive, interceptive and corrective orthodontic procedures. The following basic instructional procedures will be adapted to achieve the above objectives.

Growth and Development: In general	<ol style="list-style-type: none">1. Definition2. Growth spurts and differential growth3. Factors influencing growth and development4. Methods of measuring growth		
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	5. Growth theories (Genetic, Sicher's, Scott's, Moss's, Petrovics, Multifactorial) 6. Genetic and Epigenetic factors in growth 7. Cephalocaudal gradient in growth		
Morphologic development of craniofacial structures	Methods of bone growth Prenatal growth of craniofacial structures Postnatal growth and development of: Cranialbase, Maxilla, Mandible, Dental arches and occlusion.		
Functional development of dental arches and occlusion	Factors influencing functional development of dental arches and occlusion Forces of occlusion Wolfe's law of transformation of bone Trajectories of forces		
Clinical application of growth and development Malocclusion – In general	Concept of normal occlusion Definition of Malocclusion Description of different types of dental, skeletal and functional malocclusion		
Classification of Malocclusion: Principle, description,	Definition, importance, classification, local and general etiological factors. Etiology of following different types of malocclusion		


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advantages and disadvantages of classification of malocclusion by Angle's, Simon's, Lischer's and Ackerman and Proffitt's. Normal and abnormal function of			
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Stomatognathic system Aetiology of malocclusion			
Midline diastema Spacing Crowding Cross bite: anterior/posterior Class III malocclusion Class II malocclusion Deep bite Open bite Diagnosis and diagnostic aids	Definition, importance and classification of diagnostic aids Importance of case history and clinical examination in orthodontics Study models: - importance and uses – preparation and prevention of study models Importance of intraoral X-rays in orthodontics Cephalometrics: Its advantage and disadvantage		
Definition Description and use of cephalostat Description and use of anatomic landmarks lines and angles used in cephalometric analysis Analysis	Panoramic radiograph- Principles, advantage, disadvantage and uses Electromyography and its uses in orthodontics Wrist X-rays and its importance in orthodontics		

<p>– Steiner’s, Down’s, Tweed’s, Ricket’s-E- Line</p>			
<p>General principles in orthodontic treatment planning of dental and skeletal malocclusion Anchor age in</p>	<p>Different types of tooth movement Tissue response to orthodontic force application Age factor in orthodontic tooth movement</p>		

<p>orthodontics – definition, classification, types and stability of anchorage Biomechanical principles in orthodontic tooth movement</p>			
<p>Preventive orthodontics</p>	<p>Definition Different procedures undertaken in preventive orthodontics and their limitation</p>		
<p>Interceptive orthodontics</p>	<p>Definition Different procedures undertaken in interceptive orthodontics and their limitations Serial extractions: Definition, indication, contraindication, technique, advantages and disadvantages Role of muscle exercises as an interceptive procedures</p>		

<p>Corrective orthodontics</p>	<p>Definition, factors to be considered during treatment planning Model analysis: Pont’s, Ashley Howe’s, Bolton, Carey’s, Moyer’s mixed dentition Analysis. Methods of gaining space in the arch: Indications, relative merits and demerits of proximal stripping, arch expansion and extractions, molar distalisation. Extractions in orthodontics- indications and selection of teeth for extraction.</p>		
<p>Orthodontic appliances: General</p>	<p>Requisites for orthodontic appliances Classification, indications of removable and functional appliances Methods of force applications Material used in construction of various orthodontic appliances – uses of</p>		



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	<p>stainless steel, technical consideration in curing of acrylic, principles of welding and soldering, fluxes and antfluxes Preliminary knowledge of acid etching and direct bonding</p>		
<p>Ethics in practice of dentistry and patient care Removable Orthodontic Appliances</p>	<p>Components of removable appliances Different types of clasps and their uses Different types of labial bows and their uses Different types of springs and their uses Expansion appliances in orthodontics *Principles *Indications of arch expansion *Descriptions of expansion appliances and different types of expansion devices and their uses *Rapid maxillary expansion</p>		
<p>Fixed Orthodontic Appliances</p>	<p>Definition, Indications and Contraindications Component parts and their uses Basic principles of different techniques: Edgewise, Begg's, straight wire</p>		
<p>Extra Oral Appliances</p>	<p>Headgears Chin cups Reverse pull headgear</p>		

Myo Functional Appliances	Definition and principles Muscle exercises and their uses in orthodontics Functional appliances * Activator, Oral screens, Frankel’s functionalregulator, Bionator, Twin block, Lip bumper * Inclined planes – upper and lower		
Orthodontic management of Cleftlip and palate Principles of surgical orthodontics	Brief knowledge of correction of : Mandibular Prognathism and RetrognathismMaxillary prognathism and retrognathism Anterior open bite and deep bite Cross bite		
Principles, differential diagnosis	Midline diastema Cross bite Deep bite Open bite Spacing Crowding Class II - Division 1,Division 2		

and the methods of treatment of :	Class III Malocclusion–True and Pseudo class III		
Retention and Relapse	Definition Need for retention Cause of relapse Methods of retention Different types of retention devices Duration of retention Theories of retention		
Clinicals and Practical s in Orthodontics		Model Analysis Pont’s Ashley Howe’s Carey’sBoltons Moyers	
Cephalometric Analysis		Down’s Steiners Tweeds	Implants In Orthodontics Cbct – Applications Hand Wrist XrayTracing Digital Records Orthodontic Clinical Set Up Sterilisation In Orthodontics Soft Wares Applications In

			Orthodontics Accelerated Orthodontics Adult Orthodon tics
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Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics

7. PRACTICAL TRAININ

1. Discussion of 5 Clinical Cases – Each Of Different Types:

Dentoalveolar Malocclusion : Class I/II/III Malocclusion With

:Proclination/Spacingdeep Bite/Open Bite, EtcSkeletal Class II: Growing

Individuals Requiring Growth Modification

Skeletal Class II: Non Growing

Requiring Surgical Correction

Skeletal Class III: Growing

Individuals Requiring Growth

ModificationSkeletal Class III:

Non Growing Requiring Surgical

Correction

2. Fabrication And Delivery Of 5 Removable Appliances
3. Mixed Dentition Analysis
4. Permanent Dentition Space Analysis
5. Demostration Of Welding And Soldering
6. Demostration Of Cephalometric Tracing
7. Demostration Of Fixed applianc

PROCEDURES: practical exercises required to be proficient about as given below

DEMONSTRATION: Teaching faculty should demonstrate each of the exercises and guide students to understand the properties of the components, their use and method of activating and adjusting them when incorporated in the orthodontics appliances.

PRACTICAL EXERCISES REQUIRED TO BE PROFICIENT ABOUT :

- Basic wire bending exercise Gauge 22 or 0.7mm
- 1. Straightening of wire (4 Nos)
- 2. Bending of a equilateral triangle
- 3. Bending of a rectangle
- 4. Bending of a square
- 5. Bending of a circle



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- A) Finger spring
- B) Single cantilever spring
- C) Double cantilever spring (Z- spring)
 - Construction of canine retractors
 - A. Buccal canine retractor
 - B. Helical canine retractor
 - C. U loop canine retractor
- A. Upper hawley's appliance
- B. Upper hawley's appliance with anterior bite plane
- C. Upper hawley's appliance
- D. With tongue spikes
- E. Upper hawley's retainer appliance

8. THEORY EXAMINATIONS

Elaborate on 2 X 10 = 20 Marks

Write Notes on 10 X 5 = 50 Marks

70 Marks

9. PRACTICAL EXAMINATIONS

	Marks	Total	
1. Clinicals/OSCE/OSPE/Spotters:	10 X 3 Marks	30 Marks	10 Stations
2. Clinical Case Discussion Intra & Extra Oral			
	Findings :	10 Marks	
	Diagnosis:	10 Marks	
	Treatment Plan:	10 Marks	30 Marks

	Examination	Internal Assessment	Viva	Total

Theory	70	10	20	100
Practicals	90	10	-	100
Total				200

10. FORMATIVE/INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations should be considered. The Internal Assessment marks to be submitted to the University, once in every threemonths. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in every 3 months.

IA will be based on :

- 1) wire bending exercise/ assignment completion
- 2) Attendance in Lab classes and clinical
- 3) clinical assignment completion on time
- 4) patient care – ethics , communication, behaviour , responsibility

11. RECORD NOTE / LOG BOOK

Record shall be maintained as per University norms and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations

12. TEXT BOOKS

1. Essentials Of Orthodontics By Neil T Reske
2. Removable Orthodontic Appliances By Philip Adams
3. Text Bookm Of Orthodontics By Samir E Bishara
4. Wire Bending By Dickson
5. Dental Materials By Anu Savice
6. Understanding Orthodontics By Perry
7. Orthodontic Notes By Walter & Houston
8. Handbook Of Facial Growth By Enlow & Hans
9. A Text Book Of Orthodontics By Wjb Houston , Stephans ,Tilley

10. Removable Orthodontic Appliance By Isaacson

11. Principles And Practice Of Orthodontics By J R E Mills

13. Reference Books

1. Contemporary Orthodontics - William 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 Orthodontic Appliances - C. Philip Adams
6. Clinical Orthodontics : Vol 1 & 2 - Salzmann

14. CRI POSTING SCHEDULE AND ORIENTATION

A. The internees shall observe the following procedures during their posting in Orthodontics:

1. Detailed diagnostic procedures for 5 patients
2. Laboratory techniques including wire-bending for removable appliances, soldering and processing of myo-functional appliances.
3. Treatment of plan options and decisions.
4. Making of bands, bonding procedures and wire insertions.
5. Use of extra oral anchorage and observation of force values.
6. Retainers.
7. Observe handling of patients with oral habits causing malocclusions

The dental graduates shall do the following laboratory work:-

1. Wire bending for removable appliances and space maintainers including welding and heat treatment procedure. -5Cases
2. Soldering exercises, banding & bonding procedures -2Cases
3. Cold-cure and heat-cure acrylisation of simple Orthodontics appliances -5Cases

Period of Postings

Orthodontics - 1 Month

15. PERIODONTOLOGY

1. GOAL

To impart optimal knowledge to the students within the preview of the curriculum designed by the DCI- under the following guidelines- must know – desirable to know – nice to know

2. OBJECTIVES

a. Knowledge and understanding:

To have adequate knowledge and understanding of the basic periodontal tissues, etiology, pathophysiology, diagnosis and treatment planning for various periodontal disease/ problem.

b. Skill:

To chart a proper clinical history after thorough examination of the patient, able to perform diagnostic procedure; able to interpret laboratory investigation; arrive at a provisional / definitive diagnosis regarding the periodontal problem in question.

c. Attitude:

To develop the right attitude to store his knowledge and the willingness to learn newer concept so as to keep pace with current technology and development; also to seek opinion from an allied Medical Dental specialist as and when required.

d. Integration:

From the integrated teaching of other clinical sciences, the students shall be able to describe the various signs, and symptoms and interpret the clinical manifestations of disease processes.

e. Knowledge about infection and cross infection in dentistry:

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area/ personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

f. Computer proficiency :

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes. Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses, and online courses. The following validation is required and must be completed.

- i. Technological Requirements for all Graduate Students
- ii. A laptop or desktop computer that supports the following requirements
 - a. Operating system requirements
 - b. Internet browser requirements
 - c. Reliable and consistent access to the internet
 - d. Virus software which is current and consistently updated
 - e. Microsoft Office
 - f. Adobe Reader (or equivalent to view PDF files)

3. COMPETENCIES

1. General skills
2. Practice Management
3. Communication and Community Resources
4. Patient Care – Diagnosis
5. Patient Care - Treatment Planning
6. Competencies specific to the subject

4. TEACHING METHODOLOGY

THIRD BDS (DURING CLINICAL POSTING)

- i. Infection control
- ii. Periodontal instruments and instrumentation
- iii. Chair position, ergonomics, principles of instrumentation; maintenance of instruments
- iv. Basic tissues- gingiva , periodontal ligament, cementum, alveolar bone.
- v. Plaque control- both mechanical and chemical
- vi. Motivation of patients- oral hygiene instructions & education with typhodont

FINAL BDS(DURING CLINICAL POSTING)

- i. Revision of third BDS tutorial
- ii. Diagnosis / classification of periodontal disease
- iii. Determination of prognosis and treatment plan
- iv. Radiographic interpretation and lab diagnosis
- v. Ultrasonic instrumentation
- vi. Principles of periodontal surgery
- vii. Periodontal
surgical procedure
and suturing
technique
- viii. Concepts of local
drug delivery
- ix. Occlusion – correction & management.
- x. Splinting techniques



5. THEORY SYLLABUS

TOPIC	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
Third BDS lecture classes : 40 hours	1. Instruments and instructions 2. Gingiva 3. Junctional epithelium, gingivalpigmentation 4. GCF & saliva 5. Cementum 6. Periodontal ligament 7. Ageing and the periodontal & alveolarbone 8. Classification of periodontal disease 9. Epidemiology of gingival and periodontaldisease 10. Plaque – introduction, properties,structure and formation 11. Plaque – Microbial specificity, micro organisms associated with periodontaldisease 12. Calculus 13. Immunology – basic concepts 14. Immunology – microbial host interaction 15. Gingivitis 16. Acute lesions of gingiva 17. Gingival	Genetic factors associated with periodontal disease.	1. Desquamative gingivitis 2. Influence of endocrine disorders& hormonal changes on the periodontium 3. Influence of haematological disorders& immune deficiencies on the periodontium 4. Stress & psychosomaticdisorders and the periodontium 5. Nutritional influences onthe periodontium 6. Smoking and periodontaldisease.

	enlargements 18. Gingival bleeding 19. Gingival recession		
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22. Chemical plaque control		
23. Systemic administration of drugs in periodontal therapy		
24. Chronic & aggressive periodontitis		
25. Periodontal pocket		
26. Abscesses of the periodontium – gingival, periodontal & pericoronal		
27. HIV & the periodontium		
28. Bone loss and patterns of bone destruction		
29. Trauma from occlusion		
30. Furcation involvement		
31. Tooth mobility		
32. Halitosis & Hypersensitivity		

<p>Final B.D.S.</p>	<ol style="list-style-type: none"> 1.Periodontal medicine 2.Clinical diagnosis 3.Radiographic and diagnostic aids in the diagnosis of periodontal disease 4. Risk factors & risk assessment 5. Determination of prognosis 6. Treatment plan 7. Periodontal treatment of medically compromised patient 8. Iatrogenic factors in the etiology of periodontitis 9. Ortho-perio inter – relationship 10.Endo- perio inter – relationship 11.Prostho- perio inter – relationship 12.Host modulation & therapy 13.non-surgical therapy 14. Local drug delivery 15. Splinting 16. Surgical anatomy & general principles of 	<ol style="list-style-type: none"> 1. Advanced regenerative procedure in periodontics 2. Recent advances in periodontal surgery 3. Periodontal plastic and esthetic surgery 4. Application of micro surgery in periodontics. 5. Implants – surgical concepts. 6. Supportive implant treatment 	<ol style="list-style-type: none"> 1. Advanced diagnostic technique- microbiological, immunological & radiographic 2. Mucogingival surgery. 3. Lasers in periodontics.
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	<p>periodontal surgery</p> <p>17. Gingival surgical techniques – periodontaldressing</p> <p>18. Periodontal flap surgery</p> <p>19. Gingivectomy and gingivoplasty 20. Resective osseous surgery</p> <p>21. Regeneration in periodontal therapy</p> <p>22. Healing in periodontal therapy</p> <p>23. Failures in periodontal therapy</p> <p>24. Supportive periodontal therapy</p> <p>25. Periodontal plastic and esthetic surgery 26. Multi- disciplinary approach for the management of periodontal disease 27. Diagnosis and treatment of periodontal emergencies</p> <p>28. Implant basics and diagnosis , treatmentplanning</p> <p>29. Peri-implant disease and management.</p>		
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Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics.


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6. PRACTICALS / CLINICALS

Case history taking followed by discussion

Final BDS :5 long cases

10 short cases Oral prophylaxis - Handscaling - 75 cases

Demonstration of surgical procedure

7. THEORY EXAMINATION (3 Hours)

Elaborate on 2x10 marks = 20 marks

Write notes on 10 x5 marks = 50 marks

_____ -
Total = 70 marks
_____ -

8. PRACTICALS/ CLINICALS EXAMINATIONS

Clinical procedures

1. Case sheet writing for the given case
2. Scaling
3. Spotters-Instruments, Radiographic interpretation chair side clinical diagnosis

Scheme for Clinical /Practical Examination

Viva = 20 marks

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100

10. FORMATIVE/ INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations should be considered. The Internal Assessment marks to be submitted to the University, once in every threemonths. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the university once in every 3 months.

11. RECORD NOTE /LOG BOOK

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases as specified in Dental Council of India regulation for the students during clinical training and examinations.

12. TEXT BOOKS

Carranza 's Clinical Periodontology

13. REFERENCE BOOKS

- i. ClinicalPeriodontology & implantology by Jan Lindhe
- ii. Contemporary Peridontics by Robert Genco Henry Goldman
- iii. Essentials of Periodontology and periodontics – Torquil MacPhee
- iv. Contemporary Periodontics – Cohen
- v. Periodontal therapy – Goldman
- vi. Orbans' periodontics – Orban
- vii. Oral Health Survey – W.H.O.
- viii. Preventive Periodontics – Yound and Stiffler
- ix. Public Health Dentistry – Slack
- x. Advanced Periodontal Disease – John Prichard
- xi. Preventive Dentistry – Forrest
- xii. Periodontics – Baer & Morris

14. CRI POSTING SCHEDULE AND ORIENTATION

A. The dental graduates shall perform the following procedures

- | | |
|---------------------|---------|
| 1. Prophylaxis | 15cases |
| 2. FlapOperation | 2cases |
| 3. RootPlanning | 1case |
| 4. Currettage | 1case |
| 5. Gingivectomy | 1case |
| 6. Perio-Endo cases | 1case |

B. During their one week posting in the community health centers, the internees shall educate the public in prevention of Periodontal diseases.

Period of Postings

Periodontics - 1 Month



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16. PROSTHODONTICS AND CROWN AND BRIDGE

1. GOAL

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

2. OBJECTIVES

a. KNOWLEDGE:

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

b. SKILLS:

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

1. Diagnose and manage various common dental problems encountered in general dental practice keeping in mind the expectations and the right of the society to receive the best possible treatment available wherever possible.

2. Prevent and manage complications if encountered while carrying out various surgical and other procedures.
3. Carry out certain investigative procedures and ability to interpret laboratory findings.
4. Promote oral health and help prevent oral disease where possible.
5. Control pain and anxiety among the patients during dental treatment.

c. INTEGRATION:

Integrated knowledge about all the divisions in Prosthodontics(CD,RPD,FPD,IMPLANTS etc)

d. KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY:

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area/ personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

e. COMPUTER PROFICIENCY:

Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes. Basic operative skills in analysis of data and knowledge of multimedia. Students should utilize a combination of traditional classroom courses, and online courses. The following validation is required and must be completed.

- i. Technological Requirements for all Graduate Students
- ii. A laptop or desktop computer that supports the following requirements
 - a. Operating system requirements
 - b. Internet browser requirements
 - c. Reliable and consistent access to the internet
 - d. Antivirus software which is current and consistently updated
 - e. Microsoft Office
 - f. Adobe Reader (or equivalent to view PDF file)

3. COMPETENCIES

1. General skills
2. Practice Management
3. Communication and Community Resources
4. Patient Care – Diagnosis
5. Patient Care - Treatment Planning
6. Competencies specific to the subject

Subject	Lecture Hours	Practical Hours	Clinical Hours
Prosthodontics & Crown & Bridge	30		70
IV BDS			

Subject	Lecture Hours	Practical Hours	Clinical Hours
Prosthodontics & Crown & Bridge	80		300
Total Hours	110		3



4. TEACHING METHODOLOGY

The objectives of teaching methodology can be achieved by various teaching techniques such as :

- a) Lectures
- b) Lecture Demonstrations
- c) Practical exercises
- d) Audio visual aids
- e) Small group discussions with regular feed back from the students
- f) Integrated Teaching
- g) Symposium and continuing medical education programmes and Computer Aided Study

5. THEORY SYLLABUS INCLUDING BIO-ETHICS, DENTAL JURISPRUDENCE.

TOPIC	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
Under graduate student must have the following knowledge	<ul style="list-style-type: none"> • Diagnosis and Treatment Planning in Complete Denture. • History and Patient Evaluation in Complete Denture. • Anatomical Landmarks in Maxilla and Mandible. • Principles and Objectives of Impression Making. • Special Tray Fabrication and Secondary Impression. • Record Base Fabrication and Occlusal Rims. 	<ul style="list-style-type: none"> • Mouth Preparation in Complete Denture Fabrication. • Single Complete Denture. • Over Dentures. • Recording Neutral Zone. • Surveying in RPD • Cast Partial Dentures. • Attachments in RPD. • Principles in 	<ul style="list-style-type: none"> • Balancing in Complete Dentures • Semi Adjustable and Fully Adjustable Articulators. • Interocclusal Records in Complete Denture. • Implant Supported Complete Denture. • RPI concept in RPD. • Occlusion in FPD. • Implant Abutments. • Laminate and Veneers.

	<ul style="list-style-type: none"> • Recording Centric Jaw Relation. • Articulators. • Arrangement of Artificial Teeth. • Fabrication of Complete Denture –Lab Procedure • Relining and Rebasing Procedures. 	<p>RPD.</p> <ul style="list-style-type: none"> • Immediate Dentures. • Materials in FPD. • Fluid Control and Soft Tissue Management. 	<ul style="list-style-type: none"> • Obturators. • Implant retained Prosthesis. • Cleft Lip and Cleft Palate Management. • Implant Prosthesis • Grating Techniques in
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	<ul style="list-style-type: none"> • Classification of Partially Edentulous Arch. • Major Connectors and Minor Connectors. • Retainers in RPD. • Construction of Removable Denture. • Indication and Contraindication of FPD. • Parts of Fixed Partial Denture. • Principles of Tooth Preparation. • Types of FPD. • Impression Making in FPD. • Soldering and Welding Techniques. • Luting Cements. • Types of Maxillofacial Defects. • Materials Used in Maxillofacial Prosthesis. • Diagnosis and Treatment Planning for Implant • Osseointegration. • Titanium. 	<ul style="list-style-type: none"> • Resin Bonded Bridges. • Lab Procedures in FPD Fabrication. • Extraoral defects , Intra oral defects and its Managements. • Stents in Implant Placement. • Instruments and Parts of Implant. • Surgical Procedures in Implant Placement. 	<p>Implant Surgery. Loading Protocol in Implants.</p>
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	<ul style="list-style-type: none"> • Classification of Implants. • Temporomandibular joint Anatomy. 		
Bio-Ethics	<ol style="list-style-type: none"> 1. Respect human life and the dignity of every individual. 2. Refrain from supporting or committing crimes against humanity and condemn all such acts. 3. Treat the sick and injured with 		

	<p>competence and compassion and without prejudice and apply the knowledge and skills when needed.</p> <p>4. Protect the privacy and confidentiality of those for whom we care and breach that confidence only when keeping it would seriously threaten their health and safety or that of others.</p> <p>5. Work freely with colleagues to discover, develop, and promote advances in medicine and public health that ameliorate suffering and contribute to human well being.</p> <p>6. Educate the public about present and future threats to the health of humanity.</p> <p>7. Advocate for social, economic, educational and political changes that ameliorate suffering and contribute to human well being.</p> <p>8. Teach and mentor those who follow us, for they are the future of our caring profession.</p>		
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Demonstrations

It includes Demonstration of steps in Complete Denture Fabrication . Demonstration of tooth preparation in artificial teeth.

6. THEORY EXAMINATION (3 Hours)

Elaborate on : 2 x 10 marks = 20 Marks Write notes on: 10 x 5 marks = 50 Marks

70 Marks

7. PRACTICAL / CLINICAL EXAMINATIONS – OSCE/OSPEPRACTICALS: 90 marks

FINAL YEAR:

COMPLETE DENTURE:

- | | |
|---|-----------------------|
| 1. Case history and Discussion with Instrumentation: | 10 Marks -15 Minutes |
| 2. Border molding with special tray: | 15 Marks - 30 Minutes |
| 3. Master impression (patient may be completely edentulous or single edentulous arch) | 20Marks -15 Minutes |

FIXED PROSTHODONTICS:

- | | |
|---|----------------------|
| 1. Articulated Model and Instrumentation: | 10 Marks -10 Minutes |
| 2. Tooth preparation in Articulated artificial teeth: | 25 Marks -45 Minutes |

SPOTTERS

10 Marks-20 Minutes

Cast partial denture

Identification of Kennedys Class in RPDElastomeric materials

Semi Adjustable Articulators

Abrasives and Polishing agents

Acrylic ,Metal Ceramic ,Full metal Crowns and Bridges

Total: 90 Marks

VIVA -20 Marks

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100
Total				200

10. FORMATIVE/INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations should be considered. The Internal Assessment marks to be submitted to the University, once in every threemonths. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in every 3 months.

Theory Internal Assessment - 10 marks

Practical /Clinical Internal Assessment-10 marks

11. RECORD NOTE / LOG BOOK

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

12. TEXT BOOKS

1. Essential of Complete Denture Prosthodontics - Winkler
2. Prosthodontic Treatment for Edentulous Patients - Zarb Bolender
3. Clinical Removable Partial Denture - Stewart
4. Fundamentals of Fixed Prosthodontics - Shillingburg
5. Text Book of Prosthodontics - Deepak Nallaswam

13. REFERENCE BOOKS

1. Impression Techniques for Complete Denture - Bernard Levin
2. Removable Partial Prosthodontics - Mc Cracken
3. Contemporary Fixed Partial Denture - Rosenstiel

4. Syllabus of Complete denture by – Charles M. Heartwell Jr. and Arthur O. Rahn.
5. Boucher’s “Prosthodontic treatment for edentulous patients”
6. Essentials of complete denture prosthodontics by – Sheldon Winkler
7. Maxillofacial prosthetics by – Willam R. Laney
8. McCracken’s Removable partial prosthodontics

Removable partial prosthodontics by –ErnestL.MillerandJos

14. CRI POSTING SCHEDULE AND ORIENTATION

The dental graduates during their internship posting in Prosthodontics shall make:-

1. Complete denture(upper&lower) 2
2. Removable Partial Denture 4
3. Fixed Partial Denture 1
4. Planned cast partial denture 1
5. Miscellaneous-like reline/overdenture/repairs of
Maxillofacial Prosthesis 1
6. Learning use of Face bow and Semi anatomicarticulator technique
7. Crowns
8. Introduction of implants

Period of Postings

Prosthodontics - 1 ½ Months

17. CONSERVATIVE DENTISTRY AND ENDODONTICS

1. GOAL

- To acquire adequate knowledge, necessary skills and attitudes which are required for carrying out all the activities appropriate to general dental practice involving the prevention, diagnosis and treatment of anomalies and diseases of the teeth, mouth, jaws and associated tissues.
- To provide critical knowledge and understanding of conservative dentistry and endodontics.
- To train the undergraduate students and equip with knowledge, attitude and skills necessary to carry out procedures in conservative dentistry and endodontics.

2. OBJECTIVES

a. KNOWLEDGE AND UNDERSTANDING:

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

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

b. SKILLS:

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

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

c. ATTITUDE:

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

- Have empathy for the patient and do the best possible as situation demands
- Willing to apply current knowledge of dentistry in the best interest of the patients and the community.
- Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life.
- Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community.
- Willingness to participate in the continuing education programmes to update knowledge and professional skills from time to time.
- To help and to participate in the implementation of national health programmes

d. INTEGRATION:

- At the conclusion of the course the student should be able to diagnose and treat the disease efficiently.
- Should integrate interdisciplinary approach and management

e. KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY:

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area /

personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

4. TEACHING HOURS

MAXIMUM WORKING HOURS FOR BDS

SUBJECT	LECTURE HOURS	CLINICAL HOURS
CONSERVATIVE DENTISTRY AND ENDODONTICS	110	370

MINIMUM WORKING HOURS FOR BDS

YEAR	SUBJECT	LECTURE HOURS	CLINICAL HOURS
3 rd BDS	CONSERVATIVE DENTISTRY AND ENDODONTICS	30	70
4 th BDS	CONSERVATIVE DENTISTRY AND ENDODONTICS	80	300
TOTAL HOURS		110	370

5. TEACHING METHODOLOGY

- To be more interactive
- Student should come with sufficient information to be able to receive the applied concepts and skills better.
- Student should be keen to learn and demonstrate

The objectives of teaching Conservative dentistry can be achieved by various teaching techniques

such as:

- a) Lectures
- b) Lecture Demonstrations
- c) Practical exercises
- d) Audio visual aids
- e) Small group discussions with regular feedback from the students
- f) Integrated Teaching
- g) Symposium and continuing medical education programmes.

6. THEORY SYLLABUS INCLUDING BIO-ETHICS AND JURISPRUDENCE

Topic	Must Know	Desirable To Know	Nice To Know
1.	<ul style="list-style-type: none"> • Class 1 Amalgam • Class 1 amalgam With Buccal and Palatal Extensions • Class 2 Amalgam • Class 3 And Class 5 Gic Management Of Deep Caries- Temporary Restorations 	<ul style="list-style-type: none"> • Anterior Root Canal Treatment • Class 4 Composite • Observations/Demonstrations of Vitality Assessment-Ept • W L Assessment – Apex Locators • Periapical Surgery • Midline Diastema • Bleaching Cast /Fibre Post • Avulsed 	<ul style="list-style-type: none"> • Indirect Restorations- Casting Procedures • Observations/ Demonstrations of Magnification- Loupes Rvg Rotary Endodontics Thermoplastisized Gutta Percha Ceramic

		<p>Natarajapuram, NH-54 (Shenmuganpore), Kumarapalayam – 638 183, Namakkal District, Tamil Nadu. PH : +91 93458 55001 +91 9488 7 33392, +91 99653 63 999 E- Mail : dental@jkkn.ac.in - Splinting Web: www.jkkn.ac.in</p>	<p>Tooth Management Holding Medium Processing Management of Trauma Rubber Base Impression Procedures</p>
2.Additional Topics		<ul style="list-style-type: none"> • Rubber Dam Application • Biofilms • Magnification- Microscopes, Microscopic Surgery,Loupes • Recent Classification Of Trauma • Newer Concepts In Caries • Rotary Endodontic Techniques • Veneers • Light Cure Lamps, Bleaching Lights • Core Build Up Materials 	
3.	<p>1. Anterior Rct 2.Class Iv Composite 3. Midline Diastema and SpaceManagement 4.BIs Course(Basic LifeSupport)-3 Days</p>	<p>1. Premolar Rct 2. Full Crown</p>	<p>1. Magnification Loupes 2. Management of Avulsed/Subluxated Tooth</p>

Lecture	1. Introduction To Operative Dentistry		
Classes:	2. Glossary & Its Significance. 3. Tooth Designation & System Followed. 4. Classification of Caries 5. Basic Principles In CavityPreparation 6. Instruments & Equipmentfor Tooth Preparation. 7. Cavity Preparation for Amalgam. 8. Cavity Preparation for Inlay		



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	<p>9. Tooth Preparation for ToothColored Materials</p> <p>10. Matrices and Retainers</p> <p>11. Deep Caries Management</p> <p>12. Introduction to Root CanalTreatment and Pulpotomy.</p> <p>13. Operators Position, andChair Position for the Patient.</p> <p>14. Basic aspects of Sterilizationof Instruments and Equipment</p> <p>15. Basic aspects of Management of Various Restorative Materials. (Amalgam, Cement, GlassIonomer, Composites)</p>		
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<p>Conservative Dentistry</p>	<ul style="list-style-type: none"> • Definition & Scope, Oral Hygiene in Relation to Conservative Dentistry. Instruments - Nomenclature, Design and Formulae, Care and Sterilization, Examination, Diagnosis and Treatment Planning, Charting and Recording of Cases, Cavities Classification and Nomenclature, Choice of Filling Materials. • Principles of Cavity Preparation, • Control of Pain, Prevention of Damages to Hard 		
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	<p>and Soft Tissues During Operative Procedures.</p> <ul style="list-style-type: none"> • Methods Employed for Exclusion of Saliva. • Bio Mechanics of Cavity Design and Restoration with Filling Materials, Pulp and Soft Tissue Protection. • Arotors and High Speed Equipment. • Cavity Preparation for Various Types of Restorations Including Inlays and Onlays. Restorative Procedures, Matrices, Drugs Used In The Conservative Dentistry Fractured Teeth and Their Treatment Hypersensitivity and its Treatment, Ceramics In Conservative Dentistry. 		
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Endodontics	<ul style="list-style-type: none"> • Rationale of Endodontic Therapy, Diagnostic Aids In Endodontics Care and Sterilization of Instrument for Endodontic Treatment of Vital and Non-Vital Pulp, Tests for Sterility of the Root Canal. Drugs Used In Root Canal Therapy. • Bleaching of Teeth. • Restoration of Endodontically Treated Teeth, Surgical Endodontics. 		
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<p>Biomedical Ethics</p>	<ul style="list-style-type: none"> • Respect Human Life and the Dignity of Human Individual • Refrain From Supporting or Committing Crimes against Humanity and Condemn all such acts • Treat the Sick and Injured with Competence and Compassion • Protect the Privacy and Confidentiality of those whom we care. • Work Freely with Colleagues • Educate The Public • Teach and Mentor those who follow us 		
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7. PRACTICALS

EXERCISES FOR PRECLINICAL TRAINING - II YEAR B.D.S.

Exercise I

- Excavation of Deep Caries &

- Indirect Pulp capping

Exercise II :

- Excavation of Deep Caries
- & Direct Pulp capping

Exercise III

- Pulpotomy



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- Silver Amalgam
- One Lower Molar with Buccal Extension – 1
- One Lower Premolar - 1. One Upper Molar -1.

Exercise V

- Class II preparation for Silver Amalgam.
- One Lower Molar (MesioOcclusal) - 1
One Lower Premolar (DistoOcclusal) - 1
- One Upper Molar (DistoOcclusal) -1

Exercise VI:

Class III preparation for tooth Coloured Material One Upper Central Incisor (Palatal Approach) -1 One Lower Central Incisor (Labial Approach) -1

Exercise VII:

Class V Preparations One Upper
Canine -(Tooth coloured Material)
-1 One Lower Molar (Amalgam)

Exercise VIII:

Inlay Preparation
One Lower Molar (Mesio Occluso

Distal) -1. One Upper Molar (Occlusal) -1 Exercise IX:

Access cavity preparation One Upper

Lateral Incisor-1

Exercise X:

observation on Fractured teeth

8. THEORY EXAMINATIONS (3 Hours)

ELABORATE ON 2 x 10 = 20 MARKS

WRITE NOTES ON 10 X 5 = 50 MARKS

70 MARKS

Note: Elaborate On : One Essay in Conservative Dentistry and One Essay in endodontics

Write Notes on: Four questions in conservative Dentistry, Four questions in Endodontics,

One question in DentalMaterials and One question in Esthetic Dentistry.

I. CLASS I / CLASS II amalgam restoration

Case history recording, examination, diagnosis

and treatment planning : 10 marks

preparation : 35 marks

Base and matrix : 15 marks

Restoration and carving : 30 marks

Total 90 marks

Or

II. Anterior composite restoration

Case history recording, examination, diagnosis and treatment planning: 10 marks

Tooth preparation : 35 marks

Lining and matrix : 15 marks

Restoration : 20 marks

Finishing : 10 marks

Total : 90 marks

Or

III. Anterior RCT

v. Case history recording, examination,
diagnosis and treatment planning : 10 marks

vi. Access preparation : 35 marks

vii. Working length

: 15 marks

viii. Cleaning and shaping

ix. Master cone selection : 30 marks

Total

90 marks

Viva

20 marks

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100
Total				200


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9. FORMATIVE/INTERNAL ASSESSMEN

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations should be considered. The Internal Assessment marks to be submitted to the University, once in every threemonths. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in every 3months.

10. RECORD BOOK

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

11. TEXT BOOKS

DENTAL MATERIALS

1. Restorative Dental Materials -Robert G.Craig
2. Notes on Dental Materials - E.C.Combe

CONSERVATIVE DENTISTRY AND ENDODONTICS

1. The Art & Science of Operative Dentistry, Sturdevant, MosbyU.S.A
2. Pickard's manual of operative dentistry
3. Principle & Practice of Operative Dentistry, Charbeneu, Varghese Publishing, Mumbai.
4. Grossman's Endodontic Practice, B. Suresh Chandra & V. GopiKrishna, WoltersKluwer

12. REFERENCE BOOKS

- 1) Introduction to Dental Materials, Van Noort,
- 2) Applied Dental Materials, McCabe
- 3) Ingle's textbook of endodontics
- 4) Cohen's Pathways of Pulp
- 5) Fundamentals of Operative Dentistry: A Contemporary Approach-James b.Summit

13. CRI POSTING SCHEDULE AND ORIENTATION

To facilitate reinforcement of learning and achievement of basic skills, the Interns shall perform atleast the following procedures independently or under the guidance of supervisors:

1. Restoration of extensively mutilated teeth Cases	5
2. Inlay and onlay preparations	1Case
3. Use of tooth coloured restorative materials	4Cases
4. Treatment of discoloured Vital and non-vital teeth	1Case
5. Management of dento alveolar fracture	1Case
6. Management of pulpless, single-rooted teeth without periapical lesion	4Cases
7. Management of acute dento alveolar infections	2Cases
8. Management of pulpless, single-rooted teeth with peripheral lesion period	1Case
9. Non-surgical management of traumatized teeth during formative period.	

Period of Postings

Conservative Dentistry - 1 Month

18. ORAL AND MAXILLOFACIAL SURGERY

1. GOAL

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 into the in-patient management of maxillofacial problems.

2. OBJECTIVES

a. Knowledge and Understanding:

At the end of the course and 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 problems
2. Diagnose, manage and treat (understand the principles of treatment) patients with oral surgical problems.
3. Gain Knowledge of a range of surgical treatments.
4. Be able to decide the requirement of a patient to have oral surgical specialist opinion or treatment.
5. Understand the principles of in-patient management.
6. Understand the management of major oral surgical procedures and principles involved in patient management.
7. Know the ethical issues and have communication ability.
8. surgical problems and principles involved, in inpatient management.

b. Attitude:

A graduate should develop during the training period the following attitudes

1. Willingness to apply the current knowledge of dentistry in the best interest of the patient

and community.

2. Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life.
3. Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community.
4. Willingness to participate in the CDE programmes to update knowledge and professional skill from time to time
5. Help and participate in the implementation of the national oral health policy.

c. Integration:

Horizontal integration - Provision of learning within the structure where individual departments/subject areas contribute to the development and delivery of learning in a meaningful, holistic manner. Links are made between the different subject areas and that learning is enriched by the connections and interrelationships being made explicit by this process.

Vertical integration - combination of basic and clinical sciences in such a way that the traditional divide between preclinical and clinical studies is broken down. Basic science is represented explicitly in the curriculum within the clinical environments during all the years of undergraduate education and beyond into postgraduate training and continuing professional development.

(e.g.) All the students studied a case of Oral cancer - the second-year student prepared the pathology part while the intern correlated it with the case presentation. This was followed by a first year explaining the anatomy and the final year explaining the signs, symptoms, grading and staging, The surgical part was correlated with anatomy by the postgraduate.

d. Knowledge about infection and cross infection in dentistry:

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area/ personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal

4. TEACHING METHODOLOGY

- Combination of lectures
- Small group seminars, tutorials
- Clinical skills laboratory sessions
- Supervised clinical activity
- Problem based curriculum in problem solving and diagnosis.

5. THEORY SYLLABUS INCLUDING BIO-ETHICS, DENTAL JURISPRUDENCE.Third

Year

TOPIC	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
Introduction	Definition, Aims & objectives and scope of Oral and Maxillofacial surgery		



Diagnosis in oral surgery	History Taking		
Clinical Examination Investigations	Infection control	Principles of infection control Asepsis: Definition, measures to prevent infection during surgery Preparation of the patient Measures to be taken by operator Sterilisation of instruments - various methods of sterilisation etc. Cross infection, HIV/AIDS and hepatitis	
	Local Anaesthesia	Neurology of facial pain Historical aspects, definition, types of LA, indications, contraindications, advantages and disadvantages, concept of LA Local anaesthetic drugs, Classification Ideal requirements of LA solutions, composition and mode of action, Types of LA Choice of particular mode of anaesthesia Complications of LA, prevention and management. Anaesthesia technique- Mandible Pterygomandibular space - boundaries and contents, Interior dental nerve block- various techniques, complications, mental foramen nerve block Anaesthesia	

		<p>technique- Maxilla, Infraorbital nerve block, Posterior superior alveolar nerve block Use of vasoconstrictors in local anaesthetic solution, advantages, contraindications, various vasoconstrictors used</p>	
General anaesthesia		<p>Concept of general anaesthesia. Indications of general anaesthesia in dentistry. Pre-anaesthetic evaluation of the patient. Pre-anaesthetic medication -</p>	

		<p>advantages, drugs used. Commonly used anaesthetic agents.</p> <p>Complications during and after G.A. I.V. sedation with Diazepam and Midazolam. Indications, mode of action, technique etc.</p> <p>Cardiopulmonary resuscitation. Use of oxygen and emergency drugs.</p> <p>Tracheostomy.</p>	
Exodontia	<p>Ideal extraction, Introduction, indications, contra indications, extraction in medically compromised individuals</p>		
<p>Methods of extraction- Forceps or intra alveolar or closed method. principles, types of movement and force, Trans alveolar, surgical or open method, indications, surgical</p>			

<p>procedure. Dental elevators - uses, classification, principles in the use of elevators, commonly used elevators</p>			
<p>Complications of</p>			



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<p>exodontia, complication s during exodontias, common to bothmaxilla and mandible, postoperative complication s, Prevention and management of complication s</p>			
<p>Medical Emergency Medical Compromi sedPatients</p>	<p>Primary care of medical emergencies indental practice particularly – (a) Cardio vascular (b) Respiratory (c) Endocrine (d) Anaphylactic reaction (e) Epilepsy</p>		


<p>Painless Surgery: I. Pre-anaesthetic considerations. Pre-medication: purpose, drugs used 2. Anaesthetic considerations - a) Local b) Local with IV sedations 3. Use of general anaesthetic</p>			
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<p>c) Access: Intra-oral: Mucoperiosteal flaps, principles, commonly used intra oral incisions. Bone Removal: Methods of boneremoval. Use of Burs: Advantages & precautions Bone cutting instruments: Principles of using. Chisel & osteotome.</p>			
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Principles of oralsurgery	<p>Extra-oral: Skin incisions - principle's, various extra-oral incision to expose facial skeleton.</p> <p>a) Submandibular</p> <p>b) Pre-auricular</p> <p>c) Incision to expose maxilla & orbit</p> <p>d) Bicoronal incision</p> <p>e) Control of haemorrhage during surgery Normal Haemostasis</p> <p>Local measures available to control bleeding Hypotensive anaesthesia etc.</p> <p>f) Drainage and Debridement, Purpose of drainage: in surgical wounds Debridement: purpose, soft tissue as bone dement.</p>		
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	<p>g) Closure of wounds Suturing: Principles, suture material, classification, body response to various materials etc.</p> <p>h) 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</p>		
<p>Ethics</p>	<p>Introduction to Ethics</p> <p>What is ethics?</p> <p>What are values and norms?</p> <p>How to form a value system in one's personal and professional life?</p> <p>Hippocratic oath.</p> <p>Declaration of Helsinki, WHO declaration of Geneva, International code of ethics, D.C.I. Code of ethics.</p> <p>Ethics of the Individual</p> <p>The patient as a person Right to be respected Truth and confidentiality</p> <p>Autonomy of</p>		


	<p>decision Doctor</p> <p>Patient relationship</p> <p>Professional</p> <p>Ethics Code of</p> <p>conduct</p> <p>Contract and</p> <p>confidentiality</p> <p>Charging of fees, fee</p> <p>splitting Prescription of</p> <p>drugs</p> <p>Over-investigating the</p> <p>patient Malpractice and</p> <p>negligence Research</p> <p>Ethics:</p>		
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	<p>Animal and experimental research/humanne ss Human experimentation Human volunteer research-informedconsent Drug trials Ethical workshop of cases Gathering all scientific factors Gathering all value factors Identifying areas of value-conflict,setting of priorities Working out criteria towards decisions</p>		
<p>Dental Jurisprudence</p>	<p>Basic principles of law Contract laws- dentist - patient relationships & Legal forms of practiceDental malpractice Person identification through dentistry Legal protection for practicing dentist. Consumer protection act</p>		

Dento-alveolar Surgery	Trans alveolar extraction, Impactedteeth: General factors, Incidence, Aetiology, Classification Indications, Assessment: clinical & radiological, Anaesthetic considerations,Surgical procedures Endodontic surgery: Introduction, classification, apiceotomy, replantation		
Impacted teeth	Incidence, definition, aetiology. (a) Impacted mandibular third molar. Classification, reasons for removal, Assessment - both clinical as radiological Surgical procedures for removal. Complications during and after		

	<p>removal, Prevention and management.</p> <p>(b) Maxillary third molar, Indications for removal, classification, Surgical procedure for removal.</p> <p>(c) Impacted maxillary canine Reasons for canine impaction, Localisation, indications for removal, Methods of management, labial and palatal approach, Surgical exposure, transplantation, removal etc.</p>		
<p>Infection of oral cavity</p>	<p>Introduction, factors responsible for infection, course of odontogenic infections, spread of odontogenic infections through various facial spaces. Dento-alveolar abscess- aetiology, clinical features and management.</p> <p>Osteomyelitis of the jaws - Definition; Aetiology, Predisposing factors, classification, clinical features and management.</p> <p>Ludwig's angina - definition, aetiology, clinical features, management and complications</p> <p>Hepatitis B and HIV</p>		

Cystic lesions of jaws	Definition, classification, pathogenesis Diagnosis, clinical features, radiological, aspiration biopsy, use of contrast media and histopathology Management- Types of surgical procedures, rationale of the technique, indications, procedure and complications		
Tumours of the oral Cavity	General considerations, Carcinoma of oral cavity, TNM classification	Role of dental surgeons in the prevention and early detection of oral cancer	

	Non-odontogenic benign tumours - lipoma, fibroma, papilloma, ossifying fibroma, myoma etc.		
	Ameloblastoma-Clinical features, radiographic features, methods of management of Carcinoma of oral cavity		
	Biopsy – types		
	Outline of management of squamous cell carcinoma, surgery, radiotherapy,		
Fractures of the jaws	General consideration, types of the fractures, Aetiology, C/F, and general principles. Dento-alveolar Fractures, methods of management	Management of fracture of condyle - aetiology, classification, clinical features and general principles of management reduction and fixation	
	Mandibular Fractures – Applied Anatomy, Classification Diagnosis – Clinical and Radiological Features Management- open and closed Fixation, Immobilisation methods, outline of rigid and semi rigid internal fixation	Orbital fractures & fractures of Zygomatic complex	
	Fractures of middle third of the face, Definition of mid-face, applied surgical anatomy, classification, clinical features and	Surgical anatomy, Dislocation - Types, aetiology, clinical features and management	

	outline of management		
	Classification, clinical features, Indications for treatment, Various methods of reduction and fixation Alveolar fractures- methods of management		
	Ankylosis- definition, aetiology, clinical features and management		
TMJ disorders			Myofunctional pain

			dysfunction syndrome- aetiology, clinical features management, nonsurgical and surgical
			Internal derangement & Arthritis and other disorders
Diseases of maxillary Sinus	Surgical anatomy, Acute & chronic sinusitis Surgical approach of sinusitis- Caldwell-luc procedure, removal of root from the sinus		
	Oro-antral fistula – aetiology, clinical features and various surgical methods of closure		

Pre-prosthetic surgery	<p>Introduction, aims</p> <p>Definition, classification of procedures.</p> <p>(a) Corrective procedures: Alveoloplasty, Reduction of maxillary tuberosity, Frenectomies and removal of tori.</p> <p>(b) Ridge extension or Sulcus extension procedures</p> <p>Indications and various surgical procedures</p> <p>(c) Ridge augmentation and reconstruction.</p>		
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	Indications, use of bone grafts,hydroxyapatite Implants - concept of Osseo-integration Knowledge of various types of implants and Surgical procedure to place implants		
Salivary gland diseases	Diagnosis of salivary gland diseases, sialography, contrast media, procedure,Salivary calculi and Infections of the salivary glands, sialolithiasis- Submandibular and parotid duct-clinicalfeatures and management, salivary fistulae, common tumours of salivary glands like pleomorphic adenoma including minor salivary glands	Tumours of the salivary gland andmanagement	
Neurological disorders	Trigeminal neuralgia - Definition, Aetiology, C/F and methods of management including surgery. Glossopharyngeal and Facial paralysis -aetiology, clinical features	Nerve injuries - classification, neurorhaphyetc.	

Cleft lip and cleftpalate			Aetiology of the clefts, Incidence, classification, Role of dental surgeon in the management of cleft patients. Outline of the
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			closure procedures.
Developmental deformities			Basic forms, prognathism, retrognathism and open bite. Reasons for correction, Outline of surgical methods carried out on maxilla and mandible
Oral Implantology			Principles of implantology
Medical emergency in dental practice	Primary care of medical emergencies in dental practice particularly - (a) Cardio vascular (b) Respiratory (c) Endocrine (d) Anaphylactic reaction (0) Epilepsy		

Emergency drugs	Intramuscular iv injections, applied anatomy, ideal location of giving these injections, techniques etc.		
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Clinical exercises	Quota
Extraction of Maxillary teeth	25 cases
Wiring techniques on models	1 exercise
Suturing techniques on models.	1 exercise

Final Year

PRACTICAL AND CLINICAL: 200 HOUR

STUDENTS ARE REQUIRED TO LEARN THE FOLLOWING EXERCISES:

- Case history taking
- Examination of the patient
- Recording blood pressure
- Use of different instruments in Oral & Maxillofacial surgery
- Various local anaesthetic injection techniques on patients
- Extraction of mobile and firm teeth
- Trans-alveolar extraction of root stumps
- Surgical removal of Simple impacted teeth
- Management of dento-alveolar fractures with arch bar fixation, eyelets and inter-maxillary fixations.
- Training in basic life support skills

PRACTICAL AND CLINICAL QUOTA

Clinical exercises	Quota	Observe/Do/Assist
Extraction of teeth	60 cases	Do
Trans-alveolar method of extraction withsuturing	5 cases	Assist
Management of dento-alveolar fractures witharch bar fixation, eyelets and inter-maxillary fixations	5 cases	Observe
IM & IV Injection techniques	5 cases	Do
Major surgical procedures under generalanaesthesia	5 cases	Observe
Training in Handling medical emergencies,CPR and basic life support		Do

6. THEORY EXAMINATION (3 Hours)

Elaborate on: 2 x 10= 20 Marks

Write notes on: 10 x 5 = 50 Marks

Total Marks= 70 Marks

7. PRACTICAL / CLINICAL EXAMINATIONS Clinicals in Oral Surgery: 70 + 20 = 90

Marks

A. 70 Marks

Case History : 20 Marks Local anaesthesia technique: 30 Marks

Extraction of firm tooth : 20 Marks

B. 20 Marks (Wiring techniques on models 10 marks) (Suturing techniques on models 10 marks)

C. **Viva Voce** : 20 marks

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100
Total				200

8. FORMATIVE/INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations should be considered. The Internal Assessment marks to be submitted to the University, once in every threemonths. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in every 3 months.

First Internal Assessment

Topic	Details of the Topic
Introduction	Definition, Aims & objectives and scope of Oral and Maxillofacial surgery
Diagnosis in oralsurgery	History Taking
	Clinical Examination
	Investigations
Infection control	Principles of infection control Asepsis: Definition, measures to prevent infection during surgery Preparation of the patient Measures to be taken by operator Sterilisation of instruments - variousmethods of sterilisation etc. Cross infection, HIV/AIDS and hepatitis

Second Internal Assessment

Local Anaesthesia	<p>Neurology of facial pain Historical aspects, definition, types of LA, indications, contraindications, advantages and disadvantages, concept of LA Local anaesthetic drugs, Classification Ideal requirements of LA solutions, composition and mode of action, Types of LA Choice of particular mode of anaesthesia Complications of LA, prevention and management.</p> <p>Anaesthesia technique- Mandible Pterygomandibular space - boundaries and contents, Interiodental nerve block- various techniques, complications, mental foramen nerve block Anaesthesia technique- Maxilla, Infraorbital nerve block, Posterior superior alveolar nerve block</p> <p>Use of vasoconstrictors in local anaesthetic solution, advantages, contraindications, various vasoconstrictors used</p>
General anaesthesia	<p>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. Complications during and after G.A. I.V. sedation with Diazepam and Midazolam.</p> <p>Indications, mode of action, technique etc. Cardiopulmonary resuscitation. Use of oxygen and emergency drugs. Tracheostomy.</p>

Third Internal Assessment

Exodontia	<p>Ideal extraction, Introduction, indications, contra indications, extraction in medically compromised individuals</p> <p>Methods of extraction-Forceps or intra alveolar or closed method. principles, types of movement and force, Trans alveolar, surgical or open method, indications, surgical procedure. Dental elevators</p>
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	<p>- uses, classification, principles in the use of elevators, commonly used elevators</p>
	<p>Complications of exodontia, complications during exodontias, common to both maxilla and mandible, postoperative complications, Prevention and management of complications</p>
<p>Medical Emergency Medical Compromised Patients</p>	<p>Primary care of medical emergencies in dental practice particularly – (a) Cardio vas (b) Respiratory (c) Endocrine (d) (d) Anaphylactic reaction (e) Epilepsy</p>



Final Year

First Internal Assessment

Painless Surgery:

1. Pre-anaesthetic considerations. Pre-medication: purpose, drugs used

2. Anaesthetic considerations - a) Local b) Local with IV sedations

3. Use of general anaesthetic

c) Access:

Intra-oral: Mucoperiosteal flaps, principles, commonly used intra oral incisions. Bone

Removal: Methods of bone removal. Use of Burs: Advantages & precautions Bone

cutting instruments: Principles of using. Chisel & osteotome. Extra-oral: Skin incisions

- principle's, various extra-oral incision to expose facialskeleton.

a) Submandibular

b) Pre-auricular

c) Incision to expose maxilla & orbit

d) Bicoronal incision

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

f) Drainage and Debridement, Purpose of drainage: in surgical wounds

Debridement: purpose, soft tissue as bone dement.

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

h) 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

Principles of oral surgery



Introduction to Ethics

What is ethics?

Ethics

What are values and norms?

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

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

D.C.I. Code of ethics. **Ethics of the Individual**



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Fractures of middle third of the face, Definition of mid-face, applied surgical anatomy, classification, clinical features and outline of management

Second Internal Assessment

cavity abscess- aetiology, clinical features and management. Osteomyelitis of the jaws - Definition; Aetiology, Predisposing factors, classification, clinical features and management.

Ludwig's angina - definition, aetiology, clinical features, management and complications Hepatitis B and HIV

Cystic lesions of jaws Definition, classification, pathogenesis Diagnosis, clinical features, radiological, aspiration biopsy, use of contrast media and histopathology Management-Types of surgical procedures, rationale of the technique, indications, procedure and complications

General considerations, Carcinoma of oral cavity, TNM classification

Non-odontogenic benign tumours - lipoma, fibroma, papilloma, ossifying fibroma, myoma etc.

Tumours of the oral Cavity Ameloblastoma-Clinical features, radiographic features, methods of management of Carcinoma of oral cavity

Biopsy – types, TNM classification

Outline of management of squamous cell carcinoma, surgery, radiotherapy, chemotherapy. Role of dental surgeons in the prevention and early detection of oral cancer

General consideration, types of the fractures, Aetiology, C/F, and general principles. Dento-alveolar Fractures, methods of management



Mandibular Fractures – Applied Anatomy, Classification Diagnosis – Clinical and Radiological Features Management- open and closed Fixation, Immobilisation
Fractures of the jaws methods, outline of rigid and semi rigid internal fixation
Management of fracture of condyle - aetiology, classification, clinical features and general principles of management reduction and fixation



Orbital fractures & fractures of Zygomatic complex

Classification, clinical features, Indications for treatment, Various methods of reduction and fixation Alveolar fractures- methods of management

Complications - delayed union, non-union and malunion.

Surgical anatomy, Dislocation- Types, aetiology, clinical features and management

Ankylosis- definition, aetiology, clinical features and management

TMJ

disorders

Myofunctional pain dysfunction syndrome-aetiology, clinical features management, nonsurgical and surgical

Internal derangement & Arthritis and other disorders

Diseases

of

maxillar

ySinus

Surgical anatomy, Acute & chronic sinusitis Surgical approach of sinusitis- Caldwell-luc procedure, removal of root from the sinus

Oro-antral fistula –aetiology, clinical features and various surgical methods of closure

Third Internal Assessment

Introduction, aims Definition, classification of procedures.

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

Pre-prosthetic

surgery

(b) Ridge extension or Sulcus extension procedures

Indications and various surgical procedures

(c) Ridge augmentation and reconstruction. Indications, use of bonegrafts, hydroxyapatite Implants - concept of Osseo- integration Knowledge of various types of implants and Surgical procedure to place implants

Salivary gland

diseases

Diagnosis of salivary gland diseases, sialography, contrast media, procedure, Salivary calculi and Infections of the salivary glands,



	sialolithiasis- Submandibular and parotid duct- clinical features and management, salivary fistulae, common tumours of salivary glands like pleomorphic adenoma including minor salivary glands
	Tumours of the salivary gland and management
Neurological disorders	Trigeminal neuralgia - Definition, Aetiology, C/F and methods of management including surgery. Glossopharyngeal and Facial paralysis - aetiology, clinical features
	Nerve injuries - classification, neurorrhaphy etc.
Cleft lip and cleft palate	Aetiology of the clefts, Incidence, classification, Role of dental surgeon in the management of cleft patients. Outline of the closure procedures.
Developmental deformities	Basic forms, prognathism, retrognathism and open bite. Reasons for correction, Outline of surgical methods carried out on maxilla and mandible
Oral Implantology	Principles of implantology
Medical emergency in dental practice	Primary care of medical emergencies in dental practice particularly -(a) Cardiovascular (b) Respiratory(c) Endocrine (d)Anaphylactic reaction (e) Epilepsy
Emergency drugs	Intramuscular iv injections, applied anatomy, ideal location of giving these injections, techniques etc.



9. RECORD NOTE/LOG BOOK

Record shall be maintained and assessed periodically by faculty and HOD. Institution shall provide adequate number of cases/teaching materials as specified in Dental Council of India regulation for the students during clinical/practical training and examinations.

10. TEXT BOOKS

- i. Alling John F et al Impacted teeth
- ii. Srinivasan B Textbook of Oral and Maxillofacial Surgery
- iii. Malamed S F Handbook of medical emergencies in the dental office
- iv. Banks P Killey's fracture of mandible
- v. Banks P Killey's fracture of middle third of the facial skeleton
- vi. McGovanda The Maxillary sinus and its dental implication
- vii. Seward G R et al Killey and Kays outline of oral surgery Part I
- viii. Mc Carthy F M Essentials of safe dentistry for the medically compromised patients
- ix. Laskin D M Oral and Maxillofacial Surgery
- x. Howe G L Extraction of teeth
- xi. Howe G L Minor oral surgery
- xii. Balaji SM Textbook of Oral & Maxillofacial Surgery

11. REFERENCE BOOKS

- i. Peterson L J et al Principles of Oral and Maxillofacial Surgery Vol 1,2 & 3
- ii. Peterson I J et al Contemporary Oral and Maxillofacial Surgery
- iii. Topazian R G & Goldberg M H Oral and Maxillofacial infections
- iv. Impacted teeth; Alling John F et al.
- v. Principles of oral and maxillofacial surgery; Vol.1,2 & 3 Peterson LJ et al.
- vi. Text book of oral and maxillofacial surgery: Srinivasan B.
- vii. Handbook of medical emergencies in the dental office, Malamed SF.viii.Killeys Fractures of the mandible; Banks P.
- ix. Killeys fractures of the middle 3rd of the facial skeleton; Banks P.



- x. The maxillary sinus and its dental implications; McGovanda
- xi. Killey and Kays outline of oral surgery – Part-1: Seward GR et al

12. CRI POSTING SCHEDULE AND ORIENTATION

A. The internees during their posting in oral surgery shall perform the following procedures:

1. Extractions	50
2. Surgical extractions	2
3. Impactions	2
4. Simple Intra Maxillary Fixation	1
5. Cysts enucleations	1
6. Incision and drainage	2
7. Alveoloplasties, Biopsies & Frenectomies,	3

etc.

B. The Internees shall perform the following on Cancer Patients:

- 1. Maintain file work
- 2. Do extractions for radiotherapy cases
- 3. Perform biopsies
- 4. Observe varied cases of oral cancers.

C. The Internees shall have 15 days posting in emergency services of a dental/general hospital with extended responsibilities in emergency dental care in the wards. During this period they shall attend to all emergencies under the direct supervision of oral surgeon during any operation.

1. Emergencies.

- (i) Toothache; (ii) trigeminal neuralgia; (iii) Bleeding from mouth due to trauma, post extraction, bleeding disorder or haemophilia; (iv) Airway obstruction due to fracture mandible and maxilla; dislocation of mandible; syncope or vasovagal attacks; Ludwig's angina; tooth fracture; post intermaxillary fixation after general Anaesthesia.

2. Work in I.C.U. with particular reference to resuscitation procedures.

3. Conduct tutorials on medico-legal aspects including reporting on actual cases coming

to casualty. They should have visits to law court.

Period of Postings

Oral & Maxillofacial Surgery - 1 ½ Months



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19. PUBLIC HEALTH DENTISTRY

1. GOAL

To provide critical knowledge and understanding of public health dentistry To develop students understanding of the major oral health problems of community To equip students with the ability to critically analyze dental public health problems and develop practical solutions to protect and promote the oral health for the community To enable students to understand and undertake health services research and to apply key findings into dental public health practice

2. OBJECTIVES

a. KNOWLEDGE:

Apply basic sciences knowledge regarding etiology, diagnosis and management of all the oral conditions at the individual and community level Identify social, economic, environmental and emotional determinants in a given individual patient or a community for the purpose of planning and execution of community oral health programme. Ability to conduct oral health surveys in order to identify all the oral health problems affecting the community and find solutions using multi-disciplinary approach. Ability to act as a consultant in Community Oral Health and take part in research (both basic and clinical), present and publish the outcome at various scientific conferences and journals, both national and international.

b. SKILLS:

Take history, conduct clinical examination including all diagnostic procedures to arrive at diagnosis at the individual level and conduct survey of the community at a state and national level of all conditions related to oral health to arrive at community diagnosis. Plan and perform all necessary treatment, prevention, and promotion of Oral Health at the individual and community level. Plan appropriate Community Oral Health Programme, conduct the programme and evaluate, at the community level. Ability to make use of knowledge of epidemiology to identify causes and plan appropriate preventive and control measures.

Develop appropriate person power at various levels

c. ATTITUDE:

Adopt ethical principles in all aspects of Community Oral Health activities. To apply ethical and moral standards while carrying out epidemiological research. Develop communication skills, in particular to explain the causes and prevention of oral health diseases to the patient. Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed and promote teamwork approach. Respect patient's rights and privileges including patient's right to information and right to seek a second opinion

d. INTEGRATION:

At the conclusions 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.

e. KNOWLEDGE ABOUT INFECTION AND CROSS INFECTION IN DENTISTRY :

Knowledge about asepsis – disinfection and sterilization of instruments, clinical area/ personal care as per universal protection, and disposal of medical wastes in the appropriate modes. Students should be aware of the rules and regulations pertaining to maintenance of clinical set up and waste disposal.

i. Patient Care - Treatment Planning:

- x. Integrate multiple disciplines into an individual comprehensive sequence treatment plan using diagnostic and prognostic information
 - xi. Ability to order appropriate investigations
 - xii. Recognition and initial management of medical emergencies that may occur during dental treatment
 - xiii. Perform basic cardiac life support
 - xiv. Management of pain including post operative
 - xv. Administration of all forms of local anaesthesia
 - xvi. Administration of intra muscular and venous injections
 - xvii. Prescription of drugs, pre operative, prophylactic and therapeutic requirements
 - xviii. Uncomplicated extraction of teeth



- xix. Transalveolar extractions and removal of simple impacted teeth
- xx. Minor oral surgical procedures
- xxi. Management of oro-facial infections
- xxii. Simple orthodontic appliance therapy ,
- xxiii. Taking, processing and interpretation of various types of intra oral radiographs
- xxiv. Various kinds of motivative procedures using different materials available
- xxv. Simple endodontic procedures
- xxvi. Removable and fixed prosthodontics
- xxvii. Various kinds of periodontal therapy

ii. Competencies specific to the subject

3. THEORY SYLLABUS

TOPIC	MUST KNOW	DESIRABLE TO KNOW	NICE TO KNOW
Introduction to Dentistry	Definition of Dentistry, History of dentistry.Scope, aims and objectives of Dentistry		
Public Health	Health & Disease:- Concepts, Philology,Definition and Characteristics Public Health:-Definition, Concepts, Historyof public health, General	Screening of disease. Public Health Administration:- Priority,Establishment,Manpower, private Practice Management, Hospital management	Nutrition in oral diseases Behavioural science: Definitionof sociology, anthropology and psychology and their relevance in dental practice and community.

	<p>Epidemiology: - Definition, objectives, methods Environmental Health: - Concepts, principles, protection, sources, purification, environmental sanitation of water, disposal of waste, sanitation, role in mass disaster Health care delivery system: Centre and state, oral health policy, primary health care, national programmes, health organisations.</p>	<p>Ethics and Jurisprudence: Professional liabilities, negligence, malpractice, consents, evidence, contracts and methods of identification in forensic dentistry Health Education: - Definition, concepts, principles, methods, and health education aids</p>	
<p>Dental Public Health</p>	<p>Definition and difference between community and clinical health. Epidemiology of dental diseases- dental caries, periodontal diseases, malocclusion, dental fluorosis, oral cancer & TMJ</p>		



	Survey procedures: Planning, implementation and evaluation, WHO oral health survey methods 1997, indices for dental diseases.		
	Delivery of dental care: Dental auxiliaries, operational and non-operational, incremental and comprehensive healthcare, school dental health. Payments of dental care: Methods of payments and dental insurance, Government plans Preventive Dentistry-definition, Levels, role of individual, Community and profession, fluorides in dentistry, plaque control programmes.		
Bio Statistics	Bio Statistics: - Introduction, collection of data, presentation of data, Measures of Central tendency, measures of dispersion, Tests of significance, Sampling and sampling techniques -types, errors, bias, blind trials and calibration.		
Research Methodology	Research Methodology: - Definition, types of research, designing a written protocol		

Health Information	Health Information: - Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes		
Practice Management	Dentist Act 1948 Dental Council of India Indian Dental Association	Maintenance of records/accounts/audit. Consumer Protection Act.	Place and locality Premises & layout

Bioethics

Bioethics is the application of ethics to the field of medicine and healthcare. Bioethics includes medical ethics, which focuses on issues in health care; research ethics, which focuses issues in the conduct of research; environmental ethics, which focuses on issues pertaining to the relationship between human activities and the environment, and public health ethics.

4. PRACTICALS/CLINICALS/FIELD PROGRAMME IN PUBLIC HEALTH DENTISTRY

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

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

Exercises:

1. Collection of statistical data (demographic) on population in India, birth rates, morbidity and mortality, literacy, percapita income
2. Incidence and prevalence of common oral diseases like dental caries, periodontal disease, oral cancer, fluorosis at national and international levels
3. Preparation of oral health education material - posters, models, slides, lectures, play acting skits etc.
4. Oral health status assessment of the community using indices and WHO basic oral health Survey methods.

5. Exploring and planning setting of private dental clinics in rural, semi urban and urban locations, availment offinances for dental practices-preparing project report.
6. Visit to primary health centre-to acquaint with activities and primary health care delivery
7. 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 programmeetc.)
8. Visit to institution for the care of handicapped, physically, mentally, or medically compromised patients
9. Preventive dentistry: in the department application of pit and fissure sealants, fluoride gel application procedure,
A. R. T., Comprehensive health for 5 patients at least 2 patients
1. Periodontal Index- CPI and Russel
2. Dental Caries index: DMF: T and S, df: t and s
3. Fluorosis index by Dean
- I. Health Education
 1. Make one - Audio visual aid
 2. Make a health talk
- II. Practical work
 1. Pit and fissure sealant
 2. Topical fluoride application

Attendance requirement, Progress and Conduct

75% in theory and 75% in practical/clinical in each year .

METHODS OF EVALUATION:

Evaluation may be achieved by the following tested methods:

1. Written test
2. Practicals
3. Clinical examination



4. Viva voce

8. THEORY EXAMINATION: (3 Hours)

Elaborate on 2 X 10 = 20 Marks

Write Notes on 10 X 5 = 50 Marks

Total Marks 70 Marks

9. PRACTICAL AND CLINICAL EXAMINATION:

Practical & Clinical Evaluation:

Complete case history with two Oral indices - 90 mark

Viva Voce- 20 marks

	Examination	Internal Assessment	Viva	Total
Theory	70	10	20	100
Practicals	90	10	-	100
Total				200

10. FORMATIVE/INTERNAL ASSESSMENT

The continuing assessment examination (both Theory/Practical) held at least 3times in a particular year and best of two examinations should be considered. The Internal Assessment marks to be submitted to the University, once in every threemonths. The marks scored by the students shall be displayed on the Notice board and a copy forwarded by HOD shall be sent to the University once in three months.

11. TEXT BOOKS

1. Dentistry dental practice and community by David F. Striffler and Brain A. Burt. Edn-

- 983 W. B. Saunders company
2. Principles of Dental public health by James Morse Dunning, IV Edition 1986,Harward University Press.
 3. Dental public health and community 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 Gardener, PSG Publishing company Inc. Littleton Massachusetts , 1980
 6. Dental public health- An introduction to public health dentistry. Edition by Geoffrey L. Slack and Brain BurtPublished by John Wright and sons Bristol,1980.
 7. Oral health surveys – Basic methods ,2013 Published by WHO 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 Bristol ,1980
 10. Preventive Dentistry by Murray , 1997
 11. Introduction to Bio- statistics By B.A.Mahajan
 12. Research Methodology and Bio statistics .
 13. Introduction to statistical methods By Grewal.
 14. Text Book of Preventive and social Medicine by Park and park, 24th edition
 15. Community Dentistry by Dr.Soben Peter. 5th Edition

13. REFERENCE BOOKS:

1. Dentistry Dental Practice and Community by David F. Striffler and Brian A. Burt, Edn. -1983, W.B.Saunders company
2. Principles of Dental Public Health by James Morse Dunning, IV Edition , 1986, Harvard

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. Silvermanand Ames F. Tryon, Series editor-Alvin F. Gardner, PSG Publishing company Inc.Littleton Massachuselts, 1980.
6. Dental Public Health – An Introduction to Community Dentistry, Edited by Geoffrey L. Slack and Brian Burt, Publishedby 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 officeNew 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 Bristol, 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
15. Introduction to Statistical Methods by Grewal.

14. CRI POSTING SCHEDULE AND ORIENTATION

1. The internees shall conduct health education sessions for individuals and groups on oral health public health nutrition,behavioral sciences, environmental health, preventive dentistry and epidemiology.
2. They shall conduct a short term epidemiological survey in the community, or in the alternate, participate in the planningand methodology.
- 3.They shall arrange effective demonstrations of:
 - a) Preventive and interceptive procedures for prevalent dental diseases.



-
- b) Mouth-rinsing and other oral hygiene demonstrations -5Cases
- c) Tooth brushing techniques -5Cases
4. Conduction of oral health education programmes at
- A) School setting 2
- B) Community setting 2
- C) Adult education programmes 2
5. Preparation of Health Education materials 5
6. Exposure to team concept and National Health Care systems:
- a) Observation of functioning of health infrastructure.
- b) Observation of functioning of health care team including multipurpose workers male and female, health educators and other workers.
- c) Observation of atleast one National Health Programme.
- d) Observation of interlinkages of delivery of oral health care with Primary Health care. Mobile dental clinics, as and when available, should be provided for this teachings.

Period of Postings

Community Dentistry / Rural Services – 3 months



DENTAL COUNCIL OF INDIA

REVISED MDS COURSE REGULATION, 2007

(As Modified upto 12th October 2007)

COMPLIMENTRY
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NEW DELHI

BRANCH – 1

PROSTHODONTICS AND CROWN & BRIDGE

AIM:

To train the dental graduates so as to ensure higher level of competence in both general and specialty areas of Prosthodontics and prepare candidates with teaching, research and clinical abilities including prevention and after care in Prosthodontics – removable dental prosthodontics, fixed dental prosthodontics (Crown & Bridge), implantology, maxillofacial prosthodontics and esthetic dentistry.

GENERAL OBJECTIVES OF THE COURSE:

Training program for the dental graduates in Prosthetic dentistry– removable dental prosthodontics, fixed dental prosthodontics (Crown & Bridge), implantology, maxillofacial prosthodontics and esthetic dentistry and Crown & Bridge including Implantology is structured to achieve knowledge and skill in theoretical and clinical laboratory, attitude, communicative skills and ability to perform research with a good understanding of social, cultural, educational and environmental background of the society.

- To have adequate acquired knowledge and understanding of applied basic and systemic medical sciences, both in general and in particularly of head and neck region.
- The postgraduates should be able to provide Prosthodontic therapy for patients with competence and working knowledge with understanding of applied medical, behavioral and clinical science, that are beyond the treatment skills of the general BDS graduates and MDS graduates of other specialties,
- To demonstrate evaluative and judgment skills in making appropriate



PRINCIPAL

decisions regarding prevention, treatment, after care and referrals to deliver comprehensive care to patients.

KNOWLEDGE:

The candidate should possess knowledge of applied basic and systemic medicalsciences.

- On human anatomy, embryology, histology, applied in general and particularly to head and neck, Physiology & Biochemistry, Pathology Microbiology & virology; health and diseases of various systems of the body (systemic) principles in surgery and medicine, pharmacology, nutrition, behavioral science, age changes, genetics, Immunology, Congenital defects & syndromes and Anthropology, Bioengineering, Bio-medical & Biological Principles
- The student shall acquire knowledge of various Dental Materials used in the specialty and be able to provide appropriate indication, understand the manipulation characteristics, compare with other materials available, be adept with recent advancements of the same.
- Students shall acquire knowledge and practice of history taking, Diagnosis, treatment planning, prognosis, record maintenance of oral, craniofacial and systemic region.
- Ability for comprehensive rehabilitation concept with pre prosthetic treatment plan including surgical re-evaluation and prosthodontic treatment planning, impressions, jaw relations, utility of face bows, articulators, selection and positioning of teeth, teeth arrangement for retention, stability, esthetics, phonation, psychological comfort, fit and insertion.
- Instructions for patients in after care and preventive Prosthodontics and management of failed restorations shall be possessed by the students.

- Understanding of all the applied aspects of achieving physical, psychological well-being of the patients for control of diseases and / or treatment related syndromes with the patient satisfaction and restoring function of Cranio mandibular system for a quality life of a patient.
- Ability to diagnose and plan treatment for patients requiring Prosthodontic therapy.
- Ability to read and interpret radiographs, and other investigations for the purpose of diagnosis and treatment planning.
- The theoretical knowledge and clinical practice shall include principles involved for support, retention, stability, esthetics, phonation, mastication, occlusion, behavioral, psychological, preventive and social aspects of Prosthodontics science of Oral and Maxillofacial Prosthodontics and Implantology
- Tooth and tooth surface restorations, Complete denture Prosthodontics, removable partial denture Prosthodontics, fixed prosthodontics and maxillofacial and Craniofacial Prosthodontics, implants and implant supported Prosthodontics, T.M.J. and occlusion, craniofacial esthetics, and biomaterials, craniofacial disorders, problems of psychogenic origin.
- Should have knowledge of age changes, geriatric psychology, nutritional considerations and prosthodontic therapy in the aged population.
- Should have ability to diagnose failed restoration and provide prosthodontic therapy and after care.
- Should have essential knowledge on ethics, laws, and Jurisprudence and Forensic Odontology in Prosthodontics.
- Should know general health conditions and emergency as related to prosthodontics treatment like allergy of various materials and first line management of aspiration of prosthesis.



- Should identify social, cultural, economic, environmental, educational and emotional determinants of the patient and consider them in planning the treatment.
- Should identify cases, which are outside the area of his specialty / competence, refer them to appropriate specialists and perform interdisciplinary case management.
- To advice regarding case management involving surgical and interim treatment
- Should be competent in specialization of team management in craniofacial prosthesis design.
- To have adequate acquired knowledge, and understanding of applied basic, and systemic medical science knowledge in general and in particular to head and neck regions.
- Should attend continuing education programmes, seminars and conferences related to Prosthodontics, thus updating himself/herself.
- To teach and guide his/her team, colleagues and other students.
- Should be able to use information technology tools and carry out research both in basic and clinical areas, with the aim of publishing his/ her work and presenting his/her work at various scientific forums.
- Should have an essential knowledge of personal hygiene, infection control, prevention of cross infection and safe disposal of waste, keeping in view the risk of transmission of potential communicable and transmissible infections like Hepatitis and HIV.
- Should have an ability to plan and establish Prosthodontics clinic/hospital teaching department and practice management.
- Should have a sound knowledge (of the applications in pharmacology, effects of drugs on oral tissues and systems of body and in medically

compromised patient.

COURSE CONTENTS:

The course content has been identified and categorized as essential knowledge given below.

ESSENTIAL KNOWLEDGE:

The topics to be considered are Applied Basic Sciences, Oral and Maxillofacial Prosthodontics and Implantology.

APPLIED BASIC SCIENCES:

Should develop thorough knowledge on the applied aspects of Anatomy, Embryology, Histology particularly head and neck, Physiology, Biochemistry, Pathology, Microbiology, Virology, Pharmacology, Health and systematic diseases principles in surgery medicine and Anesthesia, Nutrition, Behavioral sciences, age changes, genetics, Dental Material Science, congenital defects and Syndromes and Anthropology, Biomaterial Sciences, Bio-engineering and Bio-medical and Research Methodology as related to Masters degree Prosthodontics and Crown & Bridge including Implantology

It is desirable to have adequate knowledge in Bio-statistics, Research Methodology and use of computers to develop necessary teaching skills in the specialty of Prosthodontics including crown and bridge.

APPLIED ANATOMY OF HEAD AND NECK:

General Human Anatomy –

Gross Anatomy, anatomy of Head and Neck in detail: Cranial and facial bones, TMJ and function, muscles of mastication and facial expression, muscles of neck and back including muscles of deglutition and tongue, arterial supply and venous drainage of the head and neck, anatomy of the Para nasal sinuses in relation to the Vth cranial nerve. General considerations of the structure and function of the brain,



PRINCIPAL

brief considerations of V, VII, XI,

XII, cranial nerves and autonomic nervous system of the head and neck.

The salivary glands, Pharynx, Larynx Trachea, Oesophagus, Functional Anatomy of masticatory muscles, Deglutition, speech, respiration, and circulation, teeth eruption, morphology, occlusion and function.

Embryology –

Development of the face, tongue, jaws, TMJ, Paranasal sinuses, pharynx, larynx, trachea, esophagus, Salivary glands, Development of oral and Para oral tissues including detailed aspects of tooth formation.

Growth & Development –

Facial form and Facial growth and development overview of Dentofacial growth process and physiology from foetal period to maturity and old age. General physical growth, functional and anatomical aspects of the head, changes in craniofacial skeletal development, relationship between development of the dentition and facial growth.

Dental Anatomy –

Anatomy of primary and secondary dentition, concept of occlusion, mechanism of articulation, and masticatory function. Detailed structural and functional study of the oral and Para oral tissues, normal occlusion, development of occlusion in deciduous mixed and permanent dentitions, root length, root configuration & tooth-numbering systems.

Histology –

histology of enamel, dentin, Cementum, periodontal ligament and alveolar bone, pulpal anatomy, histology and biological consideration. Salivary glands and Histology of epithelial tissues including glands.

Histology of general and specific connective tissue including bone, Salivary glands, Histology of skin, oral mucosa, respiratory mucosa,

connective tissue, bone, cartilage, cellular elements of blood vessels, blood, lymphatics, nerves, muscles, tongue and tooth

Cell biology –

Brief study of the structure and function of the mammalian cell
Components of the cell and functions of various types of cells and their consequences with tissue injury.

APPLIED PHYSIOLOGY AND NUTRITION:

Introduction, Mastication, deglutition, digestion and assimilation, Homeostasis, fluid and electrolyte balance, blood composition, volume, function, blood groups and hemorrhage, Blood transfusion, circulation, Heart, Pulse, Blood pressure, capillary and lymphatic circulation. Shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration. Endocrine glands in particular reference to pituitary, parathyroid and thyroid glands and sex hormones. Role of calcium and Vit D in growth and development of teeth, bone and jaws. Role of Vit. A, C and B complex in oral mucosal and periodontal health. Physiology and function of the masticatory system. Speech mechanism, mastication, swallowing and deglutition mechanism, salivary glands and Saliva

Endocrines –

General principles of endocrine activity and disorders relating to pituitary, thyroid, pancreas, parathyroid, adrenals, gonads, including pregnancy and lactation. Physiology of saliva, urine formation, normal and abnormal constituents, Physiology of pain, Sympathetic and parasympathetic nervous system, neuromuscular co-ordination of the stomatognathic system.

Applied Nutrition –

General principles, balanced diet, effect of dietary deficiencies and starvation, Diet, digestion, absorption, transportation and utilization & diet

for elderly patients.

APPLIED BIOCHEMISTRY:

General principles governing the various biological activities of the body, such as osmotic pressure, electrolytic dissociation, oxidation-reduction Carbohydrates, proteins, lipids and their metabolism, Enzymes, Vitamins, and minerals, Hormones, Blood, Metabolism of inorganic elements, Detoxification in the body & anti metabolites.

APPLIED PHARMACOLOGY AND THERAPEUTICS:

Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics, analeptics and tranquilizers. Local anesthetics, Chemotherapeutics and antibiotics, Antitubercular and anti syphilitic drugs, Analgesics and antipyretics, Antiseptics, styptics, Sialogogues and antisialogogues, Haematinics, Cortisones, ACTH, insulin and other antidiabetics vitamins: A, D, B – complex group C, K etc. Chemotherapy and Radiotherapy. Drug regime for antibiotic prophylaxis and infectious endocarditis and drug therapy following dental surgical treatments like placement of implants, pre and peri prosthetic surgery

APPLIED PATHOLOGY:

Inflammation, repair and degeneration, Necrosis and gangrene, Circulatory disturbances, Ischaemia, hyperaemia, chronic venous congestion, oedema, thrombosis, embolism and infarction. Infection and infective granulomas, Allergy and hypersensitive reactions, Neoplasms; Classification of tumors, Carcinogenesis, characteristics of benign and

malignant tumors, spread of tumors. Applied histo pathology and clinical pathology.

APPLIED MICROBIOLOGY:

Immunity, knowledge of organisms commonly associated with diseases of the oral cavity (morphology cultural characteristics etc) of strepto, staphylo, Clostridia group of organisms, Spirochaetes, organisms of tuberculosis, leprosy, diphtheria, actinomycosis and moniliasis etc. Virology, Cross infection control, sterilization and hospital waste management

APPLIED ORAL PATHOLOGY:

Developmental disturbances of oral and Para oral structures, Regressive changes of teeth, Bacterial, viral and mycotic infections of the oral cavity. Dental caries, diseases of pulp and periapical tissues, Physical and chemical injuries of the oral cavity, oral manifestations of metabolic and endocrine disturbances, Diseases of the blood and bloodforming organism in relation to the oral cavity, Periodontal diseases, Diseases of the skin, nerves and muscles in relation to the Oral cavity.

LABORATORY DETERMINATIONS:

Blood groups, blood matching, R.B.C. and W.B.C. count, Bleeding and clotting time, PT, PTT and INR Smears and cultures – urine analysis and culture. Interpretation of RBS, Glycosylated Hb, GTT

BIOSTATISTICS:

Characteristics and limitations of statistics, planning of statistical experiments, sampling, collection, classification and presentation of data (Tables, graphs, pictograms etc) & Analysis of data, parametric and non parametric tests

Introduction to Biostatistics –

Scope and need for statistical application to biological data.

Definition of selected terms – scale of measurements related to statistics,
Methods of collecting data, presentation of the statistical diagrams and graphs.

Frequency curves, mean, mode of median, Standard deviation and co-efficient of variation, Correlation – Co-efficient and its significance, Binominal distributions normal distribution and Poisson's distribution, Tests of significance.

RESEARCH METHODOLOGY:

Understanding and evaluating dental research, scientific method and the behavior of scientists, understanding to logic – inductive logic – analogy, models, authority, hypothesis and causation,. Measurement and Errors of measurement, presentation of results, Reliability, Sensitivity and specificity diagnosis tests and measurements, Research Strategies, Observation, Correlation, Experimentation and Experimental design. Logic of statistical in(ter)ferences, balance judgements, judgement under uncertainty, clinical vs., scientific judgement, problems with clinical judgement, forming scientific judgements, the problem of contradictory evidence, citation analysis as a Means of literature evaluation, influencing judgement :

Protocol writing for experimental, observational studies, survey including hypothesis, PICO statement, aim objectives, sample size justification, use of control/placebo, standardization techniques, bias and its elimination, blinding, evaluation, inclusion and exclusion criteria.

All MDS candidates shall compulsorily attend the Research Methodology Workshop conducted by the University within 6 months from the date of joining the course. In this regard, the candidates will be issued a completion Certificate by the University.



APPLIED RADIOLOGY:

Introduction, radiation, background of radiation, sources, radiation biology, somatic damage, genetic damage, protection from primary and secondary radiation, Principles of X-ray production, Applied principles of radio therapy and after care.

ROENTGENOGRAPHIC TECHNIQUES:

Intra oral, extra oral roentgenography, Methods of localization digital radiology and ultra sounds. Normal anatomical landmarks of teeth and jaws in radiograms, temporomandibular joint radiograms, neck radiograms.

Use of CT and CBCT in prosthodontic

APPLIED MEDICINE:

Systemic diseases and (its) their influence on general health and oral and dental health. Medical emergencies like syncope, hyperventilation, angina, seizure, asthma and allergy/anaphylaxis in the dental offices – Prevention, preparation, medico legal consideration, unconsciousness, respiratory distress, altered consciousness, seizures, drug related emergencies, chest pain, cardiac arrest, premedication, prophylaxis and management of ambulatory patients, resuscitation, applied psychiatry, child, adult and senior citizens and **diseases like diabetes, hypertension and blood dyscrasias.**

APPLIED SURGERY & ANESTHESIA:

General principles of surgery, wound healing, incision wound care, hospital care, control of hemorrhage, electrolyte balance. Common bandages, sutures, splints, shifting of critically ill patients, prophylactic therapy, bone surgeries, grafts, etc, surgical techniques, nursing assistance, anesthetic assistance.

Principles in speech therapy, surgical and radiological craniofacial oncology, applied surgical ENT and ophthalmology.

APPLIED PLASTIC SURGERY:

Applied understanding and assistance in programs of plastic surgery for prosthodontics therapy.

APPLIED DENTAL MATERIALS:

- Students should have understanding of all materials used for treatment of craniofacial disorders – Clinical, treatment, and laboratory materials, associated materials, technical considerations, shelf life, storage, manipulations, sterilization, and waste management.
- Students shall acquire knowledge of testing biological, mechanical and other physical properties of all materials used for the clinical and laboratory procedures in prosthodontic therapy.
- Students shall acquire full knowledge and practice of Equipments, instruments, materials, and laboratory procedures at a higher level of competence with accepted methods.
- **Tell show do technique –training skills.**
- All clinical practices shall involve personal and social obligation of cross infection control, sterilization and waste management.



**ORAL AND MAXILLOFACIAL PROSTHODONTICS AND
IMPLANTOLOGY:**

**I. NON-SURGICAL AND SURGICAL METHODS OF
PROSTHODONTICS AND IMPLANTOLOGY**

- a) Prosthodontic treatment for completely edentulous patients – Complete dentures, immediate complete dentures, single complete dentures, tooth supported complete dentures & Implant supported Prosthesis for completely edentulous patients for typical and atypical cases.
- b) Prosthodontic treatment for partially edentulous patients: - Clasp-retained acrylic and cast partial dentures, transitional dentures, immediate dentures, intra coronal and extra coronal precision attachments retained partial dentures & maxillofacial prosthesis for typical and atypical cases.

Prosthodontic treatment for edentulous patients: - Complete Dentures and Implant supported Prosthesis.

Complete Denture Prosthesis – Definitions, terminologies, G.P.T., Boucher's clinical dental terminology.

Scope of Prosthodontics – The Cranio Mandibular system and its functions, the reasons for loss of teeth, consequences of loss of teeth and treatment modality with various restorations and replacements.

(a) Edentulous Predicament, Biomechanics of the edentulous state, Support mechanism for the natural dentition and complete dentures, Biological considerations, Functional and Para functional considerations, Esthetic, behavioral and adaptive responses, Temporomandibular joints changes

(b) Effects of aging of edentulous patients –aging population, distribution

andedentulism in old age, impact of age on edentulous mouth – Mucosa, Bone, saliva, jaw movements in old age, taste and smell, nutrition, aging, skin and teeth, concern for personal appearance in old age

(c) Sequelae caused by wearing complete denture –the denture in the oral environment – Mucosal reactions, altered taste perception, burning mouth syndrome, gagging, residual ridge (reduction) resorption, denture stomatitis, flabby ridge, denture irritation hyperplasia, traumatic Ulcers, Oral cancer in denture wearers, nutritional deficiencies, masticatory ability and performance, nutritional status and masticatory functions.

(d) Temporomandibular disorders in edentulous patients –Epidemiology, etiology and management, Pharmacotherapy, Physical modalities, and Bio-behavioral modalities

(e) Nutrition Care for the denture wearing patient –Impact of dental status on food intake, Gastrointestinal functions, nutritional needs and status of older adults, Calcium and bone health, vitamin and herbal supplementation, dietary counseling and risk factor for malnutrition in patients with dentures and when teeth are extracted.

(f) Preparing patient for complete denture patients –Diagnosis and treatment planning for edentulous and partially edentulous patients – familiarity with patients, principles of perception, health questionnaires and identification data, problem identification, prognosis and treatment identification data, problem identification, prognosis and treatment planning

– contributing history – patient's history, social information, medical status , systemic status with special reference to debilitating diseases, diseases of the joints, cardiovascular disorders, diseases of the skin, neurological disorders, oral malignancies, climacteric, use of drugs, mental health – mental attitude, psychological changes, adaptability, geriatric changes – physiologic,

pathological, pathological and intra oral changes. Intra oral health – mucus membrane, alveolar ridges, palate and vestibular sulcus and dental health. Data collection and recording, visual observation, radiography, palpation, measurement of sulci or fossae, extra oral measurement, the vertical dimension of occlusion, diagnostic casts. Specific observations – existing dentures, soft tissue health, hard tissue health – teeth, bone. Biomechanical considerations – jaw relations, border tissues, saliva, muscular development – muscle tone, neuromuscular co-ordination, tongue, cheek and lips. Interpreting diagnostic findings and treatment planning.

- (g) **Pre prosthetic surgery** –Improving the patients denture bearing areas and ridge relations.
- (h) **Non surgical methods** –rest for the denture supporting tissues, occlusal correction of the old prosthesis, good nutrition, conditioning of the patients musculature.
- (i) **Surgical methods** –Correction of conditions, that preclude optimal prosthetic function – hyperplastic ridge – epulis fissuratum and papillomatosis, frenular attachments and pendulous maxillary tuberosities, ridge augmentation, maxillary and mandibular oral implants, corrections of congenital deformities, discrepancies in jaw size, relief of pressure on the mental foramen, enlargement of denture bearing areas, vestibuloplasty, ridge augmentation, replacement of tooth roots with Osseo integrated denture implants.
- (j) **Over dentures** (tooth supported complete dentures)–indications and treatment planning, advantages and disadvantages, selection of abutment teeth, loss of abutment teeth, tooth supported complete dentures. Non-coping abutments, abutment with copings, abutments with attachments, submerged vital roots, preparations of the retained teeth.

(k) Single Dentures: Single Mandibular denture to oppose natural maxillary teeth, single complete maxillary denture to oppose natural Mandibular teeth to oppose a partially edentulous Mandibular arch with fixed prosthesis, partially edentulous Mandibular arch with removable partial dentures. Opposing existing complete dentures, preservation of the residual alveolar ridge, necessity for retaining maxillary teeth and preventing mental trauma.

(l) Art of communication in the management of the edentulous predicament

– Communication–scope, a model of communication, why communication is important? What are the elements of effective communication? special significance of doctor / patient communication, doctor behavior, The iatrosedative (doctor & act of making calm) recognizing and acknowledging the problem, exploring and identifying the problem, interpreting and explaining the problem, offering a solution to the problem for mobilizing their resources to operate in a most efficient way, recognizing and acknowledging the problem, interpreting and explaining the problem, offering a solution to the problem.

Fabrication of prosthetic denture teeth, requirement of prosthetic denture teeth, denture

Lining materials and tissue conditioners, cast metal alloys as denture bases – base metal alloys.

(m) Materials prescribed in the management of edentulous patients -

Denture base materials, General requirements of biomaterials for edentulous patients, requirement of an ideal denture base, chemical composition of denture base resins, materials used.

(n) Articulators – Evolution of concepts, Classification, selection, limitations, precision, accuracy and sensitivity, and Functions of the articulator and their

uses. Recent advancements including virtual articulator.

(o) Fabrication of complete dentures –complete denture impressions–muscles of facial expressions and anatomical landmarks, support, retention, stability, aims and objectives of preservation, support, stability, aesthetics, and retention. Impression materials and techniques – need of 2 impressions the preliminary impression and final impressions.

Developing an analogue / substitute for the maxillary denture bearing area – anatomy of supporting structures – mucous membrane, hard palate, residual ridge, shape of the supporting structure and factors that influence the form and size of the supporting bones, incisive foramen, maxillary tuberosity, sharp spiny process, torus palatinus, Anatomy of peripheral or limiting structures, labial vestibule, Buccal vestibule, vibrating lines. Preliminary and final impressions, impression making, custom tray and refining the custom tray, preparing the tray to secure the final impression, making the final impression, boxing impression and making the casts Developing an analogue / substitute for the Mandibular denture bearing area- anatomy of supporting structure, crest of the residual ridge, buccal shelf, shape of supporting structure, mylohyoid ridge, mental foramen, genial tubercles, torus mandibularis, Anatomy of peripheral or limiting structure – labial vestibule, Buccal vestibule, lingual border, mylohyoid muscle, retromylohyoid fossa, sublingual gland region, alveolingual sulcus, Mandibular impressions – preliminary impressions, custom tray, refining, preparing the tray\, final impressions.

(p)Mandibular movements, Maxillo mandibular relations and concepts of occlusion – Gnathology, identification of shape and location of arch form– Mandibular and maxillary occlusion rims, level of occlusal plane and recording of trail denture base, tests to determine vertical dimension of occlusion, interocclusal & centric relation records. Biological and clinical considerations

in making jaw relation records and transferring records from the patients to the articulator, Recording of Mandibular movements – influence of opposing tooth contacts, temporomandibular joint, muscular involvements, neuromuscular regulation of Mandibular motion, the envelope of motion, rest position.

Maxillo – Mandibular relations – the centric, eccentric, physiologic rest position, vertical dimension, occlusion, recording methods – mechanical, physiological, Determining the horizontal jaw relation – Functional graphics, tactile or interocclusal check record method, Orientation / sagittal relation records, Arbitrary / Hinge axis and face bow record, significance and requirement, principles and biological considerations and securing on articulators.

- (q) **Selecting and arranging artificial teeth and occlusion for the edentulous patient** – anterior tooth selection, posterior tooth selection, and principles in arrangement of teeth, and factors governing the position of teeth – horizontal & vertical relations. The inclinations and arrangement of teeth for aesthetics, phonetics and mechanics – to concept of occlusion.
- (r) **The Try in** – verifying vertical dimension, centric relation, establishment of posterior palatal seal, creating a facial and functional harmony with anterior teeth, harmony of spaces of individual teeth position, harmony with sex, personality and age of the patient, co-relating aesthetics and incisal guidance.
- (s) **Speech considerations with complete dentures & speech production** – structural and functional demands, neuropsychological background, speech production and the roll of teeth and other oral structures – bilabial sounds, labiodental(s) sounds, linguodental sounds, linguoalveolar sound, articulatoric characteristics, acoustic characteristics, auditory characteristics, linguopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.
- (t) **Waxing contouring and processing the dentures their fit and insertion and**

after care –laboratory procedure–wax contouring, flasking and processing, laboratory remount procedures, *selective grinding*, finishing and polishing.

Critiquing the finished prosthesis – doctors evaluation, patients evaluation, friends evaluation, elimination of basal surface errors, errors in occlusion, interocclusal records for remounting procedures – verifying centric relation, eliminating occlusal errors.

Special instructions to the patient – appearance with new denture, mastication with new dentures, speaking with new dentures, oral hygiene with dentures, preservation of residual ridges and educational material for patients, maintaining the comfort and health of the oral cavity in the rehabilitated edentulous patients. Twenty-four hours oral examination and treatment and (preventive) Prosthodontic – periodontic recall for oral examination 3 to 4 months intervals and yearly intervals.

(u) Implant supported Prosthesis for partially edentulous patients –Science of Osseo integration, clinical protocol (*diagnostic, surgical and prosthetic*) for treatment with implant supported over dentures, managing problems and complications. Implant Prosthodontics for edentulous patients: current and future directions.

Implant supported prosthesis for partially edentulous patients – Clinical and laboratory protocol: Implant supported prosthesis, managing problems and complications

- Introduction and Historical Review
- Biological, clinical and surgical aspects of oral implants
- Diagnosis and treatment planning
- Radiological interpretation for selection of fixtures
- Splints for guidance for surgical placement of fixtures
- *Surgical and* Intra oral plastic surgery, if any

- Guided bone and Tissue regeneration consideration for implants fixture.
- Implant supported prosthesis for complete edentulism and partial edentulism
- Occlusion for implant supported prosthesis.
- Peri-implant tissue and Management of peri-implantitis
- Maintenance and after care
- Management of failed restoration.
- Work authorization for implant supported prosthesis – definitive instructions, legal aspects, delineation of responsibility.



Prosthodontic treatment for partially edentulous patients –

Removable partial Prosthodontics –

- a. **Scope, definition** and terminology, Classification of partially edentulous arches - requirements of an acceptable method of classification, Kennedy's classification,

Applegate's rules for applying the Kennedy classification

Components of RPD –

- i) major connector – mandibular and maxillary
- ii) minor connectors, design, functions & form and location of major and minor connectors, tissue stops, finishing lines, reaction of tissue to metallic coverage
- iii) Rest and rest seats – form of the Occlusal rest and rest seat, interproximal Occlusal rest seats, internal Occlusal rests, possible movements of partial dentures, support for rests, lingual rests on canines and incisor teeth, incisal rest and rest seat.
- iv) Direct retainers- Internal attachments & extracoronal direct retainers. Relative uniformity of retention, flexibility of clasp arms, stabilizing reciprocal clasp, criteria for selecting a given clasp design, the basic principles of clasp design, circumferential clasp, bar clasp, combination clasp and other type of retainers.
- v) Indirect Retainers – denture rotation about an axis, factors influencing effectiveness of indirect retainers, forms of indirect retainers, auxiliary Occlusal rest, canine extensions
- vi) from Occlusal rests, canine rests, continuous bar retainers and linguoplates, modification areas, rugae support, direct – indirect retention.
- vii) Teeth and denture bases – types, materials, advantages and disadvantages, indications and contraindications and clinical use.



Principles of removable partial Denture design – Bio mechanical considerations, and the factors influencing after mouth preparations – Occlusal relationship of remaining teeth, orientation of Occlusal plane, available space for restoration, arch integrity, tooth morphology, response of oral structure to previous stress, periodontal conditions, abutment support, tooth supported and tooth and tissue supported, need for indirect retention, clasp design, need for rebasing, secondary impression, need for abutmenttooth modification, type of major connector, type of teeth selection, patients past experience, method of replacing single teeth or missing anterior teeth.

Difference between tooth supported and tissue supported partial dentures. Essentials of partial denture design, components of partial denture design, tooth support, tissue support, stabilizing components, guiding planes, use of splint bar for denture support, internal clip attachments, overlay abutment as support for a denture base, use of a component partially to gain support.

- a) Education of patient
- b) Diagnosis and treatment planning
- c) Design, treatment sequencing and mouth preparation
- d) **Surveying** –Description of dental surveyor, purposes of surveying, Aims and objectives in surveying of diagnostic cast and master cast, Final path of insertion, factors that determine path of insertion and removal, Recording relation of cast to surveyor, measuring amount of retentive area Blocking of master cast – paralleled blockout, shaped blockout, arbitrary blockout and relief.

- e) **Diagnosis and treatment planning** –Infection control and cross infection barriers – clinical and laboratory and hospital waste management, Objectives of prosthodontic treatment, Records, systemic evaluation, Oral examination, preparation of diagnostic cast, interpretation of examination data, radiographic interpretation, periodontal considerations, caries activity, prospective surgical preparation, endodontic treatment, analysis of occlusal factors, fixed restorations, orthodontic treatment, need for determining the design of components, impression procedures and occlusion, need for reshaping remaining teeth, reduction of unfavorable tooth contours, differential diagnosis : fixed or removable partial dentures, choice between complete denture and removable partial dentures, choice of materials
- f) **Preparation of Mouth for removable partial dentures** –Oral surgical preparation, conditioning of abused and irritated tissues, periodontal preparation – objectives of periodontal therapy, periodontal diagnosis, control therapy, periodontal surgery.
- g) **Preparation of Abutment teeth** –Classification of abutment teeth, sequence of abutment preparations on sound enamel or existing restorations, conservative restorations using crowns, splinting abutment teeth, utilization, temporary crowns to be used as abutment.
- h) **Impression Materials and Procedures for Removable Partial Dentures**
Rigid materials, thermoplastic materials, elastic materials, impression of partially edentulous arch, tooth supported, tooth tissue supported, individual impression trays.
- i) **Support for the Distal Extension Denture Base** –Distal extension removable partial denture, Factors influencing the support of distal extension base, Methods of obtaining functional support for the distal extension base.

- j) **Initial placement, adjustment and servicing of the removable partial denture** – adjustments to bearing surfaces of denture framework, adjustment of occlusion in harmony with natural and artificial dentition, instructions to the patient, follow – up services
- k) **Relining and Rebasing the removable partial denture** –Relining tooth supported dentures bases, relining distal extension denture bases, methods of reestablishing occlusion on a relined partial denture.
- l) **Repairs and additions to removable partial dentures** –Broken clasp arms, fractured occlusal rests, distortion or breakage of other components – major and minor connectors, loss of a tooth or teeth not involved in the support or retention of the restoration, loss of an abutment tooth necessitating its replacement and making a new direct retainer, Other types of repairs & repair by soldering.
- m) **Removable partial denture considerations in maxillofacial prosthetics** – Maxillofacial prosthetics, intra oral prosthesis, design considerations, maxillary prosthesis, Obturators, speech aids, palatal lifts, palatal augmentations, mandibular prosthesis, treatment planning, framework design, class I resection, Class II resection, mandibular flange prosthesis, jaw relation records.
- n) **Management of failed restorations and work authorization details.**

II. MAXILLOFACIAL REHABILITATION:

Scope, terminology, definitions, cross infection control and hospital waste management, work authorization.

Behavioral and psychological issues in Head and neck cancer, Psychodynamic interactions between clinician and patient. **Cancer**

Chemotherapy: Oral Manifestations, Complications, and management,

Radiation therapy of head and neck tumors: Oral effects, Dental

manifestations and dental treatment: Etiology, treatment and rehabilitation (restoration).

Acquired defects of the mandible, acquired defects of hard palate, soft palate, clinical management of edentulous and partially edentulous maxillectomy patients, Facial defects, Restoration of speech, Velopharyngeal function, cleft lip and palate, cranial implants, maxillofacial trauma, Lip and cheek support prosthesis, Laryngectomy aids, Obstructive sleep apnoea, Tongue prosthesis, Oesophageal prosthesis, radiation carriers, Burn stents, Nasal stents, Vaginal and anal stents, Auditory inserts, Trismus appliances, mouth controlled devices for assisting the handicapped, custom prosthesis, conformers, and orbital prosthesis for ocular and orbital defects. Osseo integrated supported facial and maxillofacial prosthesis. Resin bonding for maxillofacial prosthesis, cranial prosthesis Implant rehabilitation of the mandible compromise by radiotherapy, Prosthodontic treatment, Material and laboratory procedures for maxillofacial prosthesis.

III. OCCLUSION

EVALUATION, DIAGNOSIS AND TREATMENT OF OCCLUSAL PROBLEMS:

Scope, definition, terminology, optimum oral health, anatomic harmony, functional harmony, occlusal stability, causes of deterioration of dental and oral health. Anatomical, physiological, neuro – muscular, psychological considerations of teeth; muscles of mastication; temporomandibular joint; intra oral and extra oral and facial musculatures and the functions of Cranio mandibular system.

Occlusal therapy, the stomatognathic system, centric relation, vertical dimension, the neutral zone, the occlusal plane, differential diagnosis of temporomandibular disorders, understanding and diagnosing intra articular

problems, relating treatment to diagnosis of internal derangements of TMJ, Occlusal splints. Selecting instruments for occlusal diagnosis and treatment, mounting casts, Pankey-Mann-Schuyler philosophy of complete occlusal rehabilitation, long centric, anterior guidance, restoring lower anterior teeth, restoring upper anterior teeth, determining the type of posterior occlusal contours, methods for determining the plane of occlusion, restoring lower posterior teeth, restoring upper posterior teeth, functionally generated path techniques for recording border movements intra orally, occlusal equilibration.

Bruxism, Procedural steps in restoring occlusion, requirements for occlusal stability, solving occlusal problems through programmed treatment planning, splinting, solving occlusal wear problems, deep overbite problems, anterior overjet problems, anterior open bite problems. Treating – end to end occlusion, splayed anterior teeth, cross bite problems, Crowded, irregular, or interlocking anterior bite



IV. FIXED PROSTHODONTICS

Scope, definitions and terminology, classification and principles, design, mechanical and biological considerations of components – Retainers, connectors, pontics, work authorization.

- **Diagnosis and treatment planning** –patients history and interview, patients desires and expectations and needs, systemic and emotional health, clinical examinations – head and neck, oral – teeth, occlusal and periodontal, Preparation of diagnostic cast, radiographic interpretation, Aesthetics, endodontics considerations, abutment selection – bone support, root proximities and inclinations, selection of abutments for cantilever, pier abutments, splinting, available tooth structures and crown morphology, TMJ and muscles of mastication and comprehensive planning and prognosis.
- **Management of Carious teeth** –caries in aged population, caries control, removal caries, protection of pulp, reconstruction measure for compromised teeth – retentive pins, horizontal slots, retentive grooves, prevention of caries, diet, prevention of root caries and vaccine for caries.
- **Periodontal considerations** –attachment units, ligaments, prevention of gingivitis, periodontitis. Microbiological aspect of periodontal diseases, marginal lesion, occlusal trauma, periodontal pockets in attached gingiva, interdental papilla, gingival embrasures, gingival/periodontal prosthesis, radiographic interpretations of Periodontia, intraoral, periodontal splinting – Fixed prosthodontics with periodontally compromised dentitions, placement of margin restorations.



- **Biomechanical principles of tooth preparation** –individual tooth preparations - Complete metal Crowns – P.F.C., All porcelain – Cerestore crowns, dicor crowns, incerametc. porcelain jacket crowns; partial 3/4, 7/8, telescopic, pin– ledge, laminates, inlays, onlays. Preparations for restoration of teeth– amalgam, glass Ionomer and composite resins. Resin bond retainers, Gingival marginal preparations – Design, material selection, and biological and mechanical considerations – intracoronal retainer and precision attachments – custom made and prefabricated.
 - **Isolation and fluid control** – Rubber dam application(s), tissue dilation– softtissue management for cast restoration, impression materials and techniques, provisional restorations, interocclusal records, laboratory support for fixed Prosthodontics, Occlusion, Occlusal equilibration, articulators, recording and transferring of occlusal relations, cementing of restorations.
 - **Resins, Gold and gold alloys, glass Ionomer, restorations.**
 - **Restoration of endodontically treated teeth, Stomatognathic Dysfunction and management**
 - **Management of failed restorations**
- Osseo integrated supported fixed Prosthodontics** –Osseo integratedsupported and toothsupported fixed Prosthodontics
- **CAD – CAM Prosthodontics**

V. TMJ – Temporomandibular joint dysfunction – Scope, definitions, and terminology

Temporomandibular joint and its function, Orofacial pain, and pain from the temporomandibular joint region, temporomandibular joint dysfunction, temporomandibular joint sounds, temporomandibular joint disorders, Anatomy related, trauma, disc displacement, Osteoarthrosis/Osteoarthritis, Hyper mobility and dislocation, infectious arthritis, inflammatory diseases, Eagle's syndrome (Styloid – stylohyoid syndrome), Synovial chondromatosis, Osteochondrosis disease, Osteonecrosis, Nerve entrapment process, Growth changes, Tumors, Radiographic imaging

- Etiology, diagnosis and cranio mandibular pain, differential diagnosis and management of orofacial pain – pain from teeth, pulp, dentin, muscle pain, TMJ pain psychologic, physiologic – endogenous control, acupuncture analgesia, Placebo effects on analgesia, Trigeminal neuralgia, Temporal arteritis
- Occlusal splint therapy – construction and fitting of occlusal splints, management of occlusal splints, therapeutic effects of occlusal splints, occlusal splints and general muscles performance, TMJ joint unloading and anterior repositioning appliances, use and care of occlusal splints.
- Occlusal adjustment procedures – Reversible – occlusal stabilization splints and physical therapies, jaw exercises, jaw manipulation and other physiotherapy or irreversible therapy occlusal repositioning appliances, orthodontic treatment, Orthognathic surgery, fixed and removable prosthodontic treatment and occlusal adjustment, removable prosthodontic treatment and occlusal adjustment. Indication for occlusal adjustment, special nature of orofacial pain, Psychopathological considerations,



occlusal adjustment philosophies, mandibular position, excursive guidance, occlusal contact scheme, goals of occlusal adjustment, significance of a slide in centric, Preclinical procedures, clinical procedures for occlusal adjustment.

VI. ESTHETICS

SCOPE

DEFINITIONS:

Morpho-psychology and esthetics, structural esthetic rules –facial components, dental components, gingival components and physical components. Esthetics and its relationship to function – Crown morphology, physiology of occlusion, mastication, occlusal loading and clinical aspect in bio esthetic aspects, Physical and physiologic characteristic and muscular activities of facial muscle, perioral anatomy and muscleretaining exercises Smile – classification and smile components, smile design, esthetic restoration of smile, Esthetic management of the dentogingival unit, intraoral materials for management of gingival contours, and ridge contours, Periodontal esthetics, Restorations Tooth colored restorative materials, the clinical and laboratory aspects, marginal fit, anatomy, inclinations, form, size, shape, color, embrasures & contact point.

Prosthodontic treatment should be practiced by developing skills, by treating various and more number of patients to establish skill to diagnose and treatment and after care with bio-mechanical, biological, bio-esthetics, bio-phonetics. All treatments should be carried out in more numbers for developing clinical skills.

- Infection control, cross infection barrier – clinical & lab; hospital & lab waste managemen



Teaching / Learning Activities:

The post graduate is expected to complete the following at the end of:

I YEAR M.D.S.

- Theoretical exposure of all applied sciences
- *Pre-clinical* exercises involved in prosthodontic therapy for assessment
- Commencement of library assignment within six months
- To carry out short epidemiological study relevant to prosthodontics.
- Acquaintance with books, journals and referrals.
- To differentiate various types of articles published in and critically appraise based on standard reference guidelines.
- To develop the ability to gather evidence from published articles.
- To acquire knowledge of published books, journals and websites for the purpose of gaining knowledge and reference – in the field of ***Oral and Maxillofacial Prosthodontics and Implantology***
- Acquire knowledge of instruments, equipment, and research tools in Prosthodontics.
- To acquire knowledge of Dental Material Science – Biological and biomechanical & bio- esthetics, knowledge of using material in laboratory and clinics including testing methods for dental materials.
- Submit a protocol for their dissertation before Institutional Review Board and Institutional Ethics Committee.
- Participation and presentation in seminars, didactic lectures.



II YEAR M.D.S.

- Acquiring confidence in obtaining various phases and techniques in removable and fixed prosthodontics therapy
- Acquiring confidence by clinical practice with sufficient number of patients requiring tooth and tooth surface restorations
- Fabrication of adequate number of complete denture prosthesis following, higher clinical approach by utilizing semi-adjustable articulators, face bow and graphic tracing.
- Understanding the use of dental surveyor and its application in diagnosis and treatment plan in R.P.D.
- Adequate number of R.P.D's covering all partially edentulous situations.
- Adequate number of Crowns, Inlays, laminates, *FDP (fixed dental prosthesis)* covering all clinical situations.
- Selection of cases and following principles in treatment of partially or complete edentulous patients by implant supported prosthesis.
- Treating single edentulous arch situations by implant supported prosthesis.
- Diagnosis and treatment planning for implant prosthesis.
 - Ist stage and IIInd stage implant surgery
 - Understanding the maxillofacial *Prosthodontics, treating craniofacial and management of orofacial defects*
 - Prosthetic management of TMJ syndrome
 - Occlusal rehabilitation
 - Management of failed restorations.
 - Prosthodontic management of patient with psychogenic disorder.
 - Practice of child and geriatric prosthodontics.
 - Participation and presentation in seminars, didactic and non didactic Teaching and Training students.



III YEAR M.D.S

- Clinical and laboratory practice continued from IInd year.
- Occlusion equilibration procedures – fabrication of stabilizing splint for parafunctional disorders, occlusal disorders and TMJ functions.
- Practice of dental, oral and facial esthetics
- The clinical practice of all aspects of Prosthodontic therapy for elderly patients.
- Implants Prosthodontics – Rehabilitation of Partial Edentulism, Complete edentulism and craniofacial rehabilitation.
- Failures in all aspects of Prosthodontics and their management and after care.
- Team management for esthetics, TMJ syndrome and Maxillofacial & Craniofacial Prosthodontics
- Management of Prosthodontic emergencies, resuscitation.
- Candidate should complete the course by attending a large number and variety of patients to master the prosthodontic therapy.
- Restoration of root treated teeth, splints for periodontal rehabilitations and fractured jaws, complete dentures, R.P.D's, F.D.P's,
- Immediate dentures, over dentures, implant supported prosthesis, maxillofacial and body prosthesis, occlusal rehabilitation.
- Prosthetic management of TMJ syndrome
- Management of failed restorations
- Should complete and submit Main Dissertation assignment 6 months prior to examination.
- Candidates should acquire complete theoretical and clinical knowledge

through seminars,symposium, workshops and reading.

- Participation and presentation in seminars, didactic lecture



PROSTHODONTIC TREATMENT MODALITIES

- 1) Diagnosis and treatment planning prosthodontics
- 2) Tooth and tooth surface restorations
 - i) Fillings
 - ii) Veneers-composites and ceramics Inlays-composite, ceramic and alloys
 - iii) Onlay - composite, ceramic and alloys
 - iv) Partial crowns -- th, 4/5th, 7/8th, Mesial ½ crowns
 - v) Pin-ledge
 - vi) Radicular crowns
 - vii) Full crowns
- 3) Tooth replacements Partial Complete
 - i) Tooth supported Fixed partial denture Overdenture
 - ii) Tissue supported Interim partial denture Complete denture
 - iii) Intermediate partial denture Immediate denture
 - iv) Immediate complete denture
 - v) Tooth and tissue Supported Cast partial denture Overdenture
 - vi) Precision attachment
 - vii) Implant supported Cement retained Bar attachment
 - viii) Screw retained Ball attachment
 - (1) Implant supported Cement retained Bar attachment
 - ix) Screw retained Ball attachment
 - x) Clip attachment
 - xi) Tooth and implant Supported
 - xii) Screw retained Screw retained
 - xiii) Cement retained Cement retained



- xiv) Root supported Dowel and core Over denture
 - xv) Pin retained
 - xvi) Precision attachments
 - xvii) Bar-slide attachments
 - xviii) Joints and hinge joint attachments
- 4) Tooth and tissue defects (Maxillo-facial and Cranio-facial prosthesis)
- i. Congenital Defects
 - 1. Cleft lip and palate
 - 2. Pierre Robin Syndrome
 - 3. Hemifacial microstomia cast partial dentures
 - 4. Anodontia
 - 5. Oligodontia complete dentures
 - 6. Malformed teeth fixed partial dentures
 - ii. Acquired defects
 - 1. Head and neck cancer patients - prosthodontic splints and stents
 - 2. Restoration of facial defects
 - a. Auricular prosthesis
 - b. Nasal prosthesis
 - i. Orbital prosthesis
 - ii. Craniofacial implants
 - iii. Midfacial defects
 - iv. Restoration of maxillofacial trauma
 - v. Hemimandibulectomy cast partial denture
 - vi. Maxillectomy implant supported Dentures
 - vii. Lip and cheek support prosthesis complete dentures
 - viii. Ocular prosthesis



- ix. Speech and Velopharyngeal prosthesis
 - x. Laryngectomy aids
 - xi. Esophageal prosthesis
 - xii. Nasal stents
 - xiii. Tongue prosthesis
 - xiv. Bum stents
 - xv. Auditory inserts
 - xvi. Trismus appliances
- 5) T.M. J and Occlusal disturbances
- i. Occlusal equilibration
 - ii. Splints Diagnostic
 - iii. Repositioners / Deprogrammers
 - iv. Anterior bite planes
 - v. Posterior bite planes
 - vi. Bite raising appliances
 - vii. Occlusal rehabilitation
- 6) Esthetic/Smile designing
- i. Laminates/Veneers
 - ii. Tooth contouring (peg laterals, malformed teeth)
 - iii. Tooth replacements
 - iv. Team management
- 7) Psychological therapy
- i. Charts, papers, photographs
 - ii. Models
 - iii. Case reports
 - iv. Patient counseling
 - v. Behavioral modifications



- vi. Referrals
- 8) Geriatric Prosthodontics
 - i. Prosthodontics for the elderly
 - ii. Behavioral and psychological counseling
 - iii. Removable Prosthodontics
 - iv. Implant supported Prosthodontics
 - v. Maxillofacial Prosthodontics
 - vi. Psychological and physiological considerations
- 9) Preventive measures
 - i. Diet and nutrition modulation and counseling

b. Referrals

Sl No.	Name of the Program	Name of the course	Course outcome
<u>1.1</u>	MDS in Prosthodontics and Crown & Bridge	Applied Anatomy, Physiology, Pathology and Dental Materials	1. The candidate would knowledge about applied basic and systematic medical sciences. 2. The candidate would be able to examine the patients requiring Prosthodontics therapy, investigate the patient systemically, analyze the investigation results. 3. The candidate would diagnose the ailment, plan treatment, communicate it with the patient and

			execute it
<u>1.2</u>		Removable Prosthodontics and Oral Implantology	<p>1. The candidate would Possess knowledge about age changes and Prosthodontic Therapy for the aged Related to removable Prosthodontics and oral Implantology</p> <p>2. The candidate would be able to Demonstrate the clinical Competence to restore lost System namely mastication, speech, appearance and psychological comforts by removable prosthesis.</p> <p>3. The candidate would be able to adopt ethical principles in Prosthodontic practice. Professional honesty and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or religion of patient.</p>



<p style="text-align: center;"><u>1.3</u></p>		<p style="text-align: center;">Fixed Prosthodontics</p>	<p>1. The candidate would be Understand the prevalence and Prevention of diseases of Craniomandibular system related to Fixed prosthetic dentistry.</p> <p>2. The candidate would be willing to Adopt new methods and Techniques in fixed prosthodontics From time to time based on Scientific research, which is in Patient's best interest.</p> <p>3. The candidate would be able to communicate in simple understandable language with the patient and explain the principles of fixed prosthodontics to the patient</p>
<p style="text-align: center;"><u>1.4</u></p>		<p style="text-align: center;">Essay</p>	<p>1. The candidate would be able to outline the knowledge, procedural and operative skills needed in Master Degree in Prosthodontics.</p> <p>2. The candidate would possess comprehensive knowledge and the ability to apply the same in all the sub branches of prosthodontics in total.</p>



INTERDISCIPLINARY OR INTERDEPARTMENTAL ACTIVITIES:

1. Interdisciplinary treatment planning approach for temporomandibular joint treatment, orofacial pain, maxillofacial defects rehabilitation, endodontically treated teeth, implant-based rehabilitation and maintenance.
2. Interdepartmental teaching and learning activities with department of orthodontics and conservative dentistry and endodontics for dental materials syllabus.
3. Interdepartmental teaching and learning activities with Basic sciences departments of medical colleges for basic sciences syllabus.

TEACHING METHODOLOGY:

(a) LECTURES:

There shall be some didactic lectures in the specialty and in the allied fields. The departments shall encourage guest lectures in the required areas and integrated lectures by multi-disciplinary teams

(b) JOURNAL REVIEW:

The journal review meetings shall be held at least once a week. All trainees, associate and staff associated with the post-graduate programme are expected to participate actively and enter relevant details in the logbook. The trainee shall make presentations from the allotted journals of selected articles.

(c) SEMINARS:

The seminars shall be held at least twice a week in each department. All trainees are expected to participate actively and enter relevant details

in logbook.

(d) SYMPOSIUM:

It is recommended to hold symposium on topics covering multiple disciplines.

(e) CLINICAL POSTINGS:

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases.

(f) CLINICO-PATHOLOGICAL CONFERENCE

The clinical pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical departments. The trainees shall be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

(g) INTER-DEPARTMENTAL MEETINGS.

To encourage integration among various specialties, there shall be inter departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

(h) TEACHING SKILLS:

All the trainees shall be encouraging to take part in undergraduate teaching programmes either in the form of lectures or group discussion.

(i) DENTAL EDUCATION PROGRAMMES:



Each department shall organize dental education programmes on regular basis involving other institutions. The trainees shall also be encouraged to attend such programmes conducted outside their university or institute.

(j) CONFERENCES/WORKSHOPS/ADVANCED COURSES:

The trainees shall be encouraged to attend conference/workshops/advanced courses and also to present at least two scientific papers and two posters at State/national level specialty and allied conferences/conventions during the training period

(k) ROTATION AND POSTING IN OTHER DEPARTMENTS:

To bring in more integration among the specialties and allied fields, each department shall workout a programme to rotate the trainees in related disciplines

ICT TOOLS USED:

ICT tools for teaching and Learning

1. LCD projector with smart Classrooms
2. Visualizer
3. webinars
4. Wireless and collar microphones
5. Amplifiers
6. Noise isolation speakers
7. Accessory tools Keynote, Pages, Numbers, Google Docs, etc.



8. Internet and Intranet through Wi-Fi and LAN connectivity

9. Photocopying

10. Online information services

Paper-I, Paper-II and Paper III shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Distribution of topics for each paper will be as follows:

Part-I

Applied Basic Sciences: Applied Anatomy

Nutrition & Biochemistry, Pathology & Microbiology, virology, Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II

Paper-I: Removable Prosthodontics and Implant supported prosthesis (Implantology), Geriatric dentistry and Cranio facial Prosthodontics

Paper-II: Fixed prosthodontics, occlusion, TMJ, esthetics.

Paper-III: Essays (descriptive and analyzing type questions)

*The topics assigned to the different papers are generally evaluated under those sections. However, a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.



REFERENCE BOOKS

1. Essential of Complete Denture Prosthodontics - Winkler
2. Prosthodontic Treatment for Edentulous Patients - Zarb Bolender
3. Impression Techniques for Complete Denture - Bernard Levin
4. Clinical Removable Partial Denture -Stewart
5. Removable Partial Prosthodontics - Mc Cracken
6. Fundamentals of Fixed Prosthodontics -Shillingburg
7. Contemporary Fixed Partial Denture - Rosenstiel
8. Functional Occlusion from TMJ to Smile Design -Peter E Dawson
9. Maxillofacial Prosthodontics -Thomas D Taylor
10. Maxillofacial Rehabilitation -John Beumer III
11. Dental Implant Prosthetics - Carl E Misch
12. Contemporary Implant Dentistry -Carl E Misch
13. TextBook Of Prosthodontics -Deepak Nallaswamy



BRANCH – II

PERIODONTOLOGY

OBJECTIVES:

A) KNOWLEDGE:

Discuss historical perspective to advancement in the subject proper and related topics.

- Describe etiology, pathogenesis, diagnosis and management of common periodontal diseases with emphasis on Indian population
- Familiarize with the biochemical, microbiologic and immunologic genetic aspects of periodontal pathology
- Describe various preventive periodontal measures
- Describe various treatment modalities of periodontal disease from historical aspect to currently available ones
- Describe interrelationship between periodontal disease and various systemic conditions
- Describe periodontal hazards due to estrogenic causes and deleterious habits and prevention of it
- Identify rarities in periodontal disease and environmental/Emotional determinates in a given case
- Recognize conditions that may be outside the area of his/her Specialty/ competence and refer them to an appropriate Specialist
- Decide regarding non-surgical or surgical management of the case
- Update the student by attending courses, conferences and seminars relevant to periodontics or by self-learning process.
- Plan out/ carry out research activity both basic and clinical aspects with the aim of publishing his/her work in scientific journals
- Reach to the public to motivate and educate regarding periodontal disease,

its prevention and consequences if not treated

- Plan out epidemiological survey to assess prevalence and incidence of early onset periodontitis and adult periodontitis in Indian population (Region wise)
- Shall develop knowledge, skill in the science and practice of Oral Implantology
- Shall develop teaching skill in the field of Periodontology and Oral Implantology
- Principles of Surgery and Medical Emergencies.
- To sensitize students about inter disciplinary approach towards the soft tissues of the oral cavity with the help of specialist from other departments.

B) SKILLS:

- Take a proper clinical history, thorough examination of intra oral, extra oral, medical history evaluation, advice essential diagnostic procedures and interpret them to come to a reasonable diagnosis
- Effective motivation and education regarding periodontal disease maintenance after the treatment
- Perform both non-surgical & education regarding periodontal disease, maintenance after the treatment
- Perform both non-surgical and surgical procedures independently.



COURSE CONTENTS:

PART-I:

APPLIED BASIC SCIENCES

APPLIED ANATOMY:

1. Development of the Periodontium
2. Micro and Macro structural anatomy and biology of the periodontal tissues
3. Age changes in the periodontal tissues
4. Anatomy of the Periodontium
 - Macroscopic and microscopic anatomy
 - Blood supply of the Periodontium
 - Lymphatic system of the Periodontium
 - Nerves of the Periodontium
5. Temporomandibular joint, Maxillae and Mandible
6. Tongue, oropharynx
7. Muscles of mastication / Face
8. Blood Supply and Nerve Supply of Head & Neck and Lymphatics.
9. Spaces of Head & Neck

PHYSIOLOGY:

1. Blood
2. Respiratory system – knowledge of the respiratory diseases which are a cause of periodontal diseases (periodontal Medicine)
3. Cardiovascular system
 - a. Blood pressure
 - b. Normal ECG
 - c. Shock
4. Endocrinology – hormonal influences on Periodontium
5. Gastrointestinal system

- a. Salivary secretion – composition, function & regulation
 - b. Reproductive physiology
 - c. Hormones – Actions and regulations, role in periodontal disease
 - d. Family planning methods
6. Nervous system
- a. Pain pathways
 - b. Taste – Taste buds, primary taste sensation & pathways for sensation
7. Hemostasis

BIOCHEMISTRY:

1. Basics of carbohydrates, lipids, proteins, vitamins, enzymes and minerals
2. Diet and nutrition and periodontium
3. Biochemical tests and their significance
4. Calcium and phosphorus

PATHOLOGY:

1. Cell structure and metabolism
2. Inflammation and repair, necrosis and degeneration
3. Immunity and hypersensitivity
4. Circulatory disturbances – edema, hemorrhage, shock, thrombosis, embolism, infarction and hypertension
5. Disturbances of nutrition
6. Diabetes mellitus
7. Cellular growth and differentiation, regulation
8. Lab investigations
9. Blood

MICROBIOLOGY:

1. General bacteriology
 - Identification of bacteria
 - Culture media and methods
 - Sterilization and disinfection
2. Immunology and Infection
3. Systemic bacteriology with special emphasis on oral microbiology staphylococci, genus actinomyces and other filamentous bacteria and actinobacillus actinomycetum comitans
4. Virology
 - General properties of viruses
 - Herpes, Hepatitis, virus, HIV virus
5. Mycology
 - Candidiasis
6. Applied microbiology
7. Diagnostic microbiology and immunology, hospital infections and management

PHARMACOLOGY:

1. General pharmacology
 - Definitions – Pharmacokinetics with clinical applications, routes of administration including local drug delivery in Periodontics
 - Adverse drug reactions and drug interactions
2. Detailed pharmacology of
 - Analgesics – opioid and non-opioid
 - Local anesthetics

- Haematinics and coagulants, Anticoagulants
 - Vit.D and Calcium preparations
 - Antidiabetics drugs
 - Steroids
 - Antibiotics
 - Antihypertensive
 - Immunosuppressive drugs and their effects on oral tissues
 - Antiepileptic drugs
3. Brief pharmacology, dental use and adverse effects of
- General anesthetics
 - Antipsychotics
 - Antidepressants
 - Anxiolytic drugs
 - Sedatives
 - Antiepileptic
 - Antihypertensive
 - Antianginal drugs
 - Diuretics
 - Hormones
 - Pre-anesthetic medications
4. Drugs used in Bronchial asthma, cough
5. Drug therapy of
- Emergencies
 - Seizures
 - Anaphylaxis
 - Bleeding
 - Shock

- Diabetic ketoacidosis
 - Acute Addisonian crisis
6. Dental Pharmacology
- Antiseptics
 - Astringents
 - Sialogogues
 - Disclosing agents
 - Antiplaque agents
7. Fluoride pharmacology

BIostatistics:

1. Introduction, definition and branches of biostatistics
2. Collection of data, sampling, types, bias and errors
3. Compiling data-graphs and charts
4. Measures of central tendency (mean, median and mode),
standard deviation and variability
5. Tests of significance (chi square test, t-test and z-test) Null hypothesis

PART II

PAPER -I

ETIOPATHOGENESIS:

1. Classification of periodontal diseases and conditions
2. Epidemiology of gingival and periodontal diseases
3. Defense mechanisms of gingival
4. Periodontal microbiology
5. Basic concepts of inflammation and immunity
6. Microbial interactions with the host in periodontal diseases
7. Pathogenesis of plaque associated periodontal diseases
8. Dental calculus
9. Role of iatrogenic and other local factors
10. Genetic factors associated with periodontal diseases
11. Influence of systemic diseases and disorders of the periodontium
12. Role of environmental factors in the etiology of periodontal disease
13. Stress and periodontal diseases
14. Occlusion and periodontal diseases
15. Smoking and tobacco in the etiology of periodontal diseases
16. AIDS and periodontium
17. Periodontal medicine
18. Dentinal hypersensitivity

PAPER-II

CLINICAL AND THERAPEUTIC PERIODONTOLOGY AND ORAL IMPLANTOLOGY

Please note:

Clinical periodontology includes gingival diseases, periodontal diseases, periodontal instrumentation, diagnosis, prognosis and treatment of

periodontal diseases.

(i) **GINGIVAL DISEASES**

1. Gingival inflammation
2. Clinical features of gingivitis
3. Gingival enlargement
4. Acute gingival infections
5. Desquamative gingivitis and oral mucous membrane diseases
6. Gingival diseases in the childhood

(ii) **PERIODONTAL DISEASES**

1. Periodontal pocket
2. Bone loss and patterns of bone destruction
3. Periodontal response to external forces
4. Masticatory system disorders
5. Chronic periodontitis
6. Aggressive periodontitis
7. Necrotizing ulcerative periodontitis
8. Interdisciplinary approaches
 - Orthodontic
 - Endodontic
 - Prosthodontic

(iii) TREATMENT OF PERIODONTAL DISEASES

A. History, examination, diagnosis, prognosis and treatment planning

- Clinical diagnosis
- Radiographic and other aids in the diagnosis of periodontal diseases
- Advanced diagnostic techniques
- Risk assessment
- Determination of prognosis
- Treatment plan
- Rationale for periodontal treatment
- General principles of anti-infective therapy with special emphasis on infection control in periodontal practice
- Halitosis and its treatment
- Bruxism and its treatment

B. Periodontal instrumentation

- Periodontal Instruments
- Principles of periodontal instrumentation
- Instruments used in various parts of the mouth

C. Periodontal therapy

- Preparation of tooth surface
- Plaque control
- Anti-microbial and other drugs used in periodontal therapy and wasting diseases of teeth
- Periodontal management of HIV infected patients
- Occlusal evaluation and therapy in the management of periodontal diseases
- Role of orthodontics as an adjunct to periodontal

therapy

- Special emphasis on precautions and treatment for medically compromised patients
- Periodontal splints
- Management of dentinal hypersensitivity

1. Periodontal surgical phase – special emphasis on drug prescription
2. General principles of periodontal surgery
3. Surgical anatomy of periodontium and related structures
4. Gingival curettage
5. Gingivectomy technique
6. Treatment of gingival enlargements
7. Periodontal flap
8. Osseous surgery (resective and regenerative)
9. Furcation; Problem and its management
10. The periodontic – endodontic continuum
11. Periodontic plastic and esthetic surgery
12. Recent advances in surgical techniques

D. Future directions and controversial questions in periodontal therapy

- Future directions for infection control
- Research directions in regenerative therapy
- Future directions in anti-inflammatory therapy
- Future directions in measurement of periodontal diseases

E. Periodontal maintenance phase

(iv) ORAL IMPLANTOLOGY

1. Introduction and historical review
2. Biological, clinical and surgical aspects of dental implants

3. Diagnosis and treatment planning
4. Implant surgery
5. Prosthetic aspects of dental implants
6. Diagnosis and treatment of Peri implant complications
7. Special emphasis on plaque control measures in implant patients
8. Maintenance phase

(v) **MANAGEMENT OF MEDICAL EMERGENCIES IN PERIODONTAL PRACTICE**

Periodontology treatment should be practiced by various treatment plans and more number of patients to establish skill for diagnosis and treatment and after care with bio-mechanical, biological, bio-esthetics, bio-phonetics and all treatment should be carried out in more number for developing clinical skill.

Training in research methodology, Biostatistics, Ethics / Bio-ethics in dentistry, Jurisprudence and Audits-

Adopt ethical principles in all periodontic practice. Professional honesty and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or religion of patient. Respect patient's rights and privileges including patients right to information and right to seek second opinion. Understanding, Observation, Correlation, Experimentation and evaluating dental research, scientific method, hypothesis and Research Strategies.

Scope and need for statistical application to biological data. Definition of selected terms - scale of measurements related to statistics, Methods of collecting data, presentation of the statistical diagrams and graphs.

All MDS candidates shall compulsorily attend the Research Methodology Workshop conducted by the University within 6 month from the date of joining the course. In this regard, the candidates will be issued a completion Certificate by the University.

COURSE OUTCOMES:

Part I

Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics

Part-II

Paper I: Normal Periodontal structure, Etiology & Pathogenesis of Periodontal diseases.

Paper II: epidemiology as related to Periodontics Periodontal diagnosis, therapy & Oral Implantology

Paper III: Essays (descriptive and analyzing type questions)

*The topics assigned to the different papers are generally evaluated under those sections. However, a strict division of the subject may not be possible and some overlapping of topics is inevitable Students should be prepared to answer overlapping topics

TEACHING LEARNING METHODS (including Clinical Study)

(a) LECTURES:

There shall be some didactic lectures in the speciality and in the allied fields. The departments shall encourage guest lectures in the required areas and integrated lectures by multi-disciplinary teams on selected topics, to strengthen the training programmes.

(b) JOURNAL REVIEW:

The journal review meetings shall be held at least once a week. All trainees, associate and staff associated with the post-graduate programme are expected to participate actively and enter relevant details in the logbook. The trainee shall make presentations from the allotted journals of selected articles

(c) SEMINARS:

The seminars shall be held at least twice a week in each department. All

trainees are expected to participate actively and enter relevant details in logbook.

(d) SYMPOSIUM:

It is recommended to hold symposium on topics covering multiple disciplines.

(e) CLINICAL POSTINGS:

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases.

(f) CLINICO-PATHOLOGICAL CONFERENCE:

The clinico pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical departments. The trainees shall be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

(g) INTER-DEPARTMENTAL MEETINGS:

To encourage integration among various specialties, there shall be inter-departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

(h) TEACHING SKILLS:

All the trainees shall be encouraging to take part in undergraduate teaching programmes either in the form of lectures or group discussion.

(i) DENTAL EDUCATION PROGRAMMES:

Each department shall organize dental education programmes on regular basis involving other institutions. The trainees shall also be encouraged to attend such programmes conducted outside their university or institute.

(j) CONFERENCES/WORKSHOPS/ADVANCED COURSES:

The trainees shall be encouraged to attend conference/workshops/advanced courses and also to present at least two scientific papers and two posters at State/national level specialty and allied conferences/conventions during the training period.

(k) ROTATION AND POSTING IN OTHER DEPARTMENTS:

To bring in more integration among the specialties and allied fields, each department shall workout a programme to rotate the trainees in related disciplines.

Journal clubs- 5

Seminars 5

Lectures 5

Clinico Pathological conference 2

Presentations in 3 years Conferences 2 paper and 2
posters in 3 years

Note: Maintenance of Work Diary / Check list / Log books as prescribed.

REFERENCE BOOKS

1. Clinical Periodontology by Carranza and Newmann
2. Contemporary Periodontics by Robert Genco Henry.M.Goldman D Walter Cohen
3. Clinical Periodontology & Implant Dentistry by Jan Lindhe, T.Karving, N.P.Lang
4. Manual of periodontal Instruments by Glickman
5. Periodontics by Grant Stern Listgarten
6. Atlas of Periodontal Surgery by Cohen
7. Contemporary Implant dentistry by Carl E .Mis

BRANCH - III

CONSERVATIVE DENTISTRY AND

ENDODONTICS

OBJECTIVES:

Knowledge:

At the end of 36 months of training, the candidates should be able to:

- Describe etiology, pathophysiology, periapical diagnosis and management of common restorative situations, endodontic situations that will include contemporary management of dental caries, management of trauma and pulpal pathosis including periodontal situations.
- Demonstrate understanding of basic sciences as relevant to conservative / restorative dentistry and Endodontics.
- Identify social, economic, environmental and emotional determinants in a given case or community and take them into account for planning and execution at individual and community level.
- Ability to master differential diagnosis and recognize conditions that may require multi-disciplinary approach or a clinical situation outside the realm of the specialty, which he or she should be able to recognize and refer to appropriate specialist.
- Update himself by self-study and by attending basic and advanced courses, conferences, seminars, and workshops in the specialty of Conservative Dentistry-Endodontics-Dental Materials and Restorative Dentistry.
- Ability to teach/guide, colleagues and other students.

Use information technology tools and carry out research both basic and clinical with the aim of his publishing his work and presenting the same at scientific platform.



Skills:

- Take proper chair side history, examine the patient and perform medical and dental diagnostic procedures as well as perform relevant tests and interpret to them to come to a reasonable diagnosis about the dental condition in general and Conservative Dentistry – Endodontics in particular. And undertake complete patient monitoring including preoperative as well as post operative care of the patient.
- Perform all levels of restorative work, surgical and non-surgical Endodontics as well as endodontic-periodontal surgical procedures as part of multidisciplinary approach to clinical condition.
- Provide basic life saving support in emergency situations.
- Manage acute pulpal and pulpo periodontal situations.
- Have a thorough knowledge of infection control measures in the dental clinical environment and laboratories.
- Should have proper knowledge of sterilization procedures

Department: BRANCH IV - CONSERVATIVE DENTISTRY AND ENDODONTICS

Course code : MDS-2424

Year of study: MDS

Course outcomes:

PART-I

Applied Basic Sciences: Applied Anatomy, Physiology, Pathology including Oral

Microbiology, Pharmacology, Biostatistics and

Research Methodology and Applied Dental Materials.

PART-II

Paper-I

Paper-II

Conservative Dentistry

Endodontics

Paper-III

Essays (descriptive and analyzing type questions)

*The topics assigned to the different papers are generally evaluated under those sections

However a strict division of the subject may not be possible and some overlapping of topics is inevitable Students should be prepared to answer overlapping topics.

COURSE CONTENTS:

PART-I:

Applied Basic Sciences:

Applied Anatomy of Head and Neck:

- Development of face, paranasal sinuses and the associated structures and their anomalies, cranial and facial bones, TMJ anatomy and function, arterial and venous drainage of head and neck, muscles of face and neck including muscles of mastication and deglutition, brief consideration of structures and function of brain. Brief consideration of all cranial nerves and autonomic nervous system of head and neck. Salivary glands, Functional anatomy of mastication, deglutition and speech. Detailed anatomy of deciduous and permanent teeth, general consideration in physiology of permanent dentition, form, function, alignment, contact, occlusion.
- Internal anatomy of permanent teeth and its significance.
- Applied histology – histology of skin, oral mucosa, connective tissue, bone, cartilage, blood vessels, lymphatics, nerves, muscles, tongue.

Anatomy and Development of Teeth:

- Enamel – development and composition, physical characteristics, chemical properties, structure.
- Age changes – clinical structure.
- Dentin – development, physical and chemical properties, structure type of dentin, innervations, age and functional changes and clinical considerations.
- Pulp – development, histological structures, innervations, functions, regressive changes, clinical considerations.
- Dentin and pulp complex.
- Cementum – composition, cementogenesis, structure, function, clinical considerations.
- Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
- Periodontal ligament – development, structure, function and clinical considerations.
- Salivary glands – structure, function, clinical considerations.
- Eruption of teeth

Applied Physiology:

- Mastication, deglutition, digestion and assimilation, fluid and electrolyte balance.
- Blood composition, volume, function, blood groups, haemostasis, coagulation, blood transfusion, circulation, heart, pulse, blood pressure, shock, respiration-control, anoxia, hypoxia, asphyxia, artificial respiration, and endocrinology – general principles of endocrine activity and disorders relating to pituitary, thyroid, parathyroid, adrenals including pregnancy and lactation.

- Physiology of saliva – composition, function, clinical significance.
- Clinical significance of vitamins, diet and nutrition – balanced diet.
- Physiology of pain, sympathetic and Para sympathetic nervous system, pain pathways, physiology of pulpal pain, Odontogenic and non Odontogenic pain, pain disorders – typical and atypical.
- Biochemistry such as osmotic pressure, electrolytic dissociation, oxidation, reduction etc. Carbohydrates, proteins, lipids and their metabolism, nucleoproteins, nucleic acid and their metabolism. Enzymes, vitamins and minerals, metabolism of inorganic elements, detoxification in the body, anti metabolites, chemistry of blood lymph and urine.

Pathology:

- Inflammation, repair, degeneration, necrosis and gangrene.
- Circulatory disturbances – ischemia, hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.
- Neoplasms – classifications of tumors, characteristics of benign and malignant tumors, spread of tumors.
- Blood dyscrasias.

- Developmental disturbances of oral and Para oral structures, dental caries, regressive changes of teeth, pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
- Bacterial, viral, mycotic infections of the oral cavity.

Microbiology:

- Pathways of pulpal infection, oral flora and micro organisms

associated with endodontic diseases, pathogenesis, host defense, bacterial virulence factors, healing, theory of focal infections, microbes relevance to dentistry – strepto, staphylococci, lactobacilli, cornyebacterium, actinomycetes, clostridium, neisseria, vibrio, bacteriods, fusobacteria, spirochetes, mycobacterium, virus and fungi.

- Cross infection, infection control, infection control procedure, sterilization and disinfection.
- Immunology – antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotic sensitivity test).

Pharmacology:

- Dosage and route of administration of drugs, actions and fate of drug in body, drugaddiction, tolerance of hypersensitivity reactions.
- Local anesthesia – agents and chemistry, pharmacological actions, fate and metabolism of anaesthetic, ideal properties, techniques and complications.
- General anesthesia – pre medications, neuro muscular blocking agents, induction agents, inhalation anesthesia, and agents used, assessment of anesthetic problems in medically compromised patients.
- Anaesthetic emergencies
- Antihistamines, corticosteroids, chemotherapeutic and antibiotics,

drug resistance, haemostasis, and haemostatic agents, anticoagulants, sympathomimetic drugs, vitamins and minerals (A, B, C, D, E, K IRON), anti sialogogue, immunosuppressants, drug interactions, antiseptics, disinfectants, anti viral agents, drugs acting on CNS.

Biostatistics:

- Introduction, Basic concepts, Sampling, Health information systems – collection, compilation, presentation of data. Elementary statistical methods – presentation of statistical data, Statistical averages – measures of central tendency, measures of dispersion, Normal distribution. Tests of significance – parametric and non – parametric tests (Fisher exact test, Sign test, Median test, Mann Whitney test, Kruskal Wallis one way analysis, Friedmann two way analysis, ANOVA, Regression analysis), Correlation and regression, Use of computers.

Research Methodology:

- Essential features of a protocol for research in humans
- Experimental and non-experimental study designs
- Ethical considerations of research

Applied Dental Materials:

- Physical and mechanical properties of dental materials, biocompatibility.
- Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding- recent developments, casting procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.

- Dental ceramics-recent advances, finishing and polishing materials.
- Dental burs – design and mechanics of cutting – other modalities of tooth preparation. Methods of testing biocompatibility of materials used.

Training in Research Methodology, Biostatistics, Ethics / Bioethics, in

Dentistry, Jurisprudence and Audits:

- Respect human life and the dignity of human individual
- Refrain from supporting or committing crimes against humanity and condemn all such acts
- Treat the sick and injured with competence and compassion
- Protect the privacy and confidentiality of those whom we care.
- Work freely with colleagues
- Educate the public
- Teach and mentor those who follow us

All MDS candidates shall compulsorily attend the Research Methodology Workshop conducted by the University within 6 months from the date of joining the course. In this regard, the candidates will be issued a completion Certificate by the University.

PART-II:

Paper-I: Conservative Dentistry

1. Examination, diagnosis and treatment plan
2. Occlusion as related to conservative dentistry, contact, contour, its significance. Separation of teeth, matrices, used in conservative dentistry.
3. Dental caries- epidemiology, recent concept of etiological factors, pathophysiology, histopathology, diagnosis, caries activity tests, prevention of dental caries and management – recent methods.
4. Hand and rotary cutting instruments, development of rotary equipment, speed ranges, hazards.
5. Dental burs and other modalities of tooth reparation- recent developments (air abrasions, lasers etc.)
6. Infection control procedures in conservative dentistry, isolation equipment etc.
7. Direct concepts in tooth preparation for amalgam, composite, GIC and restorative techniques, failures and management.
8. Biologic response of pulp to various restorative materials and operative procedures.
9. Direct and indirect composite restorations.
10. Indirect tooth colored restorations- ceramic, inlays and onlays, veneers, crowns, recent advances in fabrication and gingival tissue management.
11. Impression procedures used for indirect restorations.
12. Cast metal restorations, indications, contraindications, tooth preparation for class II inlay, onlay, full crown restorations.

Restorative techniques, direct and indirect methods of fabrication including materials used for fabrication like inlay wax, investment materials and casting.

1. Direct gold restorations.
2. Recent advances in restorative materials.
3. Esthetics including smile design
4. Management of non-carious lesions.
5. Management of discolored tooth
6. Minimal intervention dentistry.
7. Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth.
8. Hypersensitivity-theories, causes and management.
9. Lasers in Conservative Dentistry.
10. CAD-CAM in restorative dentistry.
11. Digital imaging and its applications in restorative dentistry.
12. Clinical Photography.
13. Principles of esthetics.
 - Color
 - Facial analysis
 - Smile design
 - Principles of esthetic integration
 - Treatment planning in esthetic dentistry

Paper-II: Endodontics

1. Rationale of endodontics.
2. Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
3. Dentin and pulp complex
4. Pulp and periapical pathology.
5. Pathobiology of peri-apex.
6. Diagnostic procedures – Orofacial dental pain emergencies: endodontic diagnosis and management, recent advances used for diagnosis.
7. Case selection and treatment planning.
8. Endodontic microbiology.
9. Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
10. Endodontic emergencies and management.
11. Access cavity preparation – objectives and principles
12. Endodontic instruments and instrumentation – recent developments, detailed description of hand, rotary, sonic, ultra-sonic etc.
13. Working length determination, cleaning and shaping of root canal system and recent developments in techniques of canal preparation.
14. Root canal irrigants and intra canal medicaments.
15. Obturation materials, techniques and recent advances.
16. Traumatic injuries and management – endodontic treatment for young permanent teeth.
17. Endodontic surgeries, recent developments in technique and devices and wound healing.
18. Endo-perio interrelationship and management.
19. Lasers in Endodontics.

20. Multidisciplinary approach to endodontic situations.
21. Radiology and CBCT in endodontic practice.
22. Procedural errors in endodontics and their management.
23. Endodontic failures and retreatment.
24. Resorptions and its management.
25. Microscopes and Microsurgery in endodontics.
26. Single visit endodontics, current concepts and controversies.
27. Regenerative Endodontics
28. Geriatric Endodontics
29. Biologic response of pulp to various restorative materials and operative procedures
30. Local anesthesia in endodontics.
31. Restoration of endodontically treated teeth, recent advances
32. Effect of age and systemic health endodontics, with emphasis on treatment of medically complex endodontic patient.
33. Rhinosinusitis and endodontic disease
34. Vital pulp therapy
35. Records and legal responsibilities
36. Inflammation and immunology in endodontics
37. Non microbial endodontic disease
38. Pulpal reaction to caries and endodontic procedures
39. Bleaching principles
40. Outcome of endodontic treatment
41. Cracks and fracture

Paper-III: Essays (descriptive and analyzing type questions)

The teaching and learning activities in each speciality shall be as under

(a) LECTURES:

There shall be some didactic lectures in the speciality and in the allied fields. The departments shall encourage guest lectures in the required areas and integrated lectures by multi-disciplinary teams on selected topics, to strengthen the training programmes.

(b) JOURNAL REVIEW:

The journal review meetings shall be held at least once a week. All trainees, associate and staff associated with the post-graduate programme are expected to participate actively and enter relevant details in the logbook. The trainee shall make presentations from the allotted journals of selected articles.

(c) SEMINARS:

The seminars shall be held at least twice a week in each department. All trainees are expected to participate actively and enter relevant details in logbook.

(d) SYMPOSIUM:

It is recommended to hold symposium on topics covering multiple disciplines.

(e) CLINICAL POSTINGS:

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases.

(f) CLINICO-PATHOLOGICAL CONFERENCE:

The clinical pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral

Pathology and allied clinical departments. The trainees shall be encouraged to present the clinical details, radiological and histopathological interpretations and participation in the discussions.

(g) INTER-DEPARTMENTAL MEETINGS:

To encourage integration among various specialities, there shall be inter-departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

(h) TEACHING SKILLS:

All the trainees shall be encouraging to take part in undergraduate teaching programmes either in the form of lectures or group discussion.

The clinical pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical departments. The trainees shall be encouraged to present the clinical details, radiological and histopathological interpretations and participation in the discussions.

(i) INTER-DEPARTMENTAL MEETINGS:

To encourage integration among various specialities, there shall be inter-departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

(j) TEACHING SKILLS:

All the trainees shall be encouraging to take part in undergraduate teaching programmes either in the form of lectures or group discussion.

REFERENCE BOOKS:

1. Fractures of the teeth, prevention and treatment of the vital and non-vital pulp by Basrani
2. Textbook of operative dentistry by Baum
3. Dentin and pulp in restorative dentistry by Brannstorm
4. Principles and practice of operative dentistry by Charbeneau
5. Operative dentistry by Gilmore
6. Esthetic composite bonding by Jordan
7. Operative dentistry: modern theory and practice by Marzook
8. Art, science and practice of operative dentistry by Sturdevant
9. Atlas of operative dentistry - pre clinical and clinical procedures by Evans & Wetz
10. New concepts in operative dentistry by Fusiyama
11. Handbook of clinical Endodontics by Bence.
12. Pathways of the pulp by Cohen & Burns
13. Bleaching teeth by Feinman
14. Endodontic practice by Grossman
15. Problem solving in Endodontics, prevention, identification and management by Gutmann
16. Endodontics in clinical practice by Harty
17. Endodontics by Ingle & Taintor
18. Endodontics- science and practice by Schroeder
19. Endodontology - biologic considerations in Endodontic procedures by Seltzer
20. Restoration of the endodontically treated tooth by Schillingberg & Kessler
21. Principles and practice of Endodontics by Walton & Torabinejad
22. Endodontic therapy by Franklin S Weine

23.Fundamentals of operative dentistry-James B summit

24.Surgical endodontics-Gutman



BRANCH - IV

ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

OBJECTIVES:

Knowledge:

1. The dynamic interaction of biologic processes and mechanical forces acting on the stomatognathic system during orthodontic treatment.
2. The etiology, pathophysiology, diagnosis and treatment planning of various common Orthodontic problems
3. Various treatment modalities in Orthodontics – preventive, interceptive and corrective.
4. Basic sciences relevant to the practice of Orthodontics
5. Interaction of social, cultural, economic, genetic and environmental factors and their relevance to management of oro – facial deformities
6. Factors affecting the long-range stability of orthodontic correction and their management
7. Personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste, keeping in view the high prevalence of Hepatitis and HIV and other highly contagious diseases.

Skills:

1. To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures, and interpret them and arrive at a reasonable diagnosis about the Dento-facial deformities.
2. To be competent to fabricate and manage the most appropriate appliance – intra or extra oral, removable or fixed, mechanical or functional, and active or passive – for the treatment of any orthodontic problem to be treated singly or as a part of multidisciplinary treatment of oro-facial deformities.

COURSE CONTENT:

(components of post graduate curriculum)

The program outlined, addresses both the knowledge needed in Orthodontics and allied Medical specialties in its scope.

Theoretical knowledge:

All the teaching faculty and especially Professors should actively take part in imparting clinical, theoretical knowledge to each of the student. The students can be posted on rotation under each Professor and also have their clinical cases guided equally by all of them. The Associate Professors shall also discuss and guide / co – guide the students if they have adequate teaching experience

Spread of the Curriculum:

PART-I:

A. Applied Basic Sciences:

Applied Anatomy:

a. Prenatal growth of head:

Stages of embryonic development, origin of head, origin of face, origin of teeth.

b. Postnatal growth of head:

Bones of skull, the oral cavity, development of chin, the hyoid bone, general growth of head, growth of the face.

c. Bone growth:

Origin of bone, composition of bone, units of bone structure, schedule of Ossification, mechanical properties of bone, roentgen graphic appearance of bone

d. Assessment of growth and development:

Growth prediction, growth spurts, the concept of normality and growth increments of growth, differential growth, gradient of growth, methods of gathering growth data. Theories of growth and recent advances, factors affecting physical growth.

e. Muscles of mastication:

Development of muscles, muscle change during growth, muscle function and facial development, muscle function and malocclusion

f. Development of dentition and occlusion:

Dental development periods, order of tooth eruption, chronology of permanent tooth formation, periods of occlusal development, pattern of occlusion.

Physiology:

a. Endocrinology and its disorders:

Growth hormone, thyroid hormone, parathyroid hormone, ACTH.

b. Calcium and its metabolism:

c. Nutrition-metabolism and their disorders:

Proteins, carbohydrates, fats, vitamins and minerals

d. Muscle physiology:

e. Craniofacial Biology:

Adhesion molecules and mechanism of adhesion

f. Bleeding disorders in orthodontics: Hemophilia

Dental Materials:

a. Gypsum products:

Dental plaster, dental stone and their properties, setting reaction etc.

b. Impression materials:

Impression materials in general and particularly of alginate impression material.

c. Acrylics:

Chemistry, composition physical properties Composites:

Composition types, properties, setting reaction

d. Banding and bonding cements:

e. Wrought metal alloys:

Deformation, strain hardening, annealing, recovery, recrystallization, grain growth, properties of metal alloys

f. Orthodontic arch wires

g. Elastics:

Latex and non-latex elastics.

h. Applied physics, Bioengineering and metallurgy:

i. Specification and tests methods used for materials used in Orthodontics:

j. Survey of all contemporary literature and recent advances in above mentioned materials:

Genetics:

a. Cell structure, DNA, RNA, protein synthesis, cell division

b. Chromosomal abnormalities

c. Principles of orofacial genetics

d. Genetics in malocclusion

e. Molecular basis of genetics

f. Studies related to malocclusion

- g. Recent advances in genetics related to malocclusion
- h. Genetic counseling
- i. Bioethics and relationship to Orthodontic management of patients

Physical Anthropology:

- a. Evolutionary development of dentition
- b. Evolutionary development of jaws.

Pathology:

- a. Inflammation
- b. Necrosis

Biostatistics:

- a. Statistical principles
 - Data Collection
 - Method of presentation
 - Method of Summarizing
 - Methods of analysis – different tests/errors
- b. Sampling and Sampling technique
- c. Experimental models, design and interpretation
- d. Development of skills for preparing clear concise and cogent scientific abstracts and publication

Applied Research Methodology in Orthodontics:

- a. Experimental design
- b. Animal experimental protocol
- c. Principles in the development, execution and interpretation of methodologies in Orthodontics
- d. Critical Scientific appraisal of literature.

Applied Pharmacology

Definitions & terminologies used – Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics, analeptics and tranquilizers. Local anesthetics, Chemotherapeutics and antibiotics. Vitamins: A, D, B – complex group, C & K etc.

PART-II:

Paper-I: Basic Orthodontics

- Orthodontic History:**
- Historical perspective,
 - Evolution of orthodontic appliances,
 - Pencil sketch history of Orthodontic peers
 - History of Orthodontics in India

Concepts of Occlusion and Esthetics:

- Structure and function of all anatomic components of occlusion,
- Mechanics of articulation,
- Recording of masticatory function,
- Diagnosis of Occlusal dysfunction,
- Relationship of TMJ anatomy and pathology and related neuromuscular physiology.

Etiology and Classification of Malocclusion:

- A comprehensive review of the local and systemic factors in the causation of malocclusion
- Various classifications of malocclusion

Dentofacial Anomalies:

- Anatomical, physiological and pathological characteristics of major groups of developmental defects of the orofacial structures.

Diagnostic Procedures and Treatment Planning in Orthodontics:

- a. Emphasis on the process of data gathering, synthesis and translating it into a treatment plan
- b. Problem cases – analysis of cases and its management
- c. Adult cases, handicapped and mentally retarded cases and their special problems
- d. Critique of treated cases.

Cephalometrics

- a. Instrumentation
- b. Image processing
- c. Tracing and analysis of errors and applications
- d. Radiation hazards
- e. Advanced Cephalometrics techniques including digital cephalometrics
- f. Comprehensive review of literature
- g. Video imaging principles and application.

Practice Management in Orthodontics:

- a. Economics and dynamics of solo and group practices
- b. Personal management
- c. Materials management
- d. Public relations
- e. Professional relationship
- f. Dental ethics and jurisprudence
- g. Office sterilization procedures
- h. Community based Orthodontics.
- i. Orthodontic office design

Paper-II: Clinical Orthodontics Myofunctional Orthodontics:

- a. Basic principles
- b. Contemporary appliances –design, manipulation and management
- c. Case selection and evaluation of the treatment results
- d. Review of the current literature.

Dentofacial Orthopedics:

- a. Principles
- b. Biomechanics
- c. Appliance design and manipulation
- d. Review of contemporary literature

Cleft lip and palate rehabilitation:

- a. Diagnosis and treatment planning
- b. Mechanotherapy
- c. Special growth problems of cleft cases
- d. Speech physiology, pathology and elements of therapy as applied to orthodontics
- e. Team rehabilitative procedures.

Biology of tooth movement:

- a. Principles of tooth movement-review
- b. Review of contemporary literature
- c. Applied histophysiology of bone, periodontal ligament
- d. Molecular and ultra-cellular consideration in tooth movement

Orthodontic / Orthognathic surgery:

- a. Orthodontist's role in conjoint diagnosis and treatment planning
- b. Pre and post-surgical Orthodontics
- c. Participation in actual clinical cases, progress evaluation and post retention study

- d. Review of current literature

Ortho / Perio / Prosth/Endo inter relationship:

- a. Principles of interdisciplinary patient treatment
b. Common problems and their management

Basic principles of mechanotherapy includes removable appliances and fixed appliances:

- a. Design
b. Construction
c. Fabrication
d. Management
e. Review of current literature on treatment methods and results

Applied preventive aspects in Orthodontics:

- a. Caries and periodontal disease prevention
b. Oral hygiene measures
c. Clinical procedures

Interceptive Orthodontics:

- a. Principles
b. Growth guidance
c. Diagnosis and treatment planning
d. Therapy emphasis on:
 - Dento-facial problems
 - Tooth material discrepancies
- e. Minor surgery for Orthodontics

Evidence Based Orthodontics:

Different types of fixed Mechanotherapy:

Orthodontic Management of TMJ problems, sleep-apnoea etc.:

Retention and relapse:

- a. Mechanotherapy – special reference to stability of results with various procedures
- b. Post retention analysis
- c. Review of contemporary literature

Recent Advances:

- a. Use of implants
- b. Lasers
- c. Application of F.E.M.
- d. Distraction Osteogenesis
- e. Invisible Orthodontics
- f. 3D imaging Digital Orthodontics, Virtual Treatment Planning
- g. CAD-CAM bracket Customization
- h. Robotic Wire Bending
- i. Accelerated Orthodontics
 - Surgical
 - Device assisted or mechanical stimulation
 - Biochemical Mediators
- j. Lingual Orthodontics

Paper-III: Essays (descriptive and analyzing type questions)

Department: BRANCH V -ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

Course code: MDS-2425

Year of study: MDS

Course outcomes:

PART-I: Applied Basic Sciences: Applied anatomy, Physiology, Dental Materials, Genetics, Pathology, Physical Anthropology, Applied Research methodology, Bio-Statistics and Applied Pharmacology.

PART-II

Paper I: Orthodontic history, Concepts of occlusion and esthetics, Child and Adult Psychology, Etiology and classification of malocclusion, Dentofacial Anomalies, Diagnostic procedures and treatment planning in Orthodontics, Practice management in Orthodontics

Paper II: Clinical Orthodontics

Paper III: Essays (descriptive and analyzing type questions)

The topics assigned to the different papers are generally evaluated under those sections. However, a strict division of the subject may not be possible and some overlapping of topics is inevitable Students should be prepared to answer overlapping topics

Interdisciplinary or Interdepartmental

WRITING THESIS/RESEARCH PAPERS:

Attitudes including Communication Skills

- A. Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular Dentofacial problem and to obtain a true informed consent from them for the most appropriate treatment available at that point of time
- B. Develop the ability to communicate with professional colleagues in orthodontics or other specialities through various media like correspondence, internet, e-video, conference, etc.
- C. Training in Research Methodology, Biostatistics, Ethics / Bioethics in Dentistry, Jurisprudence and Audits All MDS candidates shall compulsorily attend the Research Methodology Workshop conducted by the University within 6 months from the date of joining the course. In this regard, the candidates will be issued

EVERY POST GRADUATE STUDENT MUST UNDERGO A TRAINING IN RESEARCH METHODOLOGY, BIOSTATISTICS, ETHICS, BIOETHICS IN RESEARCH, JURISPRUDENCE AND AUDITS, WITHIN THE FIRST SIX MONTHS OF COURSE, WHICH WILL HELP THEM TO DECIDE THEIR DISSERTATION TOPIC AND METHODOLOGY

Health Informatics – Usage of Information technology (Computer) STUDENTS SHOULD BE MADE WELL FAMILIAR WITH THE REQUIRED COMPUTER AND INFORMATICS SKILLS.

a. LECTURES:

There shall be some didactic lectures in the speciality and in the allied fields. The departments shall encourage guest lectures in the required areas and integrated lectures by multi-disciplinary teams on selected topics, to strengthen the training programmes.

b. JOURNAL REVIEW:

The journal review meetings shall be held at least once a week. All trainees, associate and staff associated with the post-graduate programme are expected to participate actively and enter relevant details in the logbook. The trainee shall make presentations from the allotted journals of selected articles.

c. SEMINARS:

The seminars shall be held at least twice a week in each department. All trainees are expected to participate actively and enter relevant details in logbook.

d. SYMPOSIUM:

It is recommended to hold symposium on topics covering multiple disciplines.

e. CLINICAL POSTINGS:

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases.

f. CLINICO-PATHOLOGICAL CONFERENCE:

The clinico pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical

departments. The trainees shall be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

g. INTER-DEPARTMENTAL MEETINGS:

To encourage integration among various specialities, there shall be inter-departmental meeting chaired by the Dean with all heads of post-graduate departments at least once a month.

h. TEACHING SKILLS:

All the trainees shall be encouraging to take part in undergraduate teaching programmes either in the form of lectures or group discussion.

i. DENTAL EDUCATION PROGRAMMES:

Each department shall organise dental education programmes on regular basis involving other institutions. The trainees shall also be encouraged to attend such programmes conducted outside their university or institute.

j. CONFERENCES/WORKSHOPS/ADVANCED COURSES:

The trainees shall be encouraged to attend conference/workshops/advanced courses and also to present at least two scientific papers and two posters at State/national level speciality and allied conferences/conventions during the training period.

k. ROTATION AND POSTING IN OTHER DEPARTMENTS:

To bring in more integration among the specialities and allied fields, each department shall workout a ~~program~~ to rotate the trainees in related discipline

REFERENCE BOOKS:

1. Dentofacial orthopedics with functional appliances by thomas m graber thomas rakosi alexander gpetrovic
2. Orthodontics - current principles and techniques by lee w graber robert vanersdall jr katherine viggreg j huang
3. Esthetics and biomechanics in orthodontics by ravindran nanda
4. Orthodontic diagnosis by thomas rakosi irmtrud jones thomas graber
5. Contemporary orthodontics by william r proffit henry fields david sarver
6. Twin block functional therapy - application in dentofacial orthopedics by william j clark
7. Systematised orthodontic by mclaughlin bennett trevisi
8. Contemporary treatment of dentofacial deformity by william r proffit raymond p white david m sarver
9. Facial growth -by donald h.enlow
- 10.Dentofacial deformities- bruce n.epker, john paul stella and leward c.fish.
- 11.The biomechanical foundation of clinical orthodontics - charles j burstone and kwangchul choy.
- 12.Self-ligation in orthodontics - nikolaos pandis and theodore eliades