REGULATIONS AND CURRICULUM GOVERNING

BDS PROGRAM

2023-24

Name of the Constituent Unit/Centre: Yenepoya Dental College

YENEPOYA
(DEEMED TO BE UNIVERSITY)

Deralakatte, Mangalore, Karnataka.

YENEPOYA
(DEEMED TO BE UNIVERSITY)

NOTIFICATION FROM THE UNIVERSITY

Office of the Registrar , Yenepoya (Deemed to be University)

NOTIFICATION – 51-ACM/01/2023 dtd. 16.05.2023

Sub: Syllabus enrichment/enhancement of undergraduate course of Public Health Dentistry

Ref: Resolution of the Academic council at its 51st meeting held on 16.05.2023, vide agenda – 3

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The Academic Council at its 51st meeting held on 16.05.2023 and subsequently the Board of Management at its 62nd meeting held on 14.06.2023 has resolved to approve the proposed syllabus for enrichment of undergraduate course in Public Health Dentistry as follows:-

Sl. No.	Existing	Now Amended
1	-	Inclusion of "Inter professional education and care" into the BDS syllabus of Public Health Dentistry

This will be applicable from the academic year 2023-24 onwards.

REGISTRAR

Copy to:

1. Principal – YDC
2. Professor & Head, department of Public Health Dentistry
3. CoE
4. File copy

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Office of the Registrar , Yenepoya (Deemed to be University)

NOTIFICATION – 51-ACM/05/2023 dtd. 16.05.2023

Sub: Amendment in UG curriculum in the subject Conservative Dentistry & Endodontics

Ref: Resolution of the Academic council at its 51st meeting held on 16.05.2023, vide agenda – 7

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The Academic Council at its 51st meeting held on 16.05.2023 and subsequently the Board of Management at its 62nd meeting held on 14.06.2023 has resolved to approve the amendment in UG curriculum in the subject Conservative Dentistry & Endodontics as follows:-

Sl. No.	Existing	Now Amended
	Loupes introduced for the IInd year Pre Clinical practical classes	To include one hour lecture on magnification optics and its clinical applications

This will be applicable from the academic year 2023-24 onwards.

REGISTRAR

mj

Copy to:

1. Principal – YDC
2. Professor & Head, department of Conservative Dentistry & Endodontics
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12/6/2023

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YENEPOYA

NAAC

Office of the Registrar , Yenepoya (Deemed to be University)

NOTIFICATION – 51-ACM/03/2023 dtd. 16.05.2023

Sub: Syllabus enhancement of undergraduate course in the subject Prosthodontics

Ref: Resolution of the Academic council at its 51st meeting held on 16.05.2023, vide agenda – 5

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The Academic Council at its 51st meeting held on 16.05.2023 and subsequently the Board of Management at its 62nd meeting held on 14.06.2023 has resolved to approve the proposed syllabus enhancement of undergraduate course in Prosthodontics as follows:-

Sl. No.	Existing	Now Amended
1	Batch is divided in 2 groups one batch has tooth preparation practical class and viva/tests are conducted for the other batch	Incorporation of casting lab visit and demonstration of fixed partial denture processing for IV BDS Part II students during Final Year Part II tooth preparation practical classes. There will be 2 visits of each student in small groups of 2 hours each wherein they will be demonstrated the various laboratory procedures involved in fabrication of a FPD

This will be applicable from the academic year 2023-24 onwards.

REGISTRAR

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Copy to:

1. Principal – YDC
2. Professor & Head, department of Prosthodontics
3. CoE
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13/7/23

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13/07/23

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NOTIFICATION – 46-ACM/3/2022 dtd. 03.03.2022

Sub: Introduction of Innovative Teaching Learning Methodology by role Playing activity

Ref: Resolution of the 46th Academic Council at its meeting held on 15.02.2022 vide agenda - 3

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The Academic Council at its 46th meeting held on 15.02.2022 and subsequently the Board of Management at its 57th meeting held on 16.02.2022 have approved the proposal of the department of Pedodontics & Preventive Dentistry to introduce the Innovative Teaching Learning Methodology by role playing activity at the undergraduate level.

REGISTRAR

To:

The Head, department of Pedodontics

Copy to:

1. Controller of Examinations
2. Principal, YDC
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Ref: No. Y/REG/ACA/42-ACM/2021

13.04.2021

The Principal
Yenepoya Dental College

Sub: Syllabus enrichment of undergraduate course of Oral Medicine & Radiology
Ref: Resolution of the Academic council at its 42nd meeting held on 22.03.2021, vide agenda –8

****

The Academic Council at its 42nd meeting held on 22.03.2021 and subsequently the Board of Management at its 53rd meeting held on 23.03.2021 has resolved to approve the proposed syllabus for enrichment of undergraduate course in Oral Medicine & Radiology as follows:-

DEPARTMENT	COURSES	Existing	Now Amended
Oral Medicineand Radiology	BDS	Temporomandibular joint: Developmental Abnormalities of the condyle. Rheumatoidarthritis, Osteoarthritis,Sub-luxation and luxation.	Temporomandibular joint: Developmental Abnormalities of thecondyle. Rheumatoid arthritis, Osteoarthritis, Sub- luxation and luxation. Internal de arrangement of TMJ -ADD (Anterior disc displacement)with reduction -ADD withoutreduction -Disc perforation TMJ arthritis.

REGISTRAR

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Copy to:
Professor & HoD, Department of Oral Medicine & Radiology / File copy

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Ref: No. Y/REG/ACA/42-ACM/2021 13.04.2021

The Principal
Yenepoya Dental College

Sub: Teaching learning methods and evaluation in Faculty of Dentistry

Ref: Resolution of the Academic council at its 42nd meeting held on 22.03.2021, vide agenda –7

****

The Academic Council at its 42nd meeting held on 22.03.2021 and subsequently the Board of Management at its 53rd meeting held on 23.03.2021 has resolved to approve the proposed teaching learning methods and evaluation by the Department of Periodontology as follows:-

DEPARTMENT	COURSES	Existing	Now Amended
Case based learning (CBL) Periodontia	BDS Case based Learning (CBL) for final year IV BDS students	Nil	During clinical posting, 5 Case scenarios with detailed case description are discussed by teaching faculties with final BDS students in small groups. Each case scenario is discussed in length to arrive at diagnosis, prognosis and treatment plan.
	Micro-seminar presentation for IV BDS students	Nil	During clinical posting UG students are allotted with seminar topics for which they need to refer online and offline resources. After approval by faculty, students then present the topic in small group of 15-25. Each seminar is evaluated by teaching faculty and discussed at the end of seminar Presentation.

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			Presentations are also uploaded on Yengage platform inPDF format
	MDS Debate for Post graduate students once in3 months	Nil	A relevant topic will be chosen and intimated to PG students at least one week in advance. Post graduate students will be divided into two groups. Arguments for and against the topic will be based on literature evidence and this will be presented ontime bound basis. Debate will be moderated by the teaching staff.

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Copy to:

1. Professor & HoD, Department of Periodontics
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Ref: No. Y/REG/ACA/42-ACM/2021 13.04.2021

The Principal
Yenepoya Dental College

Sub: Teaching learning methods and evaluation in Faculty of Dentistry

Ref: Resolution of the Academic council at its 42nd meeting held on 22.03.2021, vide agenda –7

****

The Academic Council at its 42nd meeting held on 22.03.2021 and subsequently the Board of Management at its 53rd meeting held on 23.03.2021 has resolved to approve the proposed teaching learning methods and evaluation by the Department of Oral and Maxillofacial Surgery as follows:-

DEPARTMENT	COURSES	Existing	Now Amended
Implementation of Innovative teaching methods for UG and PG students – Regarding" Oral and Maxillofacial surgery	BDS	Nil	**BLUNDER LECTURE:** ONE CLASS / BATCH METHOD: After aspecific topic is covered in theoryclass 'blunder lecture' theory class will be taken by the respective staff. Intentional blunders will be created and projected in the power point presentation and students will be asked to identify and note down the blunders with correct answers. In the end randomly they will be asked toread out the blunders with corrections.
	BDS	Nil	**MICROSEMINARS:** EACH STUDENT/ CLINICAL BATCH METHOD: Very specific short topic will be allotted to each student of a batch posted in the department. A 10 minutes power point presentation by the student in front of the staff and batchmates followed by discussion on the topic

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	MDS	Nil	**QUIZ:** Alternatemonth METHOD: A particular chapter(s)will be provided as topic, 1 week prior to the quiz. Studentswill be grouped in to3 member teams and staff on rotationbasis will conduct the quiz in the seminar room.

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1. Professor & HoD, Department of Oral & Maxillofacial Surgery
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Ref: No. Y/REG/ACA/38-ACM/2020

14.05.2020

NOTIFICATION – 38-ACM/04/2020 dtd. 14.05.2020

Sub: Amendments in syllabus for undergraduates in the subject Orthodontics and Dentofacial Orthopedics

Ref: Resolution of the Academic council at its 38th meeting held on 27.04.2020, vide agenda-11

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The Academic Council at its 38th meeting held on 27.04.2020 and subsequently the Board of Management at its 49th meeting held on 30.04.2020 have resolved to accept the proposal for amendments in syllabus for undergraduates in the subject Orthodontics and Dentofacial Orthopedics is as follows:-

Subject	Existing	Now Amended
Orthodontics and Dentofacial Orthopaedics	NIL	Inclusion of Obstructive Sleep Apnea in the undergraduate curriculum No. of hours Theory – 2 hours Practical - Nil

REGISTRAR

To,
The Principal, YDC

Copy to:

1. Professor & HoD, Department of Orthodontics
2. Controller of Examinations
3. File copy

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Ref: No. Y/REG/ACA/ACM-38/2020

14.05.2020

NOTIFICATION – 38-ACM/05/2020 dtd. 14.05.2020

Sub: Proposal for Teaching Learning Innovation-Observe Assist Performs (OAP) for Dental Undergraduates

Ref: Resolution of the Academic council at its 38th meeting held on 27.04.2020, vide agenda-12

****

The Academic Council at its 38th meeting held on 27.04.2020 and subsequently the Board of Management at its 49th meeting held on 30.04.2020 have resolved to accept the proposal for amendments in Teaching Learning Innovation as follows:-

	Steps for Teaching & Learning Skills		
Steps*	**Role of Teacher**	**Student's Role**	
6	Allow to perform	**PI**	**Performs independently**
5	Allow to perform & give feedback	**PS**	**Performs under supervision**
4	Do procedure	**A**	**Assists**
3	Give feedback		Receives feedback – practice
2	Facilitate Practice on Manikin or Peers	**PC**	**Imitate & Practice**
1	**Explain & Demonstrate**	**O**	**Observes**
	***Steps in ascending order from 1 to 6**		

It is suggested to implement this model for teaching BDS course across all the departments.

REGISTRAR

To,

The Principal, YDC

Copy to: 1. Professor & HoD, department of Pedodontics
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NOTIFICATION – 34-ACM/2019 dtd. 20.03.2019

Sub: Addition of the topics in Periodontics for BDS curriculum

Ref: Resolution of the Academic Council at its 34th meeting held on 08.02.2019 vide Agenda - 7

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The Academic council at its 34th meeting held on 08.02.2019 and the Board of Management at its 45th meeting has approved the addition of the topics for 3rd & 4th Year (Part-I) in Periodontics for BDS curriculum as follows:-

Existing	Now Amended
Existing syllabus is lacking in newer advancements in the field of Periodontics	Addition of the following topics for the UG curriculum Yenepoya University : • Laser • Plasma Concentrates • Piezo Surgery • Halitosis (for3rd BDS) • Periodontal Medicine

The approved amendments may be incorporated in the UG syllabus and the amended copy may be provided to this office for filing.

REGISTRAR
mj 29/3

To:

The Principal, Yenepoya Dental College

Copy to:

1. Professor & HoD, Department of Periodontics
2. Controller of Examinations
3. File copy

ATTESTED
Dr. Angadhara Somayaji K S
Registrar
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NOTIFICATION – 09/33-ACM/2018 Dtd. 19.11.2018

Sub: Incorporation of new course content/amendment to the syllabus/teaching & Evaluation methodology in UG curriculu (Dental)

Ref: Resolution of the Academic Council at its 33rd meeting held on 26.10.2018, vide Agenda – 21

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The Academic Council at its 33rd meeting held on 26.10.2018 and subsequently the 44th Board of Management have approved the recommendation of the Faculty of Dentistry for incorporating new course content/amendment to the syllabus/teaching & evaluation methodology to the U.G. curriculum of Oral Pathology as follows to be implemented.

Existing	Now Amended
U.G. Curriculum I BDS Dental Anatomy: There is no specific chapter for clinical application of dental anatomy, physiology and occlusion.	To add a chapter on clinical application of dental anatomy, physiology and occlusion of 2 hours duration.
U.G. Curriculum III BDS A chapter on Forensic Odontology of 4 hours duration	To increase the number of hours of teaching on Forensic Odontology to 6 hours as per the modified DCI requirement.
There is no practical demonstration of Forensic Odontology techniques.	To include practical demonstration of Forensic Odontology techniques as enhancement in curriculum.

REGISTRAR
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To:
The Principal - YDC
Copy to:
1. Controller of Examinations
2. Professor & HoD, Department of Oral Pathology
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NOTIFICATION – 03/32-ACM/2018 dtd. 03.09.2018

Sub: Incorporation of new course content/amendment to the syllabus/teaching & evaluation methodology in UG curriculum (Dental)
Ref: Resolution of the Academic Council at its 32nd meeting held on 11.08.2018 vide Agenda -5

******

The Academic Council at its 32nd meeting held on 11.08.2018 and subsequently the Board of Management have approved the recommendation of the Faculty of Dentistry for incorporating new course content/amendment to the syllabus/teaching & evaluation methodology to the U.G curriculum of Public Health Dentistry as follows to be implemented.

Existing	Now Amended
UG Curriculum Practical/clinical programme: Oral health status assessment of the community using indices and WHO basic Oral health survey methods (Case history recording and Oral health assessment using indices)	1. Case history quota to be increased to 10 from the present number (2) with 5 cases each to be recorded in IIIrd BDS and IV BDS-Part I. In these patients, after case history and relevant indices are recorded, comprehensive treatment to be done (scaling, filling, etc).
Extension activities: Collection of statistical data (demographic) on population in India, birth rates, morbidity and mortality, literacy, per capita income In the Family Adoption Programme (under the RHCDC), demographic characteristics and oral hygiene practices are recorded by Undergraduate (IIIrd BDS) and Postgraduate students.	Oral Health Education component will be added into the Family Adoption Programme for Undergraduate (IIIrd BDS) and Postgraduate students.

The approved amendments may be incorporated in the respective UG curriculum and the amended copy may be provided to this office for filing.

(Dr. G. Shreekumar Menon)
REGISTRAR
mj

To:
The Principal – YDC
Copy to:
1. Controller of Examinations
2. Professor & HoD, Public Health Dentistry
3. Academic Section

5/9/2018

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Ref: No. YU/REG/ACA/ACM-30/2017 04.10.2017

NOTIFICATION

Sub: Incorporation of new course content/amendment to the syllabus/teaching & evaluation methodology

Ref: Proceedings of the 30th Minutes of Academic Council meeting held on 20.10.2017, vide Agenda - 12

****

The Academic Council at its 30th meeting held on 20.10.2017 approved the recommendation of the Faculty of Dentistry for incorporating news course content/amendment to the syllabus/teaching & evaluation methodology to the U.G. curriculum as follows to be implemented prospectively from the admission batch of 2017-18.

Department of Oral & Maxillofacial Surgery

Existing	Proposed Amendment
At present Laser and cryo surgery topics are not included in the syllabus	UG Curriculum: Introduction of laser and cryo surgery in UG Syllabus

Department of Public Health Dentistry

Existing	Proposed Amendment
Extension activities: UG students are a part of Rural Health Development Centre extension activities conducted by department of community medicine YMC and Public health dentistry YDC	School health program will be started for Undergraduates, enforcing on health education and preventive protocols in schools in Dakshina Kannada district.

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Existing	Proposed Amendment
Evaluation Presently in the Final Year BDS University exam students have to answer all the given short answers	Suggestion to introduce Options in short essay and short answers categories in the University examinations in all the year B.D.S. subjects

The approved amendments may be incorporated the respective U.G. curriculum and the amended copy may be provided to this office for filing.

(Dr. G. Shreekumar Menon)
REGISTRAR

mj

Copy to:

- Principal – YDC
- HoD, Department of Oral & Maxillofacial Surgery
- HoD, Department of Public Health Dentistry
- Controller of Examinations
- Academic Section

Notification from University

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PROGRAM OUTCOMES

UNDERGRADUATE PROGRAM

BACHELOR OF DENTAL SURGERY

(K=Knowledge, S=Skill, A=Attitude)

PO1: Describe normal and abnormal human structure, development, function and behavior that is relevant to the practice of Dentistry. (K)

PO2: Apply basic knowledge of biomedical, technical and clinical sciences for the effective practice of Dentistry. (K,S)

PO3: Elicit detailed Dental and relevant Medical history, perform an oral and general physical examination and choose relevant laboratory diagnostic tests for identification of oral disorders, prevention of oral disease and promotion of oral health.(K,S)

PO4: Demonstrate the ability to interpret available clinical and laboratory data and effective clinical problem solving, in order to generate differential diagnoses and to manage oral health disorders. (K,S)

PO5: Perform and interpret a basic oral radiological examination safely. (K,S)

PO6: Plan and administer, safely, appropriate treatments, including surgical procedures, for common oral disorders in adults as well as children. (K,S)

PO7: Identify and manage common medical emergencies encountered in general dental practice.(K,S)

PO8: Identify and refer patients who may require specialist care. (K,S)

PO9: Demonstrate knowledge of global and national needs, policies and regulatory frameworks relevant to oral health. (K,S,A)

PO10: Function effectively as an oral health care team member in health care settings. (S, A)

PO11: Communicate effectively and sensitively with patients, care-givers, colleagues and the public in a manner that will improve health care outcomes and patient / client satisfaction.(S,A)

PO12: Demonstrate the ability to continue refining existing knowledge / skills and acquire new knowledge/skills. (K,S,A)

PO13: Select and pursue an appropriate career pathway that is professionally rewarding and personally fulfilling. (S,A)

PO14: Recognize and manage medico-legal, ethical and professional issues in dental practice. (K,S,A)

PO15: Demonstrate and practice integrity, responsibility, respect and selflessness. (S,A)

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COURSE OUTCOME

UNDERGRADUATE PROGRAM

BACHELOR OF DENTAL SURGERY

Course	Department of conservative dentistry and endodontics Description
CO 1	Acquire adequate knowledge, necessary skill and attitude to carry out dental practice involving prevention, diagnosis and treatment of anomalies and diseases of teeth and associated hard and soft tissues
CO 2	Apply basic knowledge of anatomy, physiology and biomechanical properties of teeth, biomaterials and associated tissues for effective practice of Dentistry
CO 3	Understand and Demonstrate the etiology, pathophysiology and clinical manifestation of diseases of the teeth and adjacent hard and soft tissues.
CO 4	Acquire basic knowledge of etiology, biology, prevention, interception and management of carious and non carious lesion of teeth.
CO 5	Choose various methods to identifiy the disease process at different stages and determine the treatment modalities
CO 6	Define and Classify disease of theeth and adjacent tisssues and plan out the treatment preferences
CO 7	Communicate effectively and sensitively with patients and public to bring about satisfaction and trust.
CO8	Identify and manage common anomalies of shape, size and number of teeh
CO9	Perform and interpret basic diagnostic procedure of teeth and perioral tissues, its prevention and treatment with the knowledge of physiological systems.
C010	Demonstrate basic knowledge of the biological basis of endodontics and management of various endoodntics situations including diagnosis, treatment planning and treatment modalities.
C011	Identfiy and refer patienst requiring specilist care
CO12	Analyze occlusion, factors affecting and physiology of occlusion with emphasis on trauma from occlusion correction.
	Dental Anatomy& Dental Histology
CO 1	Student should be able to appreciate the morphological features of all primary and permanent teeth, its chronology , sequence of eruption, occlusion and variations in morphology
CO 2	Students should have an understanding about the development of orofacial structures in particular developmental processes of teeth with applied aspects
CO 3	Students should know various properties of dental tissues, their microscopic features, the histological basis of various dental treatment procedures, physiologic aging process and the clinical considerations
CO 4	Students should appreciate the macroscopic and microscopic structure and

functions of oral facial tissues & variations in different pathological/non-pathological states and physiologic aging process

CO 5 Students should have basic understanding about laboratory techniques involved in routine soft tissue and hard tissue processing.

Dental Materials

CO 1 Dental student interpret the Biocompatibility and type of biological responses that materials cause and the anatomic aspects of the oral cavity that influence or modify the biological response to materials

CO 2 Dental student acquire knowledge of the composition, properties, manipulative variables, and recent advances of restorative, preventive, esthetic and surgical dental materials.

CO 3 Dental student develop the ability to use dental materials which will include the manipulation through laboratory and clinical exercises.

Oral and Maxillofacial Surgery

CO1: To acquire knowledge regarding the scientific and surgical principles required to provide Oral Maxillofacial surgical care and prevention of cross infection

CO2: Apply the knowledge gained from basic science and clinical subjects (anatomy, physiology, biochemistry, pathology, microbiology, pharmacology, general medicine and general surgery) in the diagnosis and management of oral surgical problems.

CO3: Record case history, perform clinical examination, order essential investigations and interpret them to arrive at a final diagnosis and plan the treatment and management of oral and maxillofacial problems.

CO4: Competently diagnose and treat medically compromised patients with minor oral surgical problems and manage medical emergencies if any during the procedures. Assess the need for specialist consent for such patients.

CO5: Perform competently extraction of tooth/teeth under local/general anesthesia with prescription of medications, post extraction instructions and proper follow-up care. Management of intra/post-operative complications with referral to an Oral and Maxillofacial Surgeon as required.

CO6: To know the ethical issues and develop communication skills and compassion towards the patient for establishing better patient-doctor relationshipirrespective of social status, caste, creed or religion of the patient.
CO7: Ability to carry out simple minor oral surgical procedures such as alveoloplasty, frenectomy, incision and drainage, dental wiring and biopsy.

CO8: To keep abreast with the recent advances in the speciality of Oral and Maxillofacial Surgery such as dental implants, laser and cryotherapy.

CO9: Understand the management of major oral surgical problems and principles involved in the management of hospitalised patients.

ATTESTED

ORAL MEDICINE AND RADIOLOGY

CO 1	To have adequate knowledge of the applied anatomy of the face and oral cavity, the basic physiologic processes, pathologic processes and the basics of pharmacologic applications
CO 2	Case history- communication skills, intra oral & extra oral examination, investigations
CO 3	To know the etiology, epidemiology , clinical presentation and management protocols of the common disorders of the oral and para-oral structures
CO 4	Understand the oral manifestations of systemic diseases & dental management of medically compromised patients
CO 5	Outline the basic principles, clinical, radiographic and medico-legal aspects of forensic odontology
CO 6	To know the history of Radiology and basics of Radiation Physics
CO 7	To understand the basics of effects of radiation on living tissues, radiation safety measures
C0 8	To understand and perform various intra-oral radiographic techniques using appropriate accessory devices and film processing equipments to produce quality intra - oral radiographs
CO 9	To understand principles of radiographic interpretation and to identify anatomical structures and to differentiate it from pathologies on an intra-oral radiographs
CO 10	To identify and understand the indications of various extra - oral radiographs in different maxillofacial pathologies
CO 11	To know and understand various digital and advances in maxillofacial imaging

ORAL PATHOLOGY

CO 1	Describe the pathological processes that involve the oral cavity and the manifestations of common diseases, their diagnosis and correlation with other clinical pathological processes
CO 2	Discuss the oral manifestations of systemic diseases to help in correlating with systemic physical signs and laboratory findings
CO 3	Determine the principles governing treatment of oral diseases
CO 4	Describe the basic aspects and methods used in Forensic Odontology
CO 5	Report microscopic studies of common lesions affecting the oral tissues through microscopic slides & projection slides and study of disease processes with the help of surgical specimens
CO 6	Discuss teeth anomalies, polymorphisms with the help of specimens & plaster casts.
CO 7	Diagnose the commonly occurring diseases in the oro-facial region on the basis of clinical, radiological and histological findings

ATTESTED

DEPARTMENT OF ORTHODONTICS

CO 1 Define Orthodontics, explain basic principles, concepts, process of growth, development of arches , occlusion and associated craniofacial structures.

CO 2 Classify and explain different types and etiological factors in different types of skeletal and dental problems.

CO 3 Explain different types of anchorage, tooth movement, biological reactions and Bio-mechanical principles of tooth movement in Orthodontics.

CO 4 Demonstrate skills in Diagnosis and treatment planning in Orthodontics and dentofacial orthopaedics, to make upper and lower dental arch impressions, prepare the study models, perform model analyses and analyse and interpret the radiographs.

CO 5 Describe the various lab procedures, materials and their uses in the fabrication of different types of orthodontic appliances.

CO 6 Etiology, theory, schools of thought of retention and retainers in orthodontics.

CO 7 Recognize types of malocclusions and refer the cases to a specialist for higher level of care. Ability to diagnose and manage simple malocclusion.

CO8 Explain etiopathogenesis ,classification and management of patient with CLP and patients requiring surgical correction.

PAEDODONTICS

CO 1 Demonstrate the principles of pediatric and preventive dentistry right from birth to adolescence, including those with special health care needs

CO 2 Elicit detailed case history and methodological examination of the child patient, perform essential diagnostic procedures and interpret them, arrive at a reasonable diagnosis and formulate a comprehensive treatment plan and treat appropriately.

CO 3 Relate the current concepts of caries and its underlying causative factors in a child, and to implement timely, effective management strategies.

CO 4 Master the use of various restorative materials used in children,including semi-permanent, stainless steel crowns, restorations, and esthetic crowns along with recent advances

CO 5 Diagnose, prevent and intercept developing dental health problems in the child, including malocclusions.

CO 6 Understand basics of growth and development , psychology and behaviour of children and display strategies for management in the dental clinic

CO 7 Identify morphology of primary and permanent root canal, pulpal and periapical diseases and perform pulp therapy techniques

CO 8 Master exodontia and LA techniques for children

CO 9 Describe salient features of gingiva and periodontium in primary dentition and summarize management of common gingival and periodontal diseases in children

CO 10 Demonstrate the management of disabled children effectively and efficiently, tailored to the need of individual requirement and conditions

CO 11 Understand the etiology, prevention and management of common dental injuries in

ATTESTE

children.

CO 12 Develop and deliver oral health education and participate in school dental health program

PERIODONTICS

CO 1 Describe the diverse anatomic and microscopic features of the periodontium and the interrelated functional aspects.

CO 2 Explain the etio-pathogenesis of periodontal/peri-implant diseases

CO 3 : Demonstrate the ability to recognise and diagnose the various forms of periodontal/peri-implant diseases.

CO 4 Apply the appropriate diagnostic technique to diagnose periodontal diseases

CO 5 Identify, plan and execute non-surgical and surgical periodontal treatment procedures based on current scientific evidence to treat systemically healthy and systemically compromised patients.

CO 6 Communicate and demonstrate appropriate measures in the prevention of periodontal diseases

CO 7 Analyse the role of inter-disciplinary approaches in periodontal/peri-implant therapy and referral to the specialist.

CO8 : Inculcate a sense of social responsibility and capability to deliver periodontal healthcare to the underprivileged sections of the society

PROSTHODONTICS

CO 1: Apply basic and systemic medical sciences on human anatomy, embryology, histology, applied in general and particularly to head and neck, Physiology & Biochemistry, Pathology and Microbiology, virology, health and diseases of various systems of the body (systemic).Apply basic and systemic medical sciences in surgery and medicine, pharmacology, nutrition, behavioral science, age changes, genetics, Immunology, Congenital defects and syndrome and Anthropology, Bioengineering, Bio-medical and Biological Principle and applications to Dental material science

CO 2: Diagnose and plan treatment for patients requiring a Prosthodontic therapy, Interpret a radiograph and other investigations for the purpose of diagnosis and treatment plan. Evaluate 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 esthetic, and biomaterials, craniofacial disorders, problems of psychogenic origin. Evaluate General health conditions and emergency as related to Prosthodontics treatment.

CO 3: Knowledge on ethics, laws and Jurisprudence and forensic odontology in Prosthodontics. Respect patient's rights and privileges including patients right to information and right to seek the second opinion.

CO 4: Identify social, cultural, economic, environmental, educational and emotional determinants of the patient and consider them in planning the treatment.

CO 5: Acquire essential knowledge of personal hygiene, infection control, prevention of cross infection and safe disposal of waste, keeping in view the risks of transmission of Hepatitis and HIV.

CO 6: Examine the patients requiring Prosthodontics therapy, investigate the patient systemically, analyze the investigation results, radiography, diagnose the ailment, plan a treatment, communicate it with the patient and execute it. Identify cases, which are outside the area of his specialty/ competence and refer them to appropriate specialists. Interact with other specialty including medical specialty for a planned team management of patients for a craniofacial and oral acquired and congenital defects, Temporomandibular joint syndromes, esthetics, Implant supported Prosthetics and problems of Psychogenic origin.

CO 7: Restore lost functions of Stomatognathic system namely mastication, speech, appearance and psychological comforts, by understanding biological, biomedical, bioengineering principles and systemic condition of the patient to provide a quality health care of the craniofacial region

CO 8: Perform clinical" and Laboratory procedure with an understanding of biomaterials, tissue conditions related to the prosthesis and have competent dexterity and skill for performing clinical and laboratory procedures in fixed, removable, implant, maxillofacial, TMJ and esthetics in Prosthodontics. Adopt new methods and techniques in prosthodontics from time to time based on scientific research, which is in patient's best interest.

CO 9: Communicate in simple understandable language with the patient and explain the principles of Prosthodontics to the patient. He should be able to guide and counsel the patient with regard to various treatment modalities available. Develop the ability to communicate with professional colleagues through various media like Internet, e-mail, video conference, and etc. to render the best possible treatment

PUBLIC HEALTH DENTISTRY

CO 1 Elicit case history, perform Clinical Examination to arrive at a diagnosis using appropriate diagnostic aids and provide comprehensive Oral health care to the patients with strict adherence to the Infection control protocol.

CO 2 Identify Community health/ oral health problems using the knowledge of Epidemiology and indices to arrive at Community Diagnosis and communicate the findings to the community.

CO 3 Develop Health Education aids and impart Health Education using appropriate methods to various target groups.

CO 4 Identify health systems and health policies for delivery of health care services in India and advocate the need for Oral health policy.

CO 5 Plan, implement and evaluate appropriate Community Oral Health Programs for Promotion of Oral Health and Prevention of Oral disease at the Community level

for various target groups including school children.

CO 6 Adopt practices to prevent Occupational hazards associated with the practice of dentistry

CO 7 Identify and manage Medico legal issues in the practice of dentistry.Adopt and apply ethical and Moral Standards while carrying out Epidemiological Researches, Community Oral Health Activities

CO8 Display competency and work efficiently in a 'Team Approach'

CO9 Strive to maintain the highest professional dignity and honour by adhering to the guidelines and values set up by the governing bodies of the profession. Respect patient's rights and Privileges including Patient's right to information and right to seek a second opinion.

CO10 Develop communication and administration skills to coordinate between appropriate manpower and resources for delivery of Health/ Oral health care.

CO11 Sensitize the community towards the various payment plans and public health/ oral health programs in place for availing health/oral health services.

CO12 Communicate Environmental Health Hazards and associated Health Outcomes to the Community, Stakeholders and Professional audience

MEDICAL SUBJECTS

BIOCHEMISTRY

CO1 Understanding of biochemical and molecular processes involved in health and disease with relevance to dentistry.

CO2 Understanding of importance of nutrition in health and disease relevant to dentistry.

CO3 Understanding of biochemical basis and rationale of clinical laboratory tests, and demonstrate ability to interpret these in the clinical context.

GENERAL MEDICINE

CO 1 Demonstrate understanding of the patho-physiologic basis, epidemiological profile, signs and symptoms of disease and their investigation and management,

CO 2 Competently interview and examine an adult patient and make a clinical diagnosis,

CO 3 Appropriately order and interpret laboratory tests,

CO 4 Initiate appropriate cost-effective treatment based on an understanding of the rational drug prescriptions, medical interventions required and preventive measures,

CO 5 Follow up of patients with medical problems and refer whenever required,

CO 6 Communicate effectively, educate and counsel the patient and family,

CO 7 Manage common medical emergencies and refer when required,

CO8 Independently perform common medical procedures safely and understand patient safety issues.

MICROBIOLOGY

CO 1 Understanding of role of microbial agents in health and disease,

CO 2	Understand and practice various methods of Sterilisation and disinfection in dental clinics.
CO 3	Understanding the immune system in health and disease.
CO 4	Ability to understand the etiology, pathogenesis, laboratory diagnosis & prevention of common infections.

PHARMACOLOGY

CO1	Describe tha pharmacokinetics and pharmacodynamics of essential and commonly used drugs in general and in dental practice
CO2	List the indications, contraindications; interactions, and adverse reactions of commonly used drugs with reason
CO3	Prescribe drugs for common dental and medical ailments
CO4	Prescribe common and essential drugs in special conditions such as pregnancy, lactation old age, renal, hepatic damage and inmmuno compromised patients
CO5	Integrate the rational drug therapy in clinical pharmacology
CO6	Indicate the principles underlying the concepts of "Essential drugs"
CO7	To appreciate adverse reactions and drug interactions of commonly used drugs
CO8	Critically evaluate drug formulations and be able to interpret the clinical pharmacology of marketed preparations commonly used in dentistry

PHYSIOLOGY

CO 1	Explain the normal functioning of organs, their integration with various systems in maintainence of homeostasis
CO 2	Explain the pathophysiological basis of diseases related to various organ system
CO 3	Perform and interpret the experiments designed for the better understanding of physiological functions

GENERAL ANATOMY

CO 1	Understanding of the gross and microscopic structure and development of various structutures in head & neck
CO2	Comprehension of the normal regulation and integration of the functions of the structutures and systems related to head & neck
CO3	Understanding of the clinical correlation of structures and systems involved and interpret the anatomical basis of disease is presentation in head & neck region

GENERAL PATHOLOGY

CO 1	Describe the normal homeostatic mechanisms and the pathological process in their derangement and the effects on human systems.
CO 2	Discuss the concepts of cell injury and pathological and immunological responses produced thereby in different tissues and organs and the body's capacity for healing.
CO 3	Demonstrate basic Knowledge and understanding of the immune system in health and disease.
CO 4	Explain the etiology, pathogenesis, pathological effects and clinicopathological correlation of common infectious and non-infectious diseases.

CO 5	Describe the concept of hemodynamic disorders, thromboembolic disease and shock and their clinical application.
CO 6	Describe the concept of neoplasia with reference to the etiology, morphological features, diagnosis and prognosis in different tissues and organs of the body.
CO 7	Discuss the epidemiology, gross and microscopic features, clinical presentation and diagnostic techniques associated with different diseases in different organ systems to the extent needed for the understanding of disease processes and their clinical significance.
CO8	Recognise and interpret the common hematological disorders and the investigations, blood banking as well as cytological procedures.
CO9	Perform and interpret the basic bed-side clinical pathology procedures on blood and urine samples.

GENERAL SURGERY

CO 1	Understanding of the structural and functional basis, principles of diagnosis and management of common surgical problems in adults and children
CO 2	Ability to choose, calculate and administer appropriately intravenous fluids, electrolytes, blood and blood products based on the clinical condition
CO 3	Ability to apply the principles of asepsis, sterilization, disinfection, rational use of prophylaxis, therapeutic utilities of antibiotics and universal precautions in surgical practice
CO 4	Ability to perform common diagnostic and surgical procedures at the primary care level
CO 5	Ability to recognize, resuscitate, stabilize and provide Basic life support to patients following trauma
CO 6	Ability to administer informed consent and counsel patient prior to surgical procedures

1. Admission to the Dental Course – Eligibility Criteria

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

1. He/She shall complete the age of 17 years on or before 31st December, of the year of admission to the BDSCourse :

2. He/ She has passed qualifying examination as under :-

   a. The higher secondary examination or the Indian School Certificate Examination which is equivalent to 10+2 Higher Secondary Examination after a period of 12 years study, the last two years of study comprising of physics, chemistry, biology (minimum marks as prescribed in Section II below) or anyother elective subjects with English at a level not less than the core course for English as prescribed by the National Council for Educational Research and Training after the introduction of the 10+2+3 yearseducational structure as recommended by the National Committee on education;

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

      Or

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

      Or

   c. The pre-professional/pre-medical examination with Physics, Chemistry and Biology, after passing eitherthe higher secondary school examination, or the pre-university or an equivalent examination. The pre- professional/pre-medical examination shall include a practical test in Physics, Chemistry and Biologyand also English as a compulsory subject;

      Or

   d. The first year of the three years degree course of a recognized university, with Physics, Chemistry andBiology including a practical test in three subjects provided the examination is a –University Examination‖ and candidate has passed 10+2 with English at a level not less than a core course (with PCB aggregatemarks as above);

Or

e. B.Sc examination of an Indian University, provided that he/she has passed the B.Sc examination withnot less than two of the following subjects Physics, Chemistry, Biology (Botany, Zoology) and furtherthat he/she has passed the earlier qualifying examination with the following subjects-Physics, Chemistry, Biology and English.

Or

f. Any other examination which, in scope and standard is found to be equivalent to the intermediate science examination of an Indian University/Board, taking Physics, Chemistry and Biology includingpractical test in each of these subjects and English. In case of doubt, it is the onus of the student to get clarification from Association of Indian Universities.

Note:
From the Academic Year 2016-17, a candidate seeking admission to Bachelor of Dental Surgery shall have to qualify NEET Examination of the respective year of admission andshall abide by the criteria stipulated by DCI/MHFW-GoI

II. Selection of Students

The selection of students to dental college shall be based solely on merit of the candidate and for determiningmerit, the following criteria shall be adopted:

1. A competitive entrance examination is absolutely necessary in the cases of Institutions of All Indiacharacter;

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

i) A candidate must have passed in the subjects of Physics, Chemistry, Biology and English individually andmust have obtained a minimum of 50% marks taken together in Physics, Chemistry and Biology at the**qualifying examination** and in addition must have come in the merit list prepared as a result of such**competitive all-India entrance examination** by securing not less that 50% marks in Physics, Chemistryand Biology taken together in the competitive examination. In respect of candidates belonging to reserved category, the marks obtained in Physics, Chemistry and Biology taken together in qualifying examination and competitive entrance examination should be a minimum of 40%.

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

III. Duration of the Course:

The undergraduate dental training programme leading to BDS degree shall be of 5 years with a minimum of 240 teaching days in each academic year. During this period, the student shall be required to have engaged in fulltime study at a dental college recognised or approved by the Dental Council of India.

IV. Migration :

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

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

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

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

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

Note 1:

(i) Migration is permitted only in the beginning of II year BDS Course in recognized Institutions.

(ii) All applications for migration shall be referred to Dental Council of India by the college authorities. No Institution/University shall allow migration directly without the prior approval of the Council.

(iii) Council reserves the right not to entertain any application which is not under the prescribed Compassionate grounds and also to take independent decisions where applicant has been allowed to migrate without referring the same to the Council.

Note 2: *Compassionate ground criteria:

(i) Death of supporting guardian.

(ii) Disturbed conditions in the Dental College area as declared by Government.

V. Attendance requirement, Progress and Conduct

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

(ii) In case of a subject in which there is no examination at the end of the academic year,

Attendance percentage shall not be less than 70%. However, at the time of appearing for the professional examination in the subject, the aggregate percentage of attendance in the subject should satisfy condition (i) above.

VI. Subjects of Study:

First Year

i) General Human Anatomy including Embryology and Histology

ii) General Human Physiology and Biochemistry, Nutrition and Dietics

iii) Dental Anatomy, Embryology and Oral Histology

iv) Dental Materials

v) Pre-clinical Prosthodontics and Crown & Bridge

Second Year

i) General Pathology and Microbiology

ii) General and Dental Pharmacology and Therapeutics

iii) Dental Materials

iv) Pre-clinical Conservative Dentistry

v) Pre-clinical Prosthodontics and Crown & Bridge

vi) Oral Pathology & Oral Microbiology

Third Year

i) General Medicine

ii) General Surgery

iii) Oral Pathology and Oral Microbiology

iv) Conservative Dentistry and Endodontics

v) Oral & Maxillofacial Surgery

vi) Oral Medicine and Radiology

vii) Orthodontics & Dentofacial Orthopaedics

viii) Paediatric & Preventive Dentistry

ix) Periodontology

x) Prosthodontics and Crown & Bridge

xi) Public Health Dentistry

Fourth Year (Part – I)

1) Orthodontics & Dentofacial Orthopaedics

2) Oral Medicine & Radiology

3) Periodontology

4) Public Health Dentistry

Fourth Year (Part – II)

i) Oral & Maxillofacial Surgery

ii) Prosthodontics and Crown & Bridge

iii) Conservative Dentistry and Endodontics

iv) Paediatric & Preventive Dentistry

VII. Examinations

These regulations shall be applicable for the B.D.S. degree examinations conducted by Yenepoya University.

1. Preface:

(A) Evaluation is a continuous process and is based on criteria developed by the concerned

authorities withcertain objectives to assess the performance of the learner. This also indirectly helps in the measurementof effectiveness and quality of the concerned B.D.S. programme.

(B) Evaluation is achieved by two processes

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

Formative evaluation is done through a series of tests and examinations conducted periodically by theinstitution. Summative evaluation is done by the University through examinations conducted at the end of the specified course.

2. Methods of Evaluation :

Evaluation may be achieved by the following tested methods :

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

INTERNAL ASSESSMENT EXAMINATION

The continuing assessment examinations may be held frequently at least 3 times in a given academic year andthe average marks of these examinations should be considered. Ten percent of the total marks in each subject separately for theory and practical/clinical examination separately is set aside for the internal assessment examinations. The student should have minimum 35% marks in their internal assessment examination to be eligible for University examination. (Applicable to students joined in 2014 and afterwards.)

SCHEME OF EXAMINATION :

The scheme of examination for B.D.S. Course shall be divided into 1st B.D.S. examination at the end of the firstacademic year, 2nd B.D.S. examination at the end of second year, 3rd B.D.S. examination at the end of third, thereis two examinations in the final year, designated as part 1 and part 2 of the respective

examinations (regulation 1983).

The examination shall be open to a candidate who satisfies the requirements of attendance, progress and other rules laid down by the University. (75% attendance in all exams appearing subjects and 70% attendance in non-exam subjects is required)

I B.D.S. Examination :

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

Any student who does not clear the BDS Course in all the subjects within a period of 9 years, including one year Compulsory Rotatory paid Internship from the date of admission shall be discharged from the course. (applicable to students joined 2015 and afterwards.)

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

II B.D.S. Examination :

A candidate who has not successfully completed the I B.D.S. examination can not appear in the II year Examination.

1. General pathology and Microbiology
2. General and dental pharmacology and therapeutics
3. Dental Materials
4. Pre Clinical Conservative - Only Practical and Viva Voce
5. Pre Clinical Prosthodontics - Only Practical and Viva Voce

III B.D.S. Examination :

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

1. General Medicine

2. General Surgery
3. Oral Pathology and Oral Microbiology

IV B.D.S. (Part – I) Examination :

1. Oral Medicine and Radiology
2. Public Health Dentistry
3. Orthodontics & Dentofacial Orthopaedics
4. Periodontology

IV B.D.S. (Part – II) Examination :

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

WRITTEN EXAMINATION :

1. The written examination in each subject shall consist of one paper of three hours duration and shall havemaximum of 70 marks.
2. In the subjects of Physiology & Biochemistry and Pathology & Microbiology each paper will be divided into two parts, A and B of equal marks.
3. The question paper should contain different types of questions such as essays, short answer and objective type / M.C.Q's.
4. The nature of questions set, should be aimed to evaluate students of different standards, ranging fromaverage to excellent.
5. The questions should cover as broad an area of the content of the course. The essay questions should beproperly structured and the marks specifically allotted.
6. The University may set up a question bank
7. Option will be provided in short essay and short answer sections in the question papers.

PRACTICAL AND CLINICAL EXAMINATION:

1. **Objective Structured Clinical Evaluation :** The clinical and practical examination should provide anumber of chances for the candidate to express one‘s skills. A number of examination stations with specific instructions will be provided. This will include clinical procedures, laboratory experiments, spotters etc. Additionally, bedside/chairside clinical case presentations will be conducted wherever necessary.

2. **Records/ Log Books :** The candidate should be given credit for his records based on the scores obtained in the record. (Maximum of 10 marks for record book and to be included with practical marks)The marks obtained for the record in the first appearance can be carried over to the subsequent appearances if necessary.

3. **Scheme of clinical and practical examinations :** The specific scheme of clinical and practical examinations, the type of clinical procedures/ experiments to be performed and marks allotted for eachare to be discussed and finalised by the Chairman and other examiners and it is to be published prior tothe conduct of the examinations along with the publication of the time table for the practical examinations. This scheme should be brought to the notice of the external examiner as and when the examiner reports.The practical and clinical examinations should be evaluated by two examiners of which one shall be an external examiner appointed from other universities preferably outside the State. Each candidate shouldbe evaluated by each examiner independently and marks computed at the end of the examination.

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

MARKS DISTRIBUTION IN EACH SUBJECT :

Each subject shall have a maximum of 200 marks.Theory 100

Practical/ Clinical 100

Theory -100		**Practicals / clinicals -100**	
University written exam	70	University Exam	90
Viva Voce	20		
Internal Assessment (written)	10	Internal assessment (practical)	10
	100		100

Practical and Viva Voce Only in University ExaminationPre-Clinical Prosthodontics

Pre-clinical Conservative Dentistry

Practical	50
Record Book	10
Viva Voce	20
Internal assessment	20
	100

Criteria for a pass :

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

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

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

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

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

VIII. Qualification and experience for eligibility for examinership in BDS examination

1. M.D.S. Degree from a recognised Institution
2. Five years teaching experience in the subject in a dental college after MDS

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

Note :

1. In case of Public Health Dentistry, as there is an acute shortage of teachers one examiner from PublicHealth Dentistry and the second from Periodontics is permissible.
2. In case of Physiology and Biochemistry if Internal examiner is from Physiology, External examiner should be from Biochemistry or vice versa.
3. In case of Pathology and Microbiology if Internal examiner is from Pathology, External examiner should be from Microbiology or vice versa.
4. In case of Dental Materials, if internal is from Prosthodontics, external should be from ConservativeDentistry and vice versa.

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

Reciprocal arrangement of Examiners should be discouraged, in that, the Internal Examiner in a subject shouldnot accept external examinership for a College from which External Examiner is appointed in his subject for the
Corresponding period.

External Examiner for not more than 3 consecutive years. However, if there is a break of one year the personcan be re-appointed.

2. GOALS AND OBJECTIVES

GOALS :

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 andbe able to participate in the rural health care delivery programmes existing in the country.

OBJECTIVES :

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

(A) KNOWLEDGE AND UNDERSTANDING :

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

1. Adequate knowledge of the scientific foundations on which dentistry is based and good understanding ofvarious relevant scientific methods, principles of biological functions; ability to evaluate and analyse scientifically various established facts and data.
2. Adequate knowledge of the development, structure and function of the teeth, mouth and jaws and associatedtissues both in health and disease and their relationship and effect on general state of health and alsobearing 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 ofdentistry.
4. Adequate clinical experience required for general dental practice.
5. Adequate knowledge of the constitution, biological function and behaviour of persons in health and sickness as well as the influence of the natural and social environment on the state of health in so far as it affectdentistry.

(B) SKILLS :

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

1. Diagnose and manage various common dental problems encountered in general dental practice keepingin 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 diseases where possible.
5. Control pain and anxiety among the patients during dental treatment.

(C) ATTITUDES :

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

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

RECOMMENDATIONS

GENERAL :

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

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

3. The first component of the course is intended to provide initially, an appreciation of normal human structure, development, function and behavior, leading to understanding of the diseases, its prevention and treatment.The main objective is to provide the student a broad knowledge of the normal structures and functions of the body, the alterations which take place in disease with particular reference to those conditions in whichmedical and dental co-operation is essential for proper management. At this stage, the student shouldalso be made aware of the social and psychological aspects of patient care with special reference to therelationship between dentist and patient. The behavioral sciences including both sociology and psychology should be introduced at the initial stages of the training programme, much before the students actuallydeal with the patients.

4. The second component of dental undergraduate programme consists instruction in the subjects dealingwith dental and oral aspects to ensure a detailed knowledge of the structure and function of the dental andoral tissues. This enables the student to diagnose, prevent and treat the dental and oral diseases and disorders which were not included in the first component. The subject of oral biology is to be introducedat this level to provide the students a comprehensive knowledge and application of oral physiology, microbiology, biochemistry and oral immunology. Students should be exposed to the basic aspects of forensic odontology at this stage of the course along with oral biology/oral pathology.

5. The third component of the course comprising the clinical and technical aspects of dentistry actually prepares the student to undertake total oral and dental health care of the patients of all ages. The emphasis at this stage should be on the prevention of the various dental diseases and how to preservenatural teeth with their supporting structures. The importance of the various preventive methods need tobe stressed. The significance of diagnosis of various dental and oral

problems needs to be emphasised along with treatment planning before actual treatment procedures are undertaken.

In addition to acquiring knowledge, the students need to gain adequate clinical hands-on-experience inextractions and other minor oral surgical procedures, all aspects of conservative dentistry, endodontics, crown and bridge, provision of partial and complete dentures, various periodontal therapeutic procedures and use of removable orthodontic appliances. Familiarity with various radiological techniques, particularly intra-oral methods and proper interpretation of radiographs is an essential part of this component of training and has application in clinical diagnosis, forensic identification and age estimation.

Towards the final stage of the clinical training, each student should be involved in comprehensive oralhealth care or holistic approach to enable them to plan and treat patients as a whole, instead of piece-meal treatment provided in each speciality. The Dental Council of India strongly recommends that all the dental colleges provide facilities and required infrastructure for this purpose.

6. The commitment towards society as a whole needs to be stressed along with the knowledge and treatmentskills gained. Instruction in public health dentistry should emphasise the sociological aspects of health care, particularly oral health care, including the reasons for the variation in oral and dental needs of different sections of the society. It is important to know the influence of the social, behavioural, environmentaland economic factors on oral and dental health. Students should be made aware of the National oral health Policy and the importance of being a member of the Health care team delivering medical and oralhealth care, particularly among the rural population.
7. Scientific advancement of any profession is based largely on continuous research activities. Dentistry is no exception. It is important that in every dental college proper facilities should be provided for research and the faculty members should involve themselves in such activities. Inter-disciplinary research should be encouraged to bring in integration among various specialities. The teaching and training methodology should be such that the students are motivated to think and indulge in self study rather than playing apassive role. Provision should be made in the daily schedules for adequate time for reading. Proper library facilities with adequate timings and seating capacity should be made available in all dental colleges. Adequate audio visual aids, like video tapes, computer assisted learning aids, Medline and internet facilities should

be provided in all dental colleges to encourage self-study. Students should be encouraged to participate in simple research project work and the system of electives, spending some stipulated amount of time in another dental college within the country or outside should be given a serious consideration byall the dental institutions.

8. The society has a right to expect high standards and quality of treatment. Hence, it is mandatory and asocial obligation for each dental surgeon to upgrade his or her knowledge and professional skills from time to time. The Dental Council of India strongly recommends that facilities and proper infrastructure shouldbe developed to conduct the continuous professional education programmes in dentistry to enable thepractitioners to update their knowledge and skills. The Council is of the opinion that the dental colleges by virtue of their infrastructural facilities will be ideal to conduct such courses and recommends establishmentof a Department of continual dental education in each of the dental colleges. In addition, the practitionersshould be encouraged to attend conferences at the state and national level, workshops, seminars and any other such activity which the Council feels is suitable to upgrade the knowledge and skills.
9. The undergraduate curriculum should stress the significance of infection and cross-infection control in dental practice. Aspects like sources of infection, measures to be adopted - both general and specific - forcontrol particularly the HIV and hepatitis should be properly incorporated into the curriculum so that thegraduates are aware of its significance and follow it in their practice.
10. The Council recommends that all undergraduates acquire minimum computer proficiency which will enablethem to enhance their professional knowledge and skills.

SPECIFIC :

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

2. **Basic Medical & Dental Subjects** :

The basic medical and dental sciences comprise anatomy gross and microscopic, physiology, biochemistry, pharmacology, oral biology and science of dental materials. Subjects like behavioural sciences, which isuseful to develop communication skills, should also be introduced in the first year itself and spread overthe undergraduate course. An introduction

to Public Health Dentistry & Preventive Dentistry also will beuseful to develop the concept of commitment to community. The laboratory skills to be developed by thestudents like pre-clinical Prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral Implantology exercises and studying dental morphology also is a part of initial training. The instruction in the above medical anddental sciences shall be for two years duration. At the end of this period the student should be in a positionto understand and comprehend in general the development, structure and function of the human body in both health and disease.

3. The instruction in basic dental sciences should include theoretical and practical aspects of oral anatomyand physiology, to provide a detailed knowledge of the form and structure of teeth, associated tissues and occlusal relationships.

   The study should also aim at development of a concept regarding physiological and biochemical processes relevant to oral cavity for better understanding of the changes which occur with the onset of disease in theoral cavity.

   The student should be made aware of the importance of various dental tissues in forensic investigation.

4. Clinical, Medical and Dental subjects :

   The students should be introduced to clinics in the initial stage, preferably in the first year, as an observerto familiarise with the clinical set-up and working. The period of instruction in the clinical subjects shall be not less than three years full time. During this period, the student shall attend a dental hospital, generalhospital, community camps and satellite clinics, in order to obtain instruction and experience in the practiceof dentistry. The main objective of training in clinical dental subjects is to produce a graduate able andcompetent to recognise or diagnose various dental and oral diseases, to undertake general dental treatment, advise on the provision of specialised treatment available and finally advise the patient on prevention. The student should also understand the relationship between oral and systemic diseases.

5. Training in general medicine and surgery should provide sufficient knowledge on human disease to

   enable the student to understand its manifestations as relevant to the practice of dentistry. This requires clinical teaching on patients and shall be carried out in in-patient and outpatient medical departments and specialist clinics.

   This clinical instruction should enable the student to understand and perhaps diagnose common

systemic diseases which have relevance to dental practice, by adopting a systematic approach of history taking and clinical examination. The student should also realise the significance of various general and special investigations in the diagnosis of diseases. The ability to recognise physical and mental illness, dealingwith emergencies, effective communication with patients, interaction with various professional colleagues also become important aspects of this training.

6. The Dental Council of India considers it important for all dental students to receive instruction in first-aidand principles of cardio-pulmonary resuscitation. It is also desirable that the student spend time in anaccident and emergency department of a general hospital.

7. The purpose of the clinical training is to provide sufficient practical skill in all aspects of clinical dentistry. The instruction should also include patient management skills, treatment of patients of all ages with special reference to children (paediatric), very elderly (geriatric), medically compromised and disabledpatients.

8. During the three years clinical course, the students should receive thorough instruction which involves history taking, diagnosis and treatment planning in all aspects of dentistry and on graduation should becompetent to carry out all routine general procedures.

   In Oral & Maxillofacial Surgery and Oral Implantology, instruction should include the knowledge of various maxillofacial problems like injuries, infections and deformities of the jaws and associated structures. Theclinical experience should include those procedures commonly undertaken in general practice like extraction of teeth, minor oral surgical procedure etc.

   In Conservative, Dentistry, Prosthodontics & Crown Bridge and Periodontology students on graduation should be competent to carry out routine treatment like restorations of various kinds, endodontic procedures,removable and fixed prosthodontics, concept of osseointegration and finally various kinds of periodontaltherapy. In addition, students should be aware of their limitations on graduation, need to refer patients forconsultant opinion and/or treatment and also the need for postgraduate and continual education programmes.

   In Orthodontics & Dento Facial Orthopedics, students should carry out simple appliance therapy for patients. Students should also be able to appreciate the role of dentofacial growth in the development and treatmentof malocclusion.

   In Paediatric dentistry, the students should concentrate on clinical management, efficacy of

preventivemeasures, treatment needs particularly for children with disabilities. In Oral medicine and oral diagnosis,the student should receive instruction in various lesions, occurring in the oral cavity with particular referenceto oral cancer.

9. The successful control and management of pain is an integral part of dental practice. Upon graduation thestudents should be competent to administer all forms of local anaesthesia. The value of behavioural methods of anxiety management should be emphasised. The students should also have the practical experience in the administration of intra-muscular and intra-venous injections. Knowledge of pain mechanisms and strategies to control post-operative pain is essential for practice of dentistry.

10. All students should receive instructions and gain practical experience in taking processing and interpretation of various types of intra and extra oral radiographs. They should be aware of the hazards of radiation and proper protective measures from radiation for the patient, operator and other staff.

11. Instruction should be given in dental jurisprudence, legal and ethical obligations of dental practitionersand the constitution and functions of Dental Council of India.

12. Infection and cross infection control assume significance in dental practice. The students should be madeaware of the potential risk of transmission in the dental surgery, various infectious diseases particularlyHIV and hepatitis. The students should be aware of their professional responsibility for the protection ofthe patients, themselves and their staff and the requirements of the health and safety regulations.

13. In recent times, the subjects of aesthetic dentistry, oral implantology, behavioural sciences and forensicodontology have assumed great significance. Hence, the Council recommends that these four specialities should be incorporated into the undergraduate curriculum. The instruction and clinical training in aesthetic dentistry shall be carried out by the departments of Conservative, Dentistry and Prosthodontics & CrownBridge. Similarly, the instruction and clinical training in oral Implantology shall be done by the departments of Oral & Maxillofacial Surgery, Prosthodontics & Crown Bridge and Periodontology. The instruction in behavioural sciences should ideally commence before the students come in contact with the patients and shall be carried out by the departments of Public Health Dentistry & Paedodontics & Preventive Dentistry. Forensic Odontology will be a part of Oral Pathology & Oral Microbiology and Oral Medicine and Radiology.

COMPETENCIES

At the completion of the undergraduate training programme the graduates shall be competent in the following :

General Skills

- Apply knowledge & skills in day to day practice
- Apply principles of ethics
- Analyse 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 specialised treatment
- Basic study of forensic odontology and geriatric dental problems

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 programmesPractice within the scope of one‘s competence

Communication & Community Resources

Assess patients goals, values and concerns to establish rapport and guide patient care Able to communicatefreely, orally and in writing with all concerned Participate in improving the oral health of the individuals through

community activities.

Patient Care - Diagnosis

Obtaining patient's history in a methodical wayPerforming thorough clinical examination
Selection and interpretation of clinical, radiological and other diagnostic information

Obtaining appropriate consultation

Arriving at provisional, differential and final diagnosis

Patient Care - Treatment Planning

Integrate multiple disciplines into an individual comprehensive sequence treatment plan using diagnostic andprognostic information

Ability to order appropriate investigations

Patient Care - Treatment

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 therapeuticRequirements Uncomplicated extraction of teeth

Transalveolar extractions and removal of simple impacted teethMinor 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 prosthodonticsVarious kinds of periodontal therapy

ORAL MEDICINE & RADIOLOGY

- Able to identify precancerous and cancerous lesions of the oral cavity and refer to the concerned specialty fortheir management.
- Should have an adequate knowledge about common laboratory investigations and interpretationof their results.
- Should have adequate knowledge about medical complications that can arise while treatingsystemically compromised patients and take prior precautions/ consent from the concerned medical specialist.
- Have adequate knowledge about radiation health hazards, radiation safety and protection.

- Competent to take intra-oral radiographs and interpret the radiographic findings
- Gain adequate knowledge of various extra-oral radiographic procedures, TMJ radiography and sialography.
- Be aware of the importance of intra- and extra-oral radiographs in forensic identification and age estimation.
- Should be familiar with jurisprudence, ethics and understand the significance of dental records withrespect to law.

PAEDIATRIC & PREVENTIVE DENTISTRY

- Able to instill a positive attitude and behaviour in children towards oral health and understand the principles of prevention and preventive dentistry right from birth to adolescence.
- Able to guide and counsel the guardian/parents with regard to various treatment modalities includingdifferent facets of preventive dentistry.
- Able to treat dental diseases occurring in the child patient.
- Able to manage physically and mentally challenged/disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions.

ORTHODONTICS & DENTOFACIAL ORTHOPAEDICS

- Understand about normal growth and development of facial skeleton and dentition.
- Pinpoint aberrations in growth process both dental and skeletal and plan necessary treatment.
- Diagnose the various categories of malocclusion.
- Able to motivate and explain to the patient (and parent or guardian) about the necessity of treatment.
- Plan and execute preventive orthodontics (space maintainers or space regainers)
- Plan and execute interceptive orthodontics (habit breaking appliances)
- Manage treatment of simple malocclusion such as anterior spacing using removable appliances.
- Handle delivery and activation of removable orthodontic appliances.

- Diagnose and appropriately refer patients with complex malocclusion to the specialist

PERIODONTOLOGY

- Diagnose the patients periodontal problem, plan and perform appropriate periodontal treatment.
- Competent to educate and motivate the patient.
- Competent to perform thorough oral prophylaxis, subgingival scaling, root planning and minor periodontal surgical procedures.
- Give proper post treatment instructions and do periodic recall and evaluation
- Familiar with concepts of Osseo integration and basic surgical aspects of implantology

PROSTHODONTICS AND CROWN & BRIDGE

- Able to understand and use various dental materials.
- Competent to carry out treatment of conventional complete and partial removable dentures and fabricate fixed partial dentures.
- Able to carry out treatment of routine prosthodontic procedures.
- Familiar with the concept of osseointegration and the value of implant-supported Prosthodontic procedures

CONSERVATIVEDENTISTRY AND ENDODONTICS

- Competent to diagnose all carious lesions.
- Competent to perform Class I and Class II cavities and their restoration with amalgam.
- Restore class V and Class III cavities with glass ionomer cement.
- Able to diagnose and appropriately treat pulpally involved teeth (pulp capping procedures).
- Able to perform RCT for anterior teeth.
- Competent to carry out small composite restorations.
- Understand the principles of aesthetic dental procedures

ORAL & MAXILLOFACIAL SURGERY

- Able to apply the knowledge gained in the basic medical and clinical subjects in the management ofpatients with surgical problems.
- Able to diagnose, manage and treat patients with basic oral surgical problems.
- Have abroad knowledge of maxillofacial surgery and oral implantology.
- Should be familiar with legal, ethical and moral issues pertaining to the patient care and communicationskills.
- Should have acquired the skill to examine any patient with an oral surgical problem in an orderly manner.
- Understand and practice the basic principles of asepsis and sterilisation
- Should be competent in the extraction of the teeth under both local and general anaesthesia.
- Competent to carry out certain minor oral surgical procedure under LA like trans-alveolar extraction,frenectomy, dento alveolar procedures, simple impaction, biopsy, etc.
- Competent to assess, prevent and manage common complications that arise during and after minor oralsurgery.
- Able to provide primary care and manage medical emergencies in the dental office.
- Familiar with the management of major oral surgical problems and principles involved in in-patientmanagement.

PUBLIC HEALTH DENTISTRY

- Apply the principles of health promotion and disease prevention
- Have knowledge of the Organisation and provision of health care in community and in the hospital service
- Have knowledge of the prevalence of common dental conditions in India.
- Have knowledge of community based preventive measures
- Have knowledge of the social, cultural and environmental factors which contribute to health or illness.
- Administer oral hygiene instructions, topical fluoride therapy and fissure sealing.

- Educate patients about the aetiology and prevention of oral disease and encourage them to assureresponsibility for their oral health.

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

I B.D.S

Subject	Lecture Hours	Practical Hours	Clinical Hours	Clinical Hours
General Human Anatomy Including Embryology, Osteology and Histology	100	175		175
General Human Physiology	120	60		60
Biochemistry	70	60		60
Dental Anatomy Embryology, and oral Histology	105	250		250
Dental materials	20	40		40
Preclinical Prosthodontics & Crown & Bridge		100		100
Total	415	685		685

II B.D.S

Subject	Lecture Hours	Practical Hours	Clinica lHours	Clinical Hours
General & Dental Pharmacology and therapeutics	70	20		90
General Pathology	55	55		110
Microbiology	65	50		115
Dental Materials	60	200		260
Oral Pathology and Oral Microbiology	25	50		75
Pre Clinical Prosthodontics & Crown & Bridge	25	200		225

Pre Clinical Conservative Dentistry	25	200		225
Total	**325**	**775**		**1100**

III B.D.S

Subject	Lecture Hours	Practical Hours	Clinical Hours	Clinical Hours
General Medicine	60		90	150
General Surgery	60		90	150
Oral Pathology and Oral Microbiology	120	80		200
Oral Medicine and Radiology	20		70	90
Paediatric and Preventive Dentistry	20		70	90
Orthodontics & Dentofacial Orthopaedics	20		70	90
Periodontology	30		70	100
Oral & Maxillofacial Surgery	20		70	90
Conservative Dentistry & Endodontics	30		70	100
Prosthodontics and Crown & Bridge	30		70	100
Public Health Dentistry	30		70	100
Total	**440**	**80**	**740**	**1260**

IV BDS (Part -I)

Subject	Lecture Hours	Practical Hours	Clinical Hours	Clinical Hours
Oral Medicine and Radiology	45		100	145
Orthodontics & Dentofacial Orthopaedics	30		100	130
Periodontology	50		100	150
Public Health Dentistry	60		200	260

Total	**185**		**500**	**685**

IV BDS (Part -II)

Subject	Lecture Hours	Practical Hours	Clinical Hours	Clinical Hours
Oral & Maxillofacial Surgery	50		200	250
Conservative Dentistry & Endodontics	80		300	380
Prosthodontics and Crown & Bridge	80		300	380
Paediatric & Preventive Dentistry	45		100	145
Total	**255**		**900**	**1155**

Note :

- Behavioural Sciences Classes shall commence in 1st Year.
- Forensic odontology shall be covered in the department of Oral pathology and Oral Medicine during 3rd Year.
- Aesthetic Dentistry shall be covered in the Departments of Conservative Dentistry and Prosthodonticsduring final Year
- Oral Implantology shall be covered in the Department of Maxillofacial Surgery, Prosthodontics & Crown &Bridge and Periodontology during 4th and 5th Years.
- Ethics and dental jurisprudence shall be covered in Public Health Dentistry in 4th and 5th years.
- Electives / Research work should be encouraged during the last year lasting for a period of atleast one month to be spent in a different dental institution in India / overseas.
- All the institutions shall compulsorily make arrangements for Comprehensive oral health care training for atleast 3 months during last Year. The department of Public Health Dentistry may be utilised in case the institution does not have a separate department for this purpose. Qualified faculty members from the departments of Prosthodontics, Conservative Dentistry and Periodontics should guide the students along with faculty of Public Health Dentistry Department.
- The minimum working hours indicated each year of study does not include one month of university examination.

SYLLABUS OF STUDY

1. HUMAN ANATOMY, EMBRYOLOGY, HISTOLOGY & MEDICAL GENETICS

A) GOAL

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

B) OBJECTIVES:

a) KNOWLEDGE & UNDERSTANDING:

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

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

b) SKILLS

1. To locate various structures of the body and to mark the topography of the living anatomy.

2. To identify various tissues under microscope.
3. To identify the features in radiographs and modern imaging techniques.
4. To detect various congenital abnormalities.

C) INTEGRATION

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

This insight is gained in a variety of ways :

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

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

D) AN OUTLINE OF THE COURSE CONTENT

1. General anatomy : Introduction of anatomical terms and brief outline of various systems of the body.
2. Regional anatomy of head & neck with osteology of bones of head & neck, with emphasis on topics ofdental importance.
3. General disposition of thoracic, abdominal & pelvic organs.

4. The regional anatomy of the sites of intramuscular & intra vascular injections, & lumbar puncture.
5. General embryology & systemic embryology with respect to development of head & neck.
6. Histology of basic tissues and of the organs of gastroinstenstinal, respiratory, Endocrine, excretorysystems & gonads.
7. Medical genetics.

E) FURTHER DETAILS OF THE COURSE

I.INTRODUCTION TO :

1. Anatomical terms.
2. Skin, superficial fascia & deep fascia
3. ardiovascular system, portal system collateral circulation and arteries.
4. Lymphatic system, regional lymph nodes
5. Osteology - Including ossification & growth of bones
6. Myology - Including types of muscle tissue & innervation.
7. Syndesmology - Including classification of Joints.
8. Nervous system

II. HEAD & NECK :

1. Scalp, face & temple, lacrimal apparatus 02. Neck - Deep fascia of neck, posterior triangle, suboccipitaltriangle, anterior triangle, anterior median region of the neck, deep structures in the neck. 03.Cranial cavity - Meninges, parts of brain, ventricles of brain, dural venous sinuses, cranial nerves attached to thebrain, pituitary gland. 04. Cranial nerves - III, IV, V, VI, VII, IX.XII in detail. 05. Orbital cavity - Muscles ofthe eye ball, supports of the eye ball, nerves and vessels in the orbit. 06. Parotid gland. 07. Temporo mandibular joint, muscles of mastication, infratemporal fossa, pterygo -palatine fossa. 08. Submandibular region 09. Walls of the nasal cavity, middle ear, paranasal air sinuses 10. Palate 11. Oral cavity, Tongue

2. Pharynx (palatine tonsil and the auditory tube) 13. Larynx. 14.OSTEOLOGY - Foetal skull, adult skull,individual bones of the skull, hyoid bone and cervical vertebrae, 15. Parasympathetic ganglia.

III. **THORAX** : Demonstration on a dissected specimen of

a. Thoracic wall

b. Heart chambers

c. Coronary arteries

d. Pericardium

e. Lungs - surfaces; pleural cavity

f. Diaphragm

IV. **ABDOMEN** : Demonstration on a dissected specimen of

a. Peritoneal cavity

b. Organs in the abdominal & pelvic cavity.

V. CLINICAL PROCEDURES :

a) Intramuscular injections : Demonstration on a dissected specimen and on a living person of the followingsites of injection.

1. Deltoid muscle and its relation to the axillary nerve and radial nerve.
2. Gluteal region and the relation of the sciatic nerve.
3. Vastus lateralis muscle.

b) Intravenous injections & venesection: Demonstration of veins in the dissected specimen and on a livingperson. 1. Median cubital vein, 2. Cephalic vein, 3. Basilic vein, 4. Long saphenous vein.

c) Arterial pulsations: Demonstration of arteries on a dissected specimen and feeling of pulsation of thefollowing arteries on a living person.

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

d) Lumbar puncture: Demonstration on a dissected specimen of the spinal cord, cauda equina & epiduralspace and the inter vertebral space between L4 & L5 .

VI. EMBRYOLOGY :

Oogenesis, Spermatogenesis, Fertilisation, Placenta, Primitive streak, Neural crest, Bilaminar and

trilaminar embryonic disc, Intra embryonic mesoderm - formation and fate, notochord formation & fate, Pharyngeal arches, pouches & clefts, Development of face, tongue, palate, thyroid gland, pituitary gland, salivary glands, and anomaliesin their development, tooth development in brief.

VII. HISTOLOGY :

The Cell :

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

Classification of Glands

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

VIII. MEDICAL GENETICS :

Mitosis, meiosis, Chromosomes, gene structure, Mendelism, modes of inheritance, Genetic disorders – TurnerSyndrome, Klinefelter Syndrome & Down Syndrome

RECOMMENDED BOOKS :

1. SNELL (Richard S.) Clinical Anatomy for Medical Students, Ed.5, Llittle Brows & Company, Boston.
2. RJ LAST'S Anatomy - McMinn
3. ROMANES (G.J.) Cunningham Manual of Practical Anatomy : Head & Neck Ed. 15, Oxford Medical publication.
4. INDERBIR SINGH - Text Book of Histology
5. INDERBIR SINGH – Text Book of Embryology
6. AMES E ANDERSON, Grant's Atlas of Anatomy. Williams & Wilkins.
7. EMERY – Medical Genetics
8. A K DUTTA / INDERBIR SINGH - Text Book Anatomy – Head & Neck

2. HUMAN PHYSIOLOGY

GOAL

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

OBJECTIVES

a) KNOWLEDGE

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

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

b) SKILLS

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

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

c) INTEGRATION

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

B) COURSE CONTENTS THEORY

1. GENERAL PHYSIOLOGY

1. Jiameostasis: Basic concept, feedback mechanisms
2. Structure of cell membrane, transport across cell mernbran

3. Membrane potentials

2. BLOOD

Composition & functions of blood.

Specific gravity, Packed cell volume, factors affecting & methods of determination. Plasma proteins - Types, concentration, functions & variations.

ErytHrocyte - Morphology, functions & variations. Erythropoiesis & factors affecting erythropoiesis.ESR- Methods of estimation, factors affecting, variations & significance.

Haemoglobin - Normal concentration, method of determination & variation in concentration.Blood Indices - MCV, MCH, MCHC - definition, normal values, variation.

Anaemia - Definition, classification, life span of RBC‘s destruction of RBC‘s , formation & fate of bile pigments,Jaundice - types.

Leucocytes : Classification, number, percentage, distribution morphology, properties, functions &variation. Role of lymphocytes in immunity , leucopoiesis life span & fate of leucocytes.

Thromobocytes - Morphology, , number, variations, function & thrombopoiesis.

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

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

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

Blood volume: Normal values, variations.

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

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

Functions of reticulo endotrelial system.

3. MUSCLE AND NERVE

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

4. DIGESTIVE SYSTEM :

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

Salivary glands : Structure of salivary glands, composition, regulation of secretion & functions of saliva. Stomach : Composition and functions of gastric juice, mechanism and regulation of gastric secretion. Exocrine Pancreas - Structure, composition of pancreatic juice, functions of each component, regulation of pancreatic secretion.

Liver : structure , composition of bile, functions of bile, regulation of secretion -Gall bladder : structure, functions.

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

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

5. EXCRETORY SYSTEM :

Structure 85 functions of kidney, functional unit of kidney & functions of different parts.Juxta glomerular apparatus, renal blood flow.

Formation of Urine : Glomerular filteration rate - definition, determination , normal values, factors influencing

G.F.R. Tubular reabsorption - Reabsorption of sodium, glucose, water & other substances. Tubular secretion

- secretion of urea, hydrogen and other substances.Mechanism of concentration & dilution of urine.

Role of kidney in the regulation of pH of the blood.

Micturition : anatomy & innervation of Urinary bladder, mechanism of miturition & : abnormalities.

6. BODY TEMPERATURE & FUNCTIONS OF SKIN

7. ENDOCRINOLOGY

General endocrinology - Enumeration of endocrine glands & hormones - General functions; of endocrinesystem, chemistry, mechanism of secretion, transport, metabolism, regulation of secretion of hormones. Hormones of anterior pituitary & their actions, hypothamic regulation of anterior pituitary function. Disordersof secretion of anterior pituitary hormones.

Posterior pituitary: Functions, regulation & disorders of secretion.

Thyroid : Histology, synthesis, secretion & transport of hormones, actions of hormones, regulation of secretion& disorders, Thyroid function tests.

Adrenal cortex & Medulla -synthesis, secretion, action, metabolism, regulation of secretion of hormones &disorders. u‖

Other hormones - Angiotensin, A.N.F. ft

8. REPRODUCTION

Sex differentiation, Physiological anatomy of male and female sex organs Female reproductive system : Menstrual cycle, functions of ovary, actions of oestrogen & Progesterone, control of secretion of ovarian hormones, tests for ovulation, fertilisation, implantation, maternal changes during pregnancy, pregnancy tests & parturition. Lactation, composition of milk, factors controlling lactation, milk ejection, reflex, Malereproductive system : spermatogenesis, semen and contraception.

9. CARDIO VASCULAR SYSTEM

Functional anatomy and innervation of heart Properties of cardiac muscleOrigin & propagation of cardiac impulse and heart block.

Electrocardiogram - Normal electrocardiogram. Two changes in ECG in myocardial infarction.

Cardiac cycle - Phases, Pressure changes in atria, ventricles & aorta.

Volume changes in ventricles. Jugular venous pulse, arterial pulse. Heart sounds: Mention of murmurs.

Heart rate : Normal value, variation & regulation.

Cardiac output: Definition, normal values, one method of determination, variation, factors affecting heartrate and stroke volume.

Arterial blood pressure: Definition, normal values & variations, determinants, regulation & measurement ofblood pressure.

Coronary circulation.

Cardio vascular homeostasis - Exercise & posture.

10. RESPIRATORY SYSTEM ;

Physiology of Respiration: External & internal respiration. Functional anatomy of respiratory passage & lungs.

Respiratory movements: Muscles of respiration, Mechanism of inflation & deflation of lungs. Intra pleural &intra pulmonary pressures & their changes during the phases of respiration. Mechanics

of breathing - surfactant, compliance & work of breathing.

Spirometry: Lung volumes & capacities definition, normal values, significance, factors affecting vital capacity, variations in vital capacity, FEV & its variations.

Pulmonary ventilation - alveolar ventilation & dead space - ventilation.Composition of inspired air, alveolar air and expired air.

Exchange of gases: Diffusing capacity, factors affecting it.Transport of Oxygen & carbon dioxide in the blood.

Regulation of respiration - neural & chemical. Hypoxia, cyanosis, dyspnoea, periodic breathing. Artificial respiration, pulmonary function tests.

11. CENTRAL NERVOUS SYSTEM

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

12. SPECIAL SENSES

Fundamental knowledge of vision, hearing, taste and smell.

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 wouldnot be included in the University examinations but question based on this would be given in the form of charts, graphs and calculations for interpretation by the students.

PROCEDURES

1. Enumeration of Red Blood Cells

2. Enumeration of White Blood Cells

3.Differential leucocyte counts

4.Determination of Haemoglobin

5.Determination of blood group

6.Determination of bleeding time and clotting time

7.Examination of pulse

8.Recording of blood pressure.

DEMONSTRATION :

1.Determination of packed cell volume and erythrocyte sedimentation rate

2.Determination of specific gravity of blood

3.Determination of erythrocyte fragility

4.Determination of vital capacity and timed vital capacity

5.Skeletal muscle experiments.

Study of laboratory appliances in experimental physiology. Frog‘s gastrocneminus sciatic preparation. Simplemuscle 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.

6.Electrocardiograph^: Demonstration of recording of normal Electro cardiogram

7.Clinical examination of cardiovascular and respiratory system.

TEXT BOOKS :

Guyton - Text book of Physiology Ganong - Review of Medical PhysiologyVander - Human physiology Choudhari - Concise Medical PhysiologyChaterjee - Human Physiology
A.K. Jain - Human Physiology for BDS students

BOOKS FOR REFERENCE :

i) Berne & Levey; Physiology

ii) West-Best & Taylor‘s, Physiological basis of Medical Practice

EXPERIMENTAL PHYSIOLOGY :

i) Rannade; Practical Physiology

ii) Ghai; a text book of practical physiology

iii) Hutchison‘s; Clinical Methods

iv)

BIOCHEMISTRY

AIMS AND SCOPE OF THE COURSE IN BIOCHEMISTRY

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

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

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

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

1. Need to know the structure of cholesterol. Should know why it cannot be carried free in plasma.

2. Mutarotation may be taught. Student should know why amylase will not hydrolyse cellulose.
3. Need not know the details of alpha - helix and beta - pleats in proteins. Should know why haemoglobin is globular and keratin is fibrous.
4. Need not know mechanism of oxidative phosphorylation. Should know more than 90 % of ATP is formed by this process.
5. Need not know details of the conversion of pepsinogen to pepsin.

   Should know hydrochloric acid cannot break a peptide bond at room temperature.
6. Need not remember the steps of glycogenesis.

   Should know that excess intake of carbohydrate will not increase glycogen level in liver or muscle.
7. Need not know about urea or cretinine clearance tests.

   Should know the basis of increase of urea and creatinine in blood in renal insufficiency.
8. Need not know the structure of insulin.

   Should know why insulin level in circulation is normal in most cases of maturity onset diabetes.
9. Need not know the structural details of ATP.

   Should know why about 10 g of ATP in the body at any given time meets all the energy needs.
10. Need not know the mechanism of action of prolylhydroxylase.

    Should know why the gum bleeds in scurvy.
11. Need not know the structure of Vitamin K.

    Should know the basis of internal bleeding arising due to its deficiency.
12. Need not remember the structure of HMGCoA.

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

BIOCHEMISTRY AND NUTRITION

1. CHEMISTRY OF BIOORGANIC MOLECULES

Carbohydrates : Definition, biological importance and classification. Monosaccharides - Isomerism, anomerism. Sugar derivatives, Disaccharides. Polysaccharides. Structures of starch and glycogen.

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

Bimolecular leaflet.Proteins : Biological importance.

Aminoacids : Classification. Introduction to peptides.

Proteins : Simple and conjugated; globular and fibrous. Charge properties. Buffer action . Introduction to protein conformation . Denaturation.

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

2. MACRONUTERIENTS AND DIGESTION

Energy needs: Basal metabolic rate. Dietary carbohydrates, fibres. Dietary lipids, essential fatty acids. Nitrogen balance. Essential amino acids. Protein quality and requirement (methods for evaluation of protein quality to beexcluded). Protein calorie malnutrition. Balanced diet.

Enzymatic hydrolysis of dietary carbohydrates. Mechanism of uptake of monosaccharides. Digestion and absorptionof triacylglycerols. Enzymatic hydrolysis of dietary proteins and uptake of amino acids.

3. MICRONUTRIENTS

Vitamins : Definition, classification, daily requirement, sources and deficiency symptoms. Brief account of water- soluble vitamins with biochemical functions. Vitamins A functions including visual process. Vitamin D and its role in calcium metabolism. Vitamin E. Vitamin K and gamma carboxylation. Introduction to antivitamins and hypervitaminosis.

Minerals : Classification, daily requirement. Calcium and phosphate: sources, uptake, excretion, function. Serum calcium regulation. Iron: sources, uptake and transport. Heme and nonheme iron functions;deficiency. odine: Brief introduction to thyroxine synthesis. General functions of thyroxine. Fluoride : function, deficiency and excess. Indications of role of other minerals.

4. ENERGY METABOLISM

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

5. SPECIAL ASPECTS OF METABOLISM

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

6. BIOCHEMICAL GENETICS AND PROTEIN SYNTHESIS

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

7. ENZYME AND METABOLIC REGULATION

Enzymes : Definition, classification, specificity and active site. Cofactors. Effect of pH, temperature and substrateconcentration. Introduction to enzyme inhibitors, proenzymes and isoenzymes.

Introduction to allosteric regulation, covalent modification and regulation by induction/repression.

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

8. STRUCTURAL COMPONENTS AND BLOOD PROTEINS

Connective tissue: Collagen and elastin. Glycosaminoglycans. Bone structure. Structure of membranes. Membrane associated processes in brief. Exocytosis and endocytosis. Introduction to cytoskeleton. Myofibril and musclecontraction in brief.

Hemoglobin: functions. Introduction to heme synthesis and degradation. Plasma proteins: classification andseparation. Functions of albumin. A brief account of immunoglobulins. Plasma lipoproteins: Formation, function and turnover.

9. MEDICAL BIOCHEMISTRY

Regulation of blood glucose. Diabetes mellitus and related disorders. Evaluation of glycemic status. Hyperthyroidism and hypothyroidism: Biochemical evaluation. Hypolipoproteinemia's and atherosclerosis, Approaches to treatment. Jaundice: Classification and evaluation. Liver function tests: Plasma protein pattern, serum enzymeslevels. Brief introduction to kidney function tests and gastric function tests. Acid base imbalance. Electrolyte imbalance: evaluation. Gout. Examples of genetic disorders including lysosomal storage disorders, glycogen storage disorders, glucose 6-

phosphate dehydrogenase deficiency, hemoglobinopathies, inborn errors of amino acid metabolism and muscular dystrophy (one or two examples with biochemical basis will be adequate). Serum enzymes in diagnosis.

PRACTICALS : Contact hours 50

1. Qualitative analysis of carbohydrates
2. Colour reactions of proteins and amino acids
3. Identification of nonprotein nitrogen substance
4. Normal constituents of urine
5. Abnormal constituents of urine
6. Analysis of saliva including amylase
7. Analysis of milk Quantitative estimations
8. Titrable acidity and ammonia in urine
9. Free and total acidity in gastric juice
10. Blood glucose estimation
11. Serum total protein estimation
12. Urine creatinine estimation Demonstration
13. Paper electrophoresis charts/clinical data evaluation
14. Glucose tolerance test profiles
15. Serum lipid profiles
16. Profiles of hypothyrodisim and hyperthyroidisim
17. Profiles of hyper and hypoparathyroidism
18. Profiles of liver function
19. Urea, uric acid creatinine profile in kidney disorders
20. Blood gas profile in acidosis/ alkalosis

RECOMMEDED BOOKS :

1. Concise text book of Biochemistry (3rd edition) 2001, T.N. Pattabiraman
2. Essentials of Biochemistry -Satyanarayana
3. Biochemistry for Dental Students- Harbans Lal

3. DENTAL ANATOMY, EMBRYOLOGY AND ORAL HISTOLOGY & ORAL PHYSIOLOGY

INTRODUCTION

Dental Anatomy including Embryology and Oral Histology - a composite of basic Dental Sciences & their clinicalapplications

SKILLS

The student should acquire basic skills in :

1. Carving of crowns of permanent teeth in wax.
2. Microscopic study of oral tissues.
3. Identification of Deciduous & Permanent teeth.
4. Age estimation by patterns of teeth eruption from plaster casts of different age groups.

OBJECTIVES

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

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

I. TOOTH MORPHOLOGY

1. Introduction to tooth morphology :

§ Human dentition, types of teeth, & functions, Palmer's & Binomial notation systems, tooth surfaces, their junctions - line angles & point angles, definition of terms used in dental morphology, geometric conceptsin tooth morphology, contact areas & embrasures - Clinical significance.

2. Morphology of permanent teeth :

§ Description of individual teeth, along with their endodontic anatomy & including a note on their chronologyof development, differences between similar class of teeth & identification of individual teeth.

§ Variations & Anomalies commonly seen in individual teeth.

Clinical application of dental anatomy, physiology and occlusion.

3. Morphology of Deciduous teeth **:**

§ Generalised differences between Deciduous & Permanent teeth.

§ Description of individual deciduous teeth, including their chronology of development, endodontic anatomy, differences between similar class of teeth & identification of individual teeth.

4. Occlusion **:**

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

§ Inclination of individual teeth - compensatory curves.

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

§ Clinical significance of normal occlusion.

§ Introduction to & Classification of Malocclusion.

II. ORAL EMBRYOLOGY

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

2. Development of teeth :

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

§ Applied aspects of disorders in development of teeth.

3. Eruption of deciduous & Permanent teeth :

§ Mechanisms in tooth eruption, different theories & histology of eruption, formation of dentogingival junction, role of gubernacular cord in eruption of permanent teeth.

§ Clinical or Applied aspects of disorders of eruption.

4. Shedding of teeth :

§ Factors & mechanisms of shedding of deciduous teeth.

§ Complications of shedding.

III. ORAL HISTOLOGY

1. Detailed microscopic study of Enamel, Dentine, Cementum 8s Pulp tissue. Age changes 85 Applied aspects(Clinical and forensic significance) of histological considerations -Fluoride applications, transparent dentine,dentine hypersensitivity, reaction of pulp tissue to varying insults to exposed dentine ; Pulp calcifications &Hypercementosis.
2. Detailed microscopic study of Periodontal ligament & alveolar bone, age changes, histological changes inperiodontal ligament & bone in normal & orthodontic tooth movement, applied aspects of alveolar borie resorption.
3. Detailed microscopic study of Oral Mucosa, variation in structure in relation to functional requirements, mechanisms of keratinisation, clinical parts of gingiva, Dentogingival & Mucocutaneous junctions & lingualpapillae. Age changes & clinical considerations
4. Salivary Glands :
   - § Detailed microscopic study of acini & ductal system.
   - § Age changes & clinical considerations.
5. TM Joint :
   - § Review of basic anatomical aspects & microscopiuc study & clinical considerations.
6. Maxillary Sinus :
   - § Microscopic study, anatomical variations, functions 8s clinical relevance of maxillary sinus in dentalpractice.
7. Processing of Hard & soft tissues for microscopic study :
   - § Ground sections, decalcified sections & routine staining procedures.
8. Basic histochemical staining patterns of oral tissues.

IV. ORAL PHYSIOLOGY

1. Saliva :
   - § Composition of saliva - variations, formation of saliva & mechanisms of secretion, salivary reflexes, brief review of secret motor pathway, functions, role of saliva in dental caries & applied aspects of hyper & hypo salivation.
2. Mastication :

§ Masticatory force & its measurement - need for mastication, peculiarities of masticatory muscles,masticatory cycle, masticatory reflexes 85 neural control of mastication.

3. Deglutition :

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

4. Calcium, phosphorous & fluoride metabolism :

§ Source, requirements, absorption, distribution, functions &, excretion, clinical considerations, hypo & hypercalcemia & hyper & hypo phosphatemia & fluorosis.

5. Theories of Mineralisation :

§ Definition, mechanisms, theories 8s their drawbacks.

§ Applied aspects of physiology of mineralisation, pathological considerations - calculus formation.

6. Physiology of Taste :

- Innervation of taste buds 8s taste pathway, physiologic basis of taste sensation, age changes & appliedaspects - taste disorders.

7. Physiology of Speech :

- Review of basic anatomy of larynx & vocal cords.
- Voice production, resonators, production of vowels & different consonants - Role of palate, teeth& tongue.
- Effects of dental prosthesis & appliances on speech & Basic speech disorders.

RECOMMENDED TEXT BOOKS

1. Orban‘s Oral Histology & Embryology - S.N.Bhaskar
2. Oral Development 8s Histology - James & Avery
3. Wheeler‘s Dental Anatomy, Physiology & Occlusion - Major. M.Ash

4. Dental Anatomy - its relevance to dentistry - Woelfel 8s Scheid

5. Applied Physiology of the mouth - Lavelle

6. Physiology & Biochemistry of the mouth – Jenkins

7. Essentials of Oral Biology – Maji Jose

8. Manual of Oral Histology & Oral Pathology – Colour Atlas & Text - Maji Jose

9. Tencate‘s Oral Histology - Antonio Nanci

4. GENERAL PATHOLOGY

AIM :

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.

OBJECTIVES :

Enabling the student

1. To demonsts and analyze pathological changes at macroscopically and microscopical levels and explain theirobservations in terms of disease processes.
2. To Integrate knowledge from the basic sciences, clinical medicine and dentistry in the study of Pathology.
3. To demonstrate understanding of the capabilities and limitations of morphological pathology in its contributionto medicine, dentistry and biological research.
4. To demonstrate ability to consult resource materials outside lectures, laboratory and tutorial classes.

COURSE CONTENT

A. General Pathology -

1. Introduction to Pathology

Terminologies
The cell in health

The normal cell structure

The cellular functions

2. Aetiology and Pathogenesis of DiseaseCell Injury Types - Congenital

Acquired

Mainly Acquired causes of disease

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

3. Degenerations

Amyloidosis

Fatty change

Cloudy swelling

Hyaline change, mucoid degeneration

4. Cell death & Necrosis

Apoptasis

Definition, causes, features and types of necrosis

Gangrene -Dry, wet, gas

Pathological Calcifications

(Dystrophic and metastatic)

5. Inflammation

- Definition, causes types, and features
- Acute inflammation
- The vascular response
- The cellular response
- Chemical mediators
- The inflammatory cells
- Fate
- Chronic inflammation Granulomations inflammation

6. Healing

- Regeneration
- Repair

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

f. Complication

7. Tuberculosis
   - Epidemiology
   - Pathogensis (formation of Tubercle0
   - Pathological features of Primary and secondary TB
   - Complication and fate
8. Syphilis
   - Epidemiology
   - Types and stages of sphyilis
   - Pathological features
   - Diagnostic criterias

- Oral lesions

9. Typhoid
   - Epidemiology
   - Pathogenesis
   - Pathological features
   - Diagnostic criterias
10. Thromobosis
   - Definition, pathophysiology
   - Formation, Complications & Fate of a thrombus
11. Embolism
   - Definition
   - Types
   - Effects
12. Ischaemia and Infraction
   - Definition, etiology, types
   - Infraction of various organs

13. Derangements of body fluids

- Oedema - pathogenesisDifferent types

14. Disorders of circulation

- Hyperaemia

- Shock

15. Nutritional Disorders

- Common Vitamin Deficiencies

16. Immunological mechanisms in disease

- Humoral & cellular immunity

- Hypersensitivity & autommunity

17. AIDS and Hepatitis.

18. Hypertension

- Definition, classification

- Pathophysiology

- Effects in various organs

19. Diabetes Mellitus

- Def, Classification, Pathogenesis, Pathology in different organs

20. Adaptive disorders of growth

- Atrophy & Hypertrophy, Hyperplasia, Metaplasia and Dysplasia

21. General Aspects of neoplasia

a. Definition, terminology, classification

b. Differences between benign and malignant neoplasms

c. The neoplastic cell

d. Metastasis

e. Aetiology and pathogenesis of neoplasia, Carcinogenesis

f. Tumour biology

g. Oncogenes and anti-oncogenes

h. Diagnosis

i. Precancerous lesions

j. Common specific tumours, Squamous papilloma & Carcinoma, Basal cell Carcinoma, Adenoma &Adenocarcinoma, Fibroma & Fibrosarcoma, Lipoma and liposarcoma

B. Systemic Pathology –

22. Anaemias

Classification & Lab Diagnosis

Iron Deficiency anaemia, Megaloblastic anaemia, Haemolytic anaemias ,Aplastic Anaemia & their Lab investigations

23. Leukaemias

- Classification ,Acute and chronic leukaemias, Diagnosis and clinical Features

24. Diseases of Lymph nodes

- Hodgkin‘s disease, Non Hodgkins lymphoma,

25. Diseases of oral cavity

- Lichen planus, Stomatitis, Leukoplakia, Squamous cell Carcinoma, Dental caries, Dentigerious cyst,Ameloblastoma

26. Diseases of salivary glands

- Normal structure, Sialadenitis, Tumours

27. Common diseases of Bones

- Osteomyelitis, Metabolic bone diseases, Bone Tumours, Osteosarcoma, Osteocalstoma, Giant cell Tumour, Ewing‘s sarcoma, Fibrous dysplasia, Aneurysmal bone cyst

28. Diseases of Cardiovascular system

- Cardiac failuare
- Congenital heart disease - ASD, VSD.PDA
- Fallot‘s Tetrology

- Infective Endocarditis
- Atherosclerosis
- Ischaemic heart Disease

29. Haemorrhagic DisordersCoagulation cascade Coagulation disorders

- Platelet function
- Platelet disorders

Practical

1. Urine - Abnormal constitutients
   - Sugar, albumin, ketone bodies
2. Urine - Abnormal constituents
   - Blood, bile salts, bile pigments
3. Haemoglobin (Hb) estimation
4. Total WBC count
5. Differential WBC Count
6. Packed cell volume(PCV,) Erythrocyte Sedimentation Rate (ESR)
7. Bleeding Time & Clotting Time
8. Histopathology Tissue ProcessingStaining
9. Histopathology slides

- Acute appendicitis, Granulation tissue, fatty liver

10. Histopathology slides

    CVC lung, CVC liver, Kidney amyloidosis

11. Histopathology slides

    Tuberculosis, Actionomycosis, Rhinosporidiosis

12. Histopathology slides

    Papilloma, Basal cell Ca, Sq cell Ca

13. Histopathology slides

    Osteosarcoma, osteoclastoma, fibrosarcoma

14. Histopathology slides

    Malignant melanoma, Ameloblastoma

15. Histopathology slides

    Mixed parotid tumour, metastatic carcinoma in lymph node

List of Textbooks

1. Robbins – Basic Pathology
2. Harsh Mohan – Text Book of Pathology
3. deGruchy‘s Clinical Haematology in Medical Practice

MICROBIOLOGY

AIM :

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

a) Lectures

b) Lecture Demonstrations

c) Practical exercises

d) Audio visual aids

e) Small group discussions with regular feedback from the students.

OBJECTIVES :

KNOWLEDGE AND UNDERSTANDING

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

1. Understand the basics of various branches of microbiology and be able to apply the knowledge relevantly.

2. Apply the knowledge gained in related medical subjects like General Medicine and General Surgery and Dental subjects like Oral Pathology, Community Dentistry, Periodontics, Oral Surgery, Paedodontics, Conservative Dentistry and Oral Medicine in higher classes.

3. Understand and practice various methods of sterilisation and disinfection in dental clinics.

4. Have a sound understanding of various infectious diseases and lesions in the oral cavity.

A. SKILLS

1. Student should have acquired the skill to diagnose and differentiate various oral lesions.
2. Should be able to select, collect and transport clinical specimens to the laboratory.

3. Should be able to carry out proper aseptic procedures in the dental clinic. A brief syllabus of Microbiology isgiven as follows :

A. GENERAL MICROBIOLOGY :

1. History, Introduction, Scope, Aims and Objectives.
2. Morphology and Physiology of bacteria.
3. Detail account of Sterlisation and Disinfection.
4. Brief account of Culture media and Culture techniques.
5. Basic knowledge of selection, collection, transport, processing of clinical Specimens and identification ofbacteria.
6. Bacterial Genetics and Drug Resistance in bacteria.

B. IMMUNOLOGY :

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

13. Immunehaematology

C. SYSTEMATIC BACTERIOLOGY

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

D. VIROLOGY

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

E. MYCOLOGY

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

F. PARAS1TOLOGY

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

RECOMMENDED BOOKS FOR REGULAR READING

1. Text book of Microbiology - R.AnanthaNarayan & C.K.Jayaram Paniker.
2. Medical Microbiology - David Greenwood et al.

BOOKS FOR FURTHER READING/REFERENCE :

i) Microbiology - Prescott, et al.

ii) Microbiology - Bernard D. Davis , et al.

iii) Clinical & Pathogenic Microbiology - Barbara J Howard, et al.

iv) Mechanisms of Microbial diseases - Moselio Schaechter, et al.

v) Immunology an Introduction - Tizard

vi) Immunology 3rd edition - Evan Roitt , et al.

5. GENERAL AND DENTAL PHARMACOLOGY AND THERAPEUTICS

GOAL :

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

OBJECTIVES :

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 andin dentistry in particular,

ii) List the indications, contraindications; interactions, and adverse reactions of commonly used drugswith reason.

iii) Tailor the use of appropriate drugs in disease with consideration to its cost, efficacy, safety for individual andmass 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 immuno compromised patients.

v) Integrate the rational drug therapy in clinical pharmacology.

vi) Indicate the principles underlying the concepts of –Essential drugs‖. SKILLS :

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

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

LECTURE :

I. GENERAL PHARMACOLOGY :

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

II. DENTAL PHARMACOLOGY

1. Anti - septics, astrigents, obtundents, mummifying agents, bleaching agents, styptics, Disclosing agents,dentifrices, mouth washes, caries and fluorides.
2. Pharmacotherapy of common oral conditions in dentistry. Practicals and Demonstrations : To familiarise the student with the methodology: prescription writing and dispensing. Rationale of drug combinations of marketed drugs.

LIST OF BOOKS RECOMMENDED FOR READING AND REFERENCE

1. Basic & Clinical pharmacology - 13th ed- Bertram G .Katzung
2. Essentials of Pharmacology for Dentistry - 4th ed-K D Tripathi
3. Pharmacology for Dentistry 4th ed- Tara V Shanbhag

6. DENTAL MATERIALS

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

INTRODUCTION

AIMS:

Aim of the course is to present basic chemical and physical properties of Dental materials as they are related toits manipulation to give a sound educational background so that the practice of the dentistry emerged from artto empirical status of science as more information through further research becomes available. It is also the aim of the course of Dental materials to provide with certain criteria of selection and which will enable to discriminate between facts and propaganda with regards to claims of manufactures.

OBJECTIVES :

To understand the evolution and development of science of dental materials.

To explain purpose of course in dental materials to personnel concerned with the profession of dentistry. Knowledgeof physical and chemical properties. Knowledge of biomechanical requirements of particular restorative procedure.An intelligent compromise of the conflicting as well as co-ordinating factors into the desired ernest. Laying down standards or specifications of various materials to guide to manufacturers as well as to help professionals. Search for newer and better materials which may answer our requirements with greater satisfaction. To understand and evaluate the claims made by manufacturers of dental materials

NEED FOR THE COURSE :

The profession has to rise from an art to a science; the need for the dentist to possess adequate knowledge ofmaterials to exercises his best through knowledge of properties of different types of

materials. The growing concern of health hazards due to mercury toxicity, inhalation of certain vapour or dust materials, irritations andallergic reaction to skin due to contact of materials. Materials causing irritation of oral tissues, pH of restorative materials causing inflammation and necrosis of pulp which is a cause for the dentist to possess widerknowledge of physical, chemical and biological properties of materials being used. For the protection for the patient and his own protection certain criteria of selection are provided that will enable the dentist to discriminate between facts and propaganda, which will make a material biologically acceptable.

SCOPE :

1) The dental materials are employed in mechanical procedures including restorative dentistry such as Prosthodontics, endodontics, periodontal, orthodontics and restorative materials.

   There is scarcely a dental procedure that does not make use of dental materials in one form or another and therefore the application of dental material is not limited to any one branch of dentistry. Branches such as minorsurgery and periodontics require less use of materials but the physical and chemical characters of materials areimportant in these fields. The toxic and tissue reaction of dental materials and their durability in the oral cavitywhere the temperature is between 32 & 37 degree centigrade, and the ingestion of hot or cold food ranges from 0-70 degree centigrade. The acid and alkalinity of fluids show pH varies from 4 to 8.5. The load on 1 sq. mm oftooth or restorative materials can reach to a level as high as many kilograms. Thus the biological properties ofdental materials cannot be separated from their physical and chemical properties.

2) **STRUCTURE OF MATTER AND PRINCIPLES OF ADHESION :**

   Change of state, inter atomic primary bonds, inter atomic secondary bonds, inter atomic bond distance and bonding energy, thermal energy, crystalline structure, non crystalline structures, diffusion, adhesion and bonding and adhesion to tooth structures.

3) **IMPORTANT PHYSICAL PROPERTIES APPLICABLE TO DENTAL MATERIALS**

   Physical properties are based on laws of mechanics, acoustics, optics, thermodynamics, electricity, magnetism, radiation, atomic structure or nuclear phenomena. Hue, value, chroma and translucency physical properties based on laws of optics, dealing with phenomena of light, vision and sight. Thermal conductivity & coefficient of thermal expansion are physical properties based on laws of thermodynamics. Stress, strain,

proportional limit,elastic limit yield strength, modulus of elasticity, flexibility, resilience, impact, impact strength, permanent deformation, strength, flexure strength fatigue, static fatigue, toughness, brittleness, ductility & malleability, hardness, abrasion resistance, relaxation, rheology, Thixotropic, creep, static creep, dynamic creep, flow, colour, three dimensional colour - hue, values, chroma, Munsell system, metamersim, fluorescence, physical propertiesof tooth, stress during mastication

4) **BIOLOGICAL CONSIDERATIONS IN USE OF DENTAL MATERIALS.**

Materials used are with the knowledge of appreciation of certain biological considerations for use in oral cavity.Requirement of materials with biological compatibility. Classification of materials from perspective of biological compatibility, eg. contact with soft tissues, affecting vitality of pulp, used for root canal fillings, affecting hard tissues of teeth, laboratory materials that could accidentally be inhaled or ingested during handling. Hazards associated with materials: pH effecting pulp, polymers causing chemical irritation, mercury toxicity, etc. Microleakage, Thermal changes, Galvanism, toxic effect of materials. Biological evaluation for systemic toxicity, skin irritation, mutagenecity and carcinogenicity. Disinfection of dental materials for infection control.

5) **GYPSUM & GYPSUM PRODUCTS.**

Gypsum - its origin, chemical formula, Products manufactured from gypsum.Dental plaster, Dental stone, Die stone, high strength, high expansion stone.

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

Chemistry of setting, setting reaction, theories of setting, gauging water, Microscopic structure of setmaterial.

Setting time: working time and setting time, Measurement of setting time and factors controlling settingtime .

Setting expansion, Hygroscopic setting expansion - factors affecting each Strength : wet strength, dry strength, factors affecting strength, tensile strengthSlurry - need and use.

Care of cast.

ADA classification of gypsum products

Description of impression plaster and dental investment Manipulation including recent methods or advanced methods.Disinfection: infection control, liquids, sprays, radiation

Method of use of disinfectants

Storage of material - shelf life

6) **IMPRESSION MATERIALS USED IN DENTISTRY**

Impression plaster, Impression compound, Zinc oxide eugenol impression paste & bite registration paste incl., non eugenol paste, Hydrocolloids, reversible and irreversible, Elastomeric impression materials. Polysulphide,Condensation silicones, Addition silicones, Polyether, Visible light cure polyether urethane dimethacrylate, Historical background & development of each impression material, Definition of impression , Purpose of making impression, Ideal properties required and application of material, Classification as per ADA specification, general & individual impression material.

Application and their uses in different disciplines, Marketed as and their commercial names, Mode of supply SB mode of application bulk/wash impression. Composition, chemistry of setting, Control of setting time , Type of impression trays required, Adhesion to tray, manipulation, instruments & equipments required. Techniques of impression, storage of impression, (Compatibility with cast and die material). Any recent advancement in material and mixing devices. Study of properties: Working time, setting time, flow, accuracy, strength, flexibility, tear strength, dimensional stability, compatibility with cast & die materials incl., electroplating Biological properties: tissue reaction , Shelf life & storage of material, Infection control - disinfection, Advantages & disadvantages of each material.

7) **SYNTHETIC RESINS USED IN DENTISTRY**

Historical background and development of material, Denture base materials and their classification and requirement Classification of resins Dental resins - requirements of dental resins, applications, polymerisation, polymerisation mechanism stages in addition polymerisation, inhibition of polymerisation, co- polymerisation, molecular weight, crosslinking, plasticisers, Physical properties of polymers, polymer structures types of resins.

ACRYLIC RESINS :

Mode of polymerisation: Heat activated, Chemically activated, Light activated, Mode of supply, application, composition, polymerisation reaction of each. Technical considerations: Methods of manipulation for each type of resin. Physical properties of denture base resin. Miscellaneous resins & techniques: Repair resins, Relining and

rebasing. Short term and long-term soft-liners, temporary crown and bridge resins, Resin impression trays,Tray materials, Resin teeth, materials in maxillofacial prosthesis, Denture cleansers, Infection control in detail,Biological properties and allergic reactions.

RESTORATIVE RESINS :

Historical background, Resin based restorative materials, Unfilled & filled, Composite restorative materials, Mode of supply, Composition, Polymerisation mechanisms: Chemically activated, Light activated, Dual cure: Degree ofconversion, Polymerisation shrinkage Classification of Composites: Application, composition and properties ofeach Composites of posterior teeth, Prosthodontics resins for veneering. Biocompatibility - microleakage, pulpalreaction, pulpal protection Manipulation of composites: Techniques of insertion of Chemically activated, light activated, dual cure Polymerisation, Finishing and polishing of restoration, Repair of composites Direct bonding Bonding: Need for bonding, Acid - etch technique, Enamel bonding, Dentin bonding agents. Mode of bonding, Bond strength, Sandwich technique its indication and procedure. Extended application for composites: Resins for restoring eroded teeth, Pit and fissure sealing, Resin inlay system - Indirect & direct, Core build up, Orthodonticapplications.

8) **METAL AND ALLOYS :**

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

HISTORY :

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

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

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

DIRECT FILLING GOLD :

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

Classification : Gold Foil, Electrolytic precipitate, powdered gold.

Manipulation: Removal of surface impurities and compaction of direct filling gold.Physical properties of compacted gold, Clinical performance.

DENTAL CASTING ALLOYS :

Historical background, desirable properties of casting alloys.

Alternatives to cast metal technology : direct filling gold, amalgam, mercury free condensable intermetallic compound - an alternative to metal casting process. CAD-CAM process for metal & ceramic inlays - without need for impression of teeth or casting procedure, pure titanium, most bio compatible metalwhich are difficult to cast can be made into crowns with the aid of CAD- CAM technology . Another method of making copings - by copy milling (without casting procedures).

Classification of casting alloys : By function & description.

Recent classification, High noble (HN), Noble (N) and predominantly base metal (PB)

Alloys for crown & bridge, metal ceramic & removable partial denture. Composition, function, constituents and application, each alloy both noble and base metal. Properties of alloys : Melting range, mechanical properties, hardness, elongation, modulus of elasticity, tarnish and corrosion.

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

9) **DENTAL WAXES INCLUDING INLAY CASTING WAX**

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

Classification of Waxes **:**

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

distortion & its causes.

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

Other waxes : Applications, mode of supply & properties.

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

10) **DENTAL CASTING INVESTMENTS.**

Definition, requirements, classification

Gypsum bonded - classification. Phosphate bonded, Silica bonded

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

11) **SOLDERING, BRAZING AND WELDING**

Need of joining dental appliances, Terms & Definition

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

WROUGHT BASE METAL ALLOYS

Applications and different alloys used mainly for orthodontics purpose

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

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

Stainless steels: Description, type, composition & properties of each type. Sensitisation & stabilisation, Mechanicalproperties - strength, tensile, yield strength, KHN. Braided & twisted wires their need , Solders for stainless steel, Fluxes, Welding

1. Wrought cobalt chromium nickel alloys, composition, allocation, properties, heat treatment, physical properties.
2. Nickel -Titanium alloys, shape, memory & super elastic
3. Titanium alloys, application, composition, properties, welding, Corrosion resistance

12) **DENTAL CEMENTS**

Definition & Ideal requirements :

Cements: Silicate, Glass ionomer, metal modified glass ionomer, resin modified glass ionomer, zinc oxideeugenol, modified zinc oxide eugenol, zinc phosphate, zinc silico phosphate, zinc poly carboxylate,

Cavity liners and cement bases, Varnishes Calcium hydroxide, Gutta percha

Application, classification (general and individual), setting mechanism, mode of supply, Properties, factors affecting setting, special emphasis on critical procedures of manipulation and protection of cement, mode of adhesion, biomechanism of caries inhibition. Agents for pulpal protection., Modifications and recent advances,

Principles of cementation. Special emphasis on cavity liners and cement bases and luting agents.

13) **DENTAL CERAMICS**

Historical background & General applications.

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

Metal Ceramics (PFM) : Alloys - Types and composition of alloys. Ceramic - Type and Composition.

Metal Ceramic Bond - Nature of bond. Bonding using electro deposition, foil copings, bonded platinum foil, swaged gold alloy foil coping. Technical considerations for porcelain and porcelain fused metal restorations. Recent advances - all porcelain restorations, Manganese core, injection moulded, castable ceramics, glass infiltrated alumina core ceramic (In ceram), ceramic veners, inlays and onlays, and CAD - CAM ceramic.

Chemical attack of ceramic by fluoride. Porcelain furnaces.

14) **ABRASION & POLISHING AGENTS**

Definition of abrasion and polishing. Need of abrasion and polishing. Types of abrasives: Finishing, polishing &cleaning. Types of abrasives: Diamond, Emery, aluminium oxides garnet, pumice, Kieselgurh, tripoli, rouge, tin oxide, chalk, chromic oxide, sand, carbides, diamond, zirconium silicate, Zinc oxide

ABRASIVE ACTION :

Desirable characteristics of an abrasive, Rate of abrasion, Size of particle, pressvire and speed.

Grading of abrasive & polishing agents. Binder, Polishing materials & procedures used. Technical consideration

- Material and procedure used for abrasion and polishing, Electrolytic polishing and burnishing.

15) **DIE AND COUNTER DIE MATERIALS INCLUDING ELECTROFORMING AND ELECTRO POLISHING.**

Types - Gypsum products, Electroforming, Epoxy resin, Amalgam.

16) **DENTAL IMPLANTS** : Evolution of dental implants, types and materials.

17) **MECHANICS OF CUTTING** : Burs and points.

At the end of the course the student should have the knowledge about the composition, properties, manipulative techniques and their various commercial names. The student should also acquire skills to select and use the materials appropriately for laboratory and

clinical use.

RECOMMENDED BOOKS :

1. Science of Dental Materials and Clinical Applications – Shama Bhat. V.U & Nandish B.T C.B.S.Printers &Publishers-New Delhi
2. Phillips Science of Dental Materials - Kenneth J. Anusavice
3. Restorative Dental Materials - 10 edn. Robert G.Craig
4. Notes on Dental Materials - E.G. Combe

7. PRE - CLINICAL PROSTHODONTICS

I. Introduction to Prosthodontics scope and definition.

A. Masticatory apparatus and function:

1. Maxilla & Mandible with or without teeth
2. Muscle 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 to replace lost teeth

D. Outline of Prosthodontics

1. Types of prosthesis
2. Requirements of prosthesis – Physical, biological, esthetic considerations.

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. xed 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. Occlusal rims
5. Temporary denture base
6. Permanent denture base
7. Occlusion
8. Jaw relation – orientation, vertical and centric
9. Christensten‘s phenomenon
10. Key of occlusion
11. Balanced occlusion
12. Abutment etc

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 undercut

C. Fixed Partial Dentures

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

V. Introduction of all steps involved in fabrication of Prosthesis Clinical steps in brief and laboratory steps in detail Impression Making

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

Impression Trays

1. Definition, classification, materials, advantages & disadvantages
2. Selection of trays
3. Special trays
4. Spacer design

Introduction to jaw relation records

1. Definition and type
2. Temporary denture base – Indications, Advantages, Disadvantages, materialsused
3. Occlusion rims – materials, shape, dimensions
4. Clinical procedures of jaw relation recording (in brief)

Articulators and face bow

1. Basic out line
2. Need for articulators
3. Definition, classification, parts, advantages, disadvantages of articulators
4. Definitions, classification, parts, advantage, disadvantages and purpose of face bow transfer
5. Demonstration of face bow transfer to an articulator on a dummy

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

Occlusion

1. Balanced Occlusion – need and advantages
2. Various factors of balanced occlusion

Try in Procedures

1. Anterior try – in
2. Posterior try – in
3. Waxing, carving, polishing and final try – in

Processing Procedures

1. Flasking

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

Recommended books

1. Prosthodontic Treatment of Edentulous Patients - Boucher
2. Syllabus of Complete Denture – Heatwell
3. Theory and Practice of Fixed Prosthodontics – Tylman
4. Removable Partial Denture – McCracken
5. Science of Dental materials Anusavice
6. Dental Materials, Properties and Manipulation – Craig

8. PRE CLINICAL CONSERVATIVE DENTISTRY

Theory

1. Introduction to Conservative Dentistry
2. Definition, Aim & Scope of Conservative Dentistry & Endodontics
3. Classification of Cavities
4. Nomenclature
5. Various Chair side positions
6. Tooth Numbering
7. Restoration – Definition & Objectives
8. Instruments – Classification ,Nomenclature, Design, Formula of hand cutting instruments, Care, Grasps &Rests
9. Rotary Cutting Instruments – Burs, Design & Use .Various Speeds in Cavity preparation
10. Principles of cavity / Tooth preparation for :
    1. Silver Amalgam
    2. Cast gold inlay
    3. Composit resins
    4. Glass Inomer
11. Matrices, Retainers, Wedges
12. Separators – different methods of separations
13. Finishing & polishing of restorations
14. Management of deep carious lesions – pulp capping & pulpotomy
15. Access cavity & brief introduction of root canal instruments
16. Magnification and illumination

LABORATORY EXERCISES

Identification and study of handcutting instruments chisles, gingival margin trimmers, excavators and hatchet.

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

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

5. Polishing of above restorations.
6. Demonstration of Class III and Class V cavity preparation. For composites on extracted toothcompleting the restoration.
7. Polishing and finishing of the restoration of composites.
8. Identification and manipulation of varnish bases like Zinc Phosphate, Poly carboxylate, Glass Ionomers,Zinc Oxide, Euginol cements.
9. Introduction of Loupes while working on preclinical phantomhead
10. Identification and manipulation of various matrices, tooth separators and materials like composites andmodified glass ionomer cements.
11. Cast Restoration
    1. Preparation of Class II inlay cavity
    2. Fabrication of wax pattern
    3. Sprue for inner attachment investing
    4. Investing of wax pattern

5. Finishing and cementing of class II inlay in extracted tooth.

12. Endodontics

1. Identification of basic endodontic instruments
2. Coronal access cavity preparation on extracted upper central incisiors
3. Determination of working length.
4. Biomechanical preparation of root canal space of central incisor
5. Obturation of root canal spaces. Absence of coronal access cavity.
6. Closure of acess cavity

RECOMMENDED BOOKS :

1. Sturdevant - The Art and Science of operative Dentistry - Mosby USA
2. Charbeneu - Principles and Practice of Operative Dentistry - Verghese Publication Bombay
3. Grossman - Endodontic Practice, Verghese Publication Bombay
4. Gopikrishna manual of preclinical conservative dentistry

9. ORAL PATHOLOGY & ORAL MICROBIOLOGY

OBJECTIVES:

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

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

SKILLS

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

1. Introduction :

- A bird‘s eye view of the different pathological processes involving the oral cavity & oral cavity involvement in systematic diseases to be brought out. Interrelationship between General Medicine &General Surgery & Oral Pathology is to be emphasised.

2. Development disturbances of teeth, jaws and soft tissues of oral & paraoral region:

- Introduction to development disturbances – Hereditary, Familial mutation, Hormonal etc. causes tobe highlighted

- Development disturbances of teeth- Aetiopathogenesis, clinical features, radiological features &histopathological features as appropriate.
- The size shape number, structure & eruption of teeth & clinical significance of the anomalies to beemphasised.
- Forensic Odontology - Practical Demonstration Techniques
- Development disturbances of jaws-size & shape of the jaws.
- Development disturbances of oral & paraoral soft tissues- tip & palate- clefts, tongue, gingival,mouth, salivary glands & face

3. Dental Caries

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

4. Pulp & Periapical Pathology & Osteomyelitis

- Aetiopathogenesis & interrelationship, clinical features microbiology, histopathology & radiologicalfeatures (as appropriate) of pulp & periapical lesions & osteomyelities.
- Swquelae of periapical abscess-* summary of space infections, systemic complications significance.

5. Periodontal Diseases :

- Aetiopathogenesis, microbiology, clinical features, histopathology & radiological features (as appropriate) of gingivitis enlargements & periodontitis. Basic Immunological Mechanisms of periodontaldisease to be highlighted.

6. Microbial infections of oral soft tissues :

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

  Bacterial : Tuberculosis syphilis ANUG & its Complications – Cancrum OrisViral : Herpes Simplex, Varicella Zoster, Measles, Mumps & HIV infectionsFungal : Candidal infection. Apthous Ulcers.

7. Common non- inflammatory diseases involving the jaws

- Aetiopathogenesis, clinical features, radiological & laboratory values in diagnosis of : Fibrous dysplasia, Cherubism, ostegenesis imperfect, pagets disease, Cleidocranial dysplasia, Rickets,Achondroplasia, Marfan‘s syndrome & Down‘s syndrome.

8. Diseases of TM Joint :

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

9. Cysts of the Oral & Paraoral region :

- Classification, eitopathogenesis, clinical feastures, histopathology, laboratory & radiological features(as appropriate) of Odontogenic cysts, Non-Odonotogenic cysts, Pseudocysts of jaws & soft tissuecysts of Oral paraoral region.

10. Tumours of the Oral cavity :

- Calssification of Odontogenic , Non- Odontogenic & salivery Gland Tumours.

Aetiopathogenesis, clinical features, histopathology, radiological features & laboratory & diagnosis(as appropriate) of the following common tumours :

a) Odonotogenic – all lesions

b) Non- Odonotogeniic

- Benign Epithelial – Papilloma, Keratoa canthoma & Neevi
- Benign Mesenchymal – Fibrima, Aggressive fibrous lesions, Lipoma, Haemangioma, Lymphangioma,Neurofibroma, Schwznnoma Chondrama, Osteoma & Tori
- Malignant Epithelial – Basal Cell Carcinoma, Verrucous Carcinoma, Squamous Cell
- Carcinoma & Maliganant Melanoma.
- Malignant Mesenchymal – Fibrosarcoma, Osteosarcoma, Giant cell tumour, Chondrosarcoma, Angiosarcoma, Kaposi‘s sarcoma, Lymphomas, Ewing‘s Sarcoma & Other Reticuloendothelial tumours

c) Salivary Gland

- Benign Epithelial neoplasms – Plemorphic Adenoma, Warthin‘s tumour & Oncocytoma
- Maliganant Epithelial Neoplasms – Adenoid Cystic Carcinoma Mucoepidermoid Carcinoma, Acinic cellCarcinoma & Adenocarcinomas

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

e) Metastatic tumours – Tumuors metastasizing to & from oral cavity & the routes of Metastasis

11. Traumatic, Reactive & Regressive lesions of Oral Cavity

- Pyogenic & Giant cell Granuloma, Exostoses fibrous Hyperplasia, Traumatic Ulcer & Traumatic Neuroma
- Attrition, Abrasion, Erosion, Bruxism Hypercementosis Dentinal changes, pulp clacifications & Resorptionof teeth.
- Radiation effects of oral cavity, summary of Physical & Chemical injuries including allergic reactionsof the oral cavity
- Healing of oral wounds & complications – Dry socket.

12. Non neoplastic Salivary Gland Diseases :

- Sialolithiasis , Sialosis Sialadenitis, Xerostomia & Ptyalism

13. Syestemic Diseases involving Oral Cavity

- Brief review & oral manifestations, diagnosis & significance of common blood Nutritional Harmonal &Metabolic diseases of oral cavity.

14. Mucocutaneous lesions

- Aetiopathogenesis clinical features & histopathology of the following common lesions
  Lichen planus lupus Erythematosus Permphigus & Pemphigod lesions Erythema Multiforma, Psoriasis, Scleroderma, Ectodermal Dysplasia Epidermolysis Bullosa & white spnge nevus.

15. Diseases of the Nerves

- Facial Neuralgias – Trigeminal & Glosspharyngeal. VII nerve paralysis Causalgia.
- Psychogenic facial pain & Burning Mouth Syndrome

16. Pigmentation of Oral & Paraoral region & Discolouration of teeth:

- Causes & Clinical Manifestations

17. Diseases of Maxillary Sinus

- Traumatic injuries to sinus, sinusitis, cysts & Tumours involving antrum

18. a) ORAL PRECCNCER- CANCER : Epidemiology aetiology clinical and histopathological features , TNMclassification. Recent advances in diagnosis, management and prevention

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

19. Principals of Basic Forensic Odontology(Pre Clinical Forensic Odontology)

- Introduction definition aims & scope
- Sex and ethnic (racial) differences in tooth morphology and histological age estimation
- Determination of sex & blood groups from buccal mucosa / saliva
- Dental DNA methods
- Bite Marks, rugae patterns & lip prints
- Dental importance of poisons and corrosives
- Overview of forensic medicine and toxicology

20. Clinical application of Dental Anatomy, Physiology and occlusion.

RECOMMENDED BOOKS

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

10. GENERAL MEDICINE

GUIDELINES :

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

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

A dental student should be taught in such a manner that he/she is able to record the arterial pulse, blood pressure and be capable of suspecting by sight and superficial examination of the body-diseases of the heart,lungs, kidneys, blood etc. He should be capable of handling medical emergencies encountered in dental practice.

THEORY SYLLABUS

CORE TOPICS (Must Know)	COLLATERAL TOPICS (Desirable to Know)
1. Aims of medicine Definitions of signs, symptoms, diagnosis, differential diagnosis treatment & prognosis.	
2. Infections Enteric fever, AIDS, herpes simplex, herpes zoster,syphilis diphtheria	Infectious mononucleosis mumps, measles,rubella, malaria
3. G.I.T. Stomatitis, gingival hyperplasia, dysphagia, acid peptic disease, jaundice, acute and chronic hepatitis, cirrhosis of liver ascites.	Diarrhoea Dysentery Amoebiasis Malabsorption

4. CVS Acute rheumatic fever rheumatic valvular heart disease, hypertension, ischemic heart disease, infective endocarditis, common arrhythmias, congenital heart disease, congestive cardiac failure.	
5. RS Pneumonia, COPD, Pulmonary TB, Bronehial asthma	Lung Abscess Pleural effusion Pneumothorax Bronchiectasis Lung cancers.
6. Haematology Anaemias, bleeding & clotting disorders, leukemias, lymphomas, agranulocytosis, splenomegaly, oral manifestations of haematologic disorders, generalized lymphadenopathy.	
7. Renal System Acute nephritis Nephrotic syndrome	Renal failure
8. Nutrition Avitaminosis	Balanced dietPEM Avitaminosis
9. CNS Facial palsy, facial pain including trigeminal neuralgi a,epilepsy, headache including migraine.	- Meningitis - Examination of comatose patient - Examination of cranial nerves
10. Endocrines Diabetes Mellitus Acromegaly, Hypothyroidism, Thyrotoxicosis, Calcium metabolism and parathyroids.	Addison‘s disease, Cushing‘s syndrome.
11. Critical care Syncope, cardiac arrest, CPR, shock	Ac LVFARDS

CLINICAL TRAINING :

The student must be able to take history, do general physical examination (including build, nourishment, pulse, BP, respiration, clubbing, cyanosis, jaundice, lymphadenopathy, oral cavity) and be able to examine CVS, RS and abdomen and facial nerve.

11. GENERAL SURGERY

AIMS :

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

1. **HISTORY OF SURGERY :**

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

2. **GENERAL PRINCIPLES OF SURGERY :**

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

3. **WOUNDS :**

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

4. **INFLAMMATION :**

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

5. **INFECTIONS :**

Acute and chronic abscess skin infections, cellulities, carbuncle, and erysipelas. Specific infections such as tetanus, gangrene, syphilis, gonorrhoes, tuberculosis, Actinomycosis, Vincents angina, cancrum oris. Pyaemia,toxaemia and septicaemia.

6. **TRANSMISSABLE VIRAL INFECTIONS :**

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

7. SHOCK AND HAEMORRHAGE :

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

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

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

9. DISEASES OF LYMPHATIC SYSTEM :

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

10. DISEASES OF THE ORAL CAVITY :

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

11. DISEASES OF LARYNX, NASOPHARYNX :

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

12. NERVOUS SYSTEM :

Surgical problems associated with nervous system with special reference to the principles of peripheral nerve injuries, their regeneration and principles of treatment. Detailed description of afflictions of facial nerve and its management. Trigeminal neuralgia, its presentation and treatement.

13. FRACTURES :

General principles of fractures, clinical presentation and treatment with additional reference to newer methods of fracture treatment. Special emphasis on fracture healing and rehabilitation.

14. PRINCIPLES OF OPERATIVE SURGERY :

Principles as applicable to minor surgical procedures including detailed description of

asepsis, antiseptics, sterilisation, principles of anaesthesia and principles of tissue replacement. Knowledge of sutures, drains, diathermy, cryosurgery and use of Laser in surgery.

15. **ANOMALIES OF DEVELOPMENT OF FACE :**

Surgical anatomy and development of face. Cleft lip and cleft palate-principles of management.

16. **DISEASES OF THYROID AND PARATHYROID:**

Surgical anatomy, pathogenesis, clinical features and management of dysfunction of thyroid and parathyroidglands. Malignant diseases of the thyroid-classification, clinical features and management.

17. **SWELLINGS OF THE JAW :**

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

18. **BIOPSY :**

Different types of biopsies routinely used in surgical practice.

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

12. CONSERVATIVE DENTISTRY & ENDODONTICS

SECOND B.D.S. CURRICULUM

Theory

- Definition, history & Scope of Operative Dentistry
- Nomenclature & tooth numbering system
- Caries definition, classification, features sequelae
- Caries diagnosis & treatment planning
- Principles of cavity preparation
- Armamentarium [hand instruments, rotary instruments, burs]
- Sterilization of instruments
- Dental amalgam
- Cements Luting & Restorative, Calcium hydroxide
- Pulp protection
- Varnishes, Liners & Bases
- Composites & GIC
- Cavity preparation for amalgam class 1, 2, composites class 3, 4 & 5
- Amalgam cavities Conventional & conservative
- Contacts & Contours
- Matrices, wedges & separators
- Finishing & polishing of restorations

Practicals

- Preparation of plaster models [molars, premolars, anteriors]
- Cavity preparation conservative & conventionalClass 1, 2 for amalgam molars & premolars restoration with wax, carving & polishing
- Class 1, 2 & MOD inlay with wax pattern
- Cavity preparation in Typhodont

  Class 1, 2 for amalgam molars & premolarsBase, matrix filling, carving polishing

  Class 3, 4 & 5 for composites

  Class 1 & 2 inlay cavity preparation wax pattern

THIRD B D S CURRICULUM

Lecture classes

- Examination , diagnosis , Treatment planning
- Caries diagnosis including recent trends
- Moisture control in operative dentistry
- Pain control in operative dentistry
- Deep caries management
- Hypersensitive dentin & management
- Pin retained restorations
- Non carious destruction of tooth
- Inlay Vs Amalgam cavity preparations
- Radio diagnosis IOPA, BW, Occlusal, R V G, OPG
- D F G including cavity preparation & restoration
- Pulp response to restorative materials & tooth preparations

Clinical Training

- Chair position, operator position etc
- Examination, Diagnosis & Treatment planning
- Case presentation & discussion
- Cavity preparation for Class 1 caries
- Pulp protection & restoration with amalgam
- Deep caries management
- Temporary restoration
- Pit & fissure sealing
- Non carious restoration with G I C

FOURTH B D S CURRICULUM

- Gingival issue management
- Adhesion in dentistry
- Aesthetic dentistry
- Composite resin restorations

- Casting in detail
- Smear layer in operative dentistry
- Applied dental materials
  1. Cements , Varnishes , Liners & bases
  2. Amalgam
  3. Composites
  4. Direct filling Gold
  5. Ceramics
  6. Impression materials
  7. Biocompatibility of dental materials
- Finishing & polishing of restorative materials

CLINICALTRAINING

- Class 1 & 2 cavity preparation for amalgam & restoration
- Deep caries management
- Temporary restorations
- Pit & fissure sealing
- Non carious lesion management
- Access cavity preparation in extracted tooth maxillary anteriors
- Cleaning & shaping
- Obturation

FINALBDSCURRICULUM

Endodontics

- Definition, scope of endodontics
- Rationale of endodontics
- Endo emergencies, indications, contra indications
- Pulpal & peri apical pathology
- Diagnosis in endodontics
- Endo armamentarium
- Sterilization in endo
- Morphology of pulp space system

- Access cavity preparation
- Working length
- Intracanal irrigants & medicaments
- Shaping & Cleaning of canal system
- Obturating materials & sealers
- Obturation of the Canal system
- Smear layer in endo
- Radiology in endo
- Disolourations & management
- Traumatic injuries and management
- Reorption
- Endo surgery
- LASER s in Dentistry
- Microcopesic dentitry
- Recent advances in Endo

Clinicals

➢ **OAP (Observe, Assist and Perform method)**

The Under graduate students have to **observe** two or more cases following which they will be allowed to **assist** two or more cases. This will help to train the students in clinical work and increase their confidence while P**erforming** a clinical procedure on patients on their own. The OAP protocol is designed to accommodate step by step procedure before actually an UG student performs the dental treatment on the patient.

- Ø Class 2 restorations for amalgam Ø Composite restoration for anteriorsØ GIC restorations
- Ø Endo for maxillay anterior tooth
- Ø Deep caries management
- Ø Case presentations
- Ø Sessional Examination

Recommended Books

I. Art & Science of

1.	Operative Dentistry	Sturdevent
2.	Operative Dentistry	Marzouk
3.	Operative Dentistry	Charbenau
4.	Operative Dentistry	Summit
5.	Operative Dentistry	Remya Reghu
6.	Operative Dentistry	Pickards

II. Endodontics

1. Louis Grossman
2. Nicholl‘s Endodontics

3. Pathway of Pulp	Cohen
4. Endodontics	Ingle
5. Endodontic Therapy	Weine
6. Endodontic Clinical Practice	Flarty
7. Endodontic Practice	Mithra Hegde
8. Endodontics	Anil Kohli

13. ORAL & MAXILLOFACIAL SURGERY

AIMS:

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 suchof those common conditions and has an exposure into the in-patient management of maxillofacial problems.

OBJECTIVES:

a) Knowledge & Understanding:

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

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

b) Skills:

1. A graduate should have acquired the skill to examine any patient with an oral surgical problem in an orderly manner. Be able to understand requisition of various clinical and

laboratory investigations and is capable of formulating differential diagnosis.

2. Should be competent in the extraction of teeth under both local and general anaesthesia.

3. Should be able to carry out certain minor oral surgical procedures under L.A. like frenectomy, alveolar procedures & biopsy etc.

4. Ability to assess, prevent and manage various complications during and after surgery.

5. Able to provide primary care and manage medical emergencies in the dental office.

6. Understanding of the management of major oral surgical problems and principles involved in inpatient management.

DETAILED SYLLABUS

1. Introduction, definition, scope, aims and objectives.

2. Diagnosis in oral surgery:

(A) History taking

(B) Clinical examination

(C) Investigations.

3. Principles of infection control and cross-infection control with particular reference to HIV/AIDS and Hepatitis.

4. Principles of Oral Surgery -

a) Asepsis: Definition, measures to prevent introduction of infection during surgery.

1. Preparation of the patient

2. Measures to be taken by operator

3. Sterilisation of instruments - various methods of sterilisation etc.

4. Surgery set up.

b) Painless Surgery:

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

2. Anaesthetic considerations -

a) Local b) Local with IV sedations

3. Use of general anaesthetic

1. **LOCAL ANAESTHESIA:**

Neurology of Pain

Historical aspects, definition, types of L.A., Indications and Contra Indications, advantage & disadvantage

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

Use of Vaso constrictors in local anaesthetic solution -

Advantages, contra-indications, various vasoconstrictors used.

Anaesthesia of the mandible -

Pterygomandibular space - boundaries, contents etc.

Interior Dental Nerve Block - various techniques

Complications

Mental foramen nerve block

Anaesthesia of Maxilla -

Intra - orbital nerve block.

Posterior superior alveolar nerve block

Maxillary nerve block - techniques.

2. **GENERAL ANAESTHESIA –**

Concept of general anaesthesia.

Indications of general anaesthesia in dentistry.

Pre-anaesthetic evaluation of the patient.

Pre-anaesthetic medication - advantages, drugs used.

Commonly used anaesthetic agents.

Complication during and after G.A.

I.V. sedation with Diazepam and Medozolam.

Indications, mode of action, technique etc.

Cardiopulmonary resuscitation

Use of oxygen and emergency drugs.

Tracheostomy.

c) Access:

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

Bone Removal: Methods of bone removal.

Use of Burs: Advantages & precautions

Bone cutting instruments: Principles of using chisel & osteotome.

Extra-oral: Skin incisions - principles, various extra-oral incision to expose facial skeleton.

a) Submandibular

b) Pre auricular

c) Incision to expose maxilla & orbit

d) Bicoronal incision

d) Control of haemorrhage during surgery

Normal Haemostasis

Local measures available to control bleeding

Hypotensive anaesthesia etc.

e) Drainage & Debridement

Purpose of drainage in surgical wounds

Types of drains used

Debridement: purpose, soft tissue & bone debridement.

f) Closure of wounds

Suturing: Principles, suture material, classification, body response to various materials etc.

g) Post operative care

Post operative instructions

Physiology of cold and heat

Control of pain - analgesics

Control of infection - antibiotics

Control of swelling - anti-inflammatory drugs

Long term post operative follow up - significance.

5. Exodontia: General considerations Ideal Extraction.

Indications for extraction of teeth

Extractions in medically compromised patients.

Methods of extraction -

(a) Forceps or intra-alveolar or closed method.

Principles, types of movement, force etc.

(b) Trans-alveolar, surgical or open method, Indications, surgical procedure.

Dental elevators: uses, classification, principles in the use of elevators, commonly used

elevators.

Complications of Exodontia -

Complications during exodontia

Common to both maxilla and mandible.

Post-operative complications -

Prevention and management of complications.

6. Impacted teeth:

Incidence, definition, aetiology.

(a) Impacted mandibular third molar.

Classification, reasons for removal,

Assessment - both clinical & radiological

Surgical procedures for removal.

Complications during and after removal,

Prevention and management.

(b) Maxillary third molar,

Indications for removal, classification,

Surgical procedure for removal.

(c) Impacted maxillary canine

Reasons for canine impaction,

Localization, indications for removal,

Methods of management, labial and palatal approach,

Surgical exposure, transplantation, removal etc.

7. BIOPSY

Types, indications & Contra indications

8. Pre-prosthetic Surgery:

Definition, classification of procedures

(a) Corrective procedures: Alveoloplasty,

Reduction of maxillary tuberosities,

Frenoctemies and removal of tori.

(b) Ridge extension or Sulcus extension procedures

Indications and various surgical procedures

(c) Ridge augmentation and reconstruction.

Indications, use of bone grafts, Hydroxyapatite

Implants - concept of osseo integration

Knowledge of various types of implants and surgical procedure to place implants.

9. Diseases of the maxillary sinus

Surgical anatomy of the sinus.

Sinusitis both acute and chronic

Surgical approach of sinus - Caldwell-Luc procedure

Removal of root from the sinus.

Oro-antral fistula - aetiology, clinical features and various surgical methods for closure.

10. Disorders of T.M. Joint

Applied surgical anatomy of the joint.

Dislocation - Types, aetiology, clinical features and management.

Ankylosis - Definition, aetiology, clinical features and management

Myo-facial pain dysfunction syndrome, aetiology, clinical features, management- Non

surgical and surgical

Internal derangement of the joint.

Arthritis of T.M. Joint.

11. **Infections of the Oral cavity**

Introduction, factors responsible for infection, course of odontogenicinfections, spread of odontogenic infections through various facial spaces.

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

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

features and management.

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

12. **Benign cystic lesions of the jaws -**

Definition, classification, pathogenesis.

Diagnosis - Clinical features, radiological, aspiration biopsy, use of contrast media and histopathology.

Management - Types of surgical procedures, Rationale of the techniques, indications, procedures, complications etc.

13. **Tumours of the Oral cavity -**

General considerations

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

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

Carcinoma of the oral cavity -

Biopsy - types

TNM classification.

Outline of management of squamous Cell carcinoma: surgery, radiation and chemotherapy

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

14. Fractures of the jaws -

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

mandibular fractures - Applied anatomy, classification.

Diagnosis - Clinical and radiological

Management - Reduction closed and open

Fixation and immobilisation methods

Outline of rigid and semi-rigid internal fixation.

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

Fractures of the middle third of the face.

Definition of the mid face, applied surgical anatomy, classification, clinical features and outline of management.

Alveolar fractures - methods of management

Fractures of the Zygomatic complex

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

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

15. **Salivary gland diseases -**

Diagnosis of salivary gland diseases'

Sialography, contrast media, procedure.

Infections of the salivary glands

Sialolithiasis - Sub mandibular duct and gland and parotid duct.

Clinical features, management.

Salivary fistulae

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

16. **Jaw deformities -**

Basic forms - Prognathism, Retrognathism and open bite.

Reasons for correction.

Outline of surgical methods carried out on mandible and maxilla.

17. **Neurological disorders -**

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

Facial paralysis - Aetiology, clinical features.

Nerve injuries - Classification, neurorhaphy etc.

18. **Cleft Lip and Palate -**

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

19. **Medical Emergencies in dental practice –**

Primary care of medical emergencies in dental practice particularly -

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

(d)Anaphylactic reaction (e) Epilepsy (f) Epilepsy

20. **Emergency drugs & Intra muscular I.V. Injections -**

Applied anatomy, Ideal location for giving these injections, techniques etc.

21. Oral Implantology
22. Ethics
23. Cryo Surgery & Laser

BLUNDER LECTURE

Intentional blunders will be created and projected in the power point presentation and students will be asked to identify and note down the blunders with correct answers. In the end randomly they will be asked to read out the blunders with corrections.

CLINICALS

OAP (Observe, Assist and Perform method)

The Under graduate students have to **observe** two or more cases following which they will be allowed to **assist** two or more cases. This will help to train the students in clinical work and increase their confidence while P**erforming** a clinical procedure on patients on their own. The OAP protocol is designed to accommodate step by step procedure before actually an UG student performs the dental treatment on the patient.

DISCUSSIONS of various clinical topics

Hands on training in

1. Instrumentation
2. Chair position, Operator Position
3. Case history recording
4. Local Anesthesia (LA) (Nerve Block) Administration
5. Performing Extraction
6. Suturing Techniques

7. Post extraction management

Micro Seminars

Very specific short topic will be allotted to each student of a batch posted in the department. A 10 minutes power point presentation by the student in front of the staff and batch mates followed by discussion on the topic.

RECOMMENDED BOOKS:

1. Impacted teeth; Alling John F & etal.

2. Principles of oral and maxillofacial surgery; Vol.1,2 & 3 Peterson LJ & etal.

3. Text book of oral and maxillofacial surgery; Srinivasan B.

4. Handbook of medical emergencies in the dental office, Malamed SF.

5. Killeys Fractures of the mandible; Banks P.

6. Killeys fractures of the middle 3rd of the facial skeleton; Banks P.

7. The maxillary sinus and its dental implications; McGovanda

8. Killey and Kays outline of oral surgery – Part-1; Seward GR &etal

9. Essentials of safe dentistry for the medically compromised patients; Mc Carthy FM

10. Oral & maxillofacial surgery, Vol 2; Laskin DM

11. Extraction of teeth; Howe, GL

12. Minor Oral Surgery; Howe.GL

13. Contemporary oral and maxillofacial surgery; Peterson I.J.& EA

14. Oral and maxillofacial infections; Topazian RG & Goldberg MH

14 ORAL MEDICINE AND RADIOLOGY

AIMS :

1. To train the students to diagnose the common disorders of Orofacial region by clinical examination and withthe help of such investigations as may be required and medical management of oro-facial disorders withdrugs and physical agents.
2. To train the students about the importance, role, use and techniques of radiographs/digital radiograph andother imaging methods in diagnosis.
3. To train the students in, the principles of the clinical and radiographic aspects of Forensic Odontology.

COURSECONTENT

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

Part-I ORAL MEDICINE AND DIAGNOSTIC AIDSSECTION (A) – DIAGNOSTIC METHODS.

(1) Definition and importance of Diagnosis and various types of diagnosis

(2) Method of clinical examinations.

a. General Physical examination by inspection.

b. Oro-facial region by inspection, palpation and other means

c. Train the students about the importance, role, use of saliva and techniques of diagnosis of saliva as partof oral disease

d. Examination of lesions like swellings, ulcers, erosions, sinus, fistula, growths, pigmented lesions, white and red patches

e. Examination of lymph nodes

f. Forensic examination – Procedures for post-mortem dental examination; maintaining dental recordsand their use in dental practice and post-mortem identification; jurisprudence and ethics.

(3) Investigations

a. Biopsy and exfoliative cytology

b. Hematological, Microbiological and other tests and investigations necessary for diagnosis and

prognosis

SECTION (B) – DIAGNOSIS, DIFFERENTIAL DIAGNOSIS

While learning the following chapters, emphasis shall be given only on diagnostic aspects including differentialdiagnosis

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

(2) Diseases of bone and Osteodystrophies: Development disorders: Anomalies, Exostosis and tori, infantile cortical hyperostosis, osteogenesis imperfecta, Marfans syndrome, osteopetrosis. Inflammation – Injury, infection and spread of infection, fascial space infections, osteoradionecrosis.

Metabolic disorders – Histiocytosis

Endocrine – Acro-megaly and hyperparathyroidism

Miscellaneous – Paget's disease, Mono and polyostotic fibrous dysplasia, Cherubism

(3) Temporomandibular joint: Developmental abnormalities of the condyle. Rheumatoid arthritis, Osteoarthritis,

Sub-luxation and luxation

Temporomandibular joint:

Developmental abnormalities of the condyle. Rhumatoid arthritis, Osteoarthritis, Sub-luxation and luxation.

Internal de arrangement of TMJ

-ADD (Anterior disc displacement)with reduction

-ADD without reduction

-Disc perforation

TMJ arthritis.

(4) Common cysts and Tumors:

CYSTS : Cysts of soft tissue: Mucocele and Ranula

Cysts of bone: Odontogenic and nonodontogenic

TUMORS :

Soft Tissue **:**

Epithelial: Papilloma, Carcinoma, Melanoma Connective tissue : Fibroma, Lipoma, FibrosarcomaVascula r: Haemangioma, Lymphangioma

Nerve Tissue : Neurofibroma, Traumatic Neuroma, Neurofibromatosis

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

Hard Tissue **:**

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

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

(5) Periodontal diseases: Gingival hyperplasia, gingivitis, periodontitis, pyogenic granuloma

(6) Granulomatous diseases: Tuberculosis, Sarcoidosis, Midline lethal granuloma, Crohn's Disease andHistiocytosis X

(7) Miscellaneous Disorders: Burkitt lymphoma, Sturge – Weber syndrome, CREST syndrome, Rendu-Osler-Weber disease

SECTION (C) : ORAL MEDICINE AND THERAPEUTICS.

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

1. Infections of oral and paraoral structures :

Bacterial: Streptococcal, tuberculosis, syphillis, vincents, leprosy, actinomycosis, diphtheria and tetanusFungal : Candida albicans

Virus : Herpes simplex, herpes zoster, Ramsay Hunt syndrome, measles, herpangina, mumps, infectiousmononucleosis, AIDS and hepatitis-B

2. Important common mucosal lesions :

White lesions: Chemical burns, leukodema, leukoplakia, fordyce spots, stomatitis nicotina palatinus, white sponge nevus, candidiasis, lichenplanus, discoid lupus erythematosis

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

Ulcers : Acute and chronic ulcers

Pigmented lesions: Exogenous and endogenous

Red lesions : Erythroplakia, stomatitis venenata and medicamentosa, erosive

lesions and denture soremouth.

3. Cervico-facial lymphadenopathy

4. Facial pain :

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

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

- Pain due to intracranial and extracranial involvement of cranial nerves. (Multiple sclerosis, cerebrovascular diseases, trotter's syndrome etc.)
- Neuralgic pain due to unknown causes: Trigeminal neuralgia, glossopharyngeal neuralgia, sphenopalatine ganglion neuralgia, periodic migrainous neuralgia and atypical facial pain

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

5. Altered sensations: Cacogeusia, halitosis

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

7. Oral manifestations of :

(i) Metabolic disorders :

- Porphyria
- Haemochromatosis
- Histocytosis X diseases

(ii) Endocrine disorders :

(a) Pituitary: Gigantism, acromegaly, hypopitutarism

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

(c) Parathyroid glands: Hyperparathyroidism.

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

(e) Pancreas : Diabetes

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

(iv) Blood disorders 3:

(a) Red blood cell diseases

Deficiency anemias : (Iron deficiency, Plummer – Vinson syndrome, pernicious anemia)Haemolytic anemias : (Thalassemia, sickle cell anemia, erythroblastosis fetalis) Aplastic anemia Polycythemia

(b) White Blood cell diseases

Neutropenia, cyclic neutropenia, agranulocytosis, infectious mononeucleosis and leukemias

(c) Haemorrhagic disorders :

Thrombocytopenia, purpura, hemophillia, chrismas disease and von willebrand‘s disease

8. Disease of salivary glands :

(i) Development disturbances : Aplasia, atresia and aberration

(ii) Functional disturbances : Xerostomia, ptyalism

(iii) Inflammatory conditions : Nonspecific sialadenitis, mumps, sarcoidosis heerdfort‘s syndrome (Uveoparotidfever), Necrotising sialometaplasia

(iv) Cysts and tumors: Mucocele, ranula, pleomorphic adenoma, mucoepidermoid carcinoma

(v) Miscellaneous: Sialolithiasis, sjogren‘s syndrome, mikuliez‘s disease and sialosis

9. Dermatological diseases with oral manifestations :

(a) Ectodermal dysplasia (b) Hyperkerotosis palmarplantaris with periodont0opathy

(c) Scleroderma (d) Lichen planus including ginspan‘s syndrome (e) Luplus erythematosus (f) Pemphigus (g) Erythema multiforme (h) Psoriasis

10. Immunological diseases with oral manifestations

(a) Leukemia (b) Lymphomas (c) Multiple mycloma (d) AIDS clinical manifestations,

opportunistic infections, neoplasms (e) Thrombcytopenia (f) Lupus erythematosus (g) Scleroderma (h) dermatomyositis (I) Submucous fibrosis (j) Rheumatoid arthritis (k) Recurrent oral ulcerations including Behcet's syndrome and Reiter's syndrome

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

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

13. Management of dental problems in medically compromised persons:

(i) Physiological changes: Puberty, pregnancy and menopause

(ii) The patients suffering with cardiac, respiratory, liver, kidney and bleeding disorders, hypertension, diabetesand AIDS. Post-irradiated patients.

14. Precancerous lesions and conditions

15. Nerve and muscle diseases :

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

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

16. Forensic odontology:

a. Medicolegal aspects of orofacial injuries
b. Identification of bite marks
c. Determination of age and sex
d. Identification of cadavers by dental appliances, Restorations and tissue remnants

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

Part – II ORAL RADIOLOGY

1. Scope of the subject and history of origin

2. Physics of radiation:

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

3. Biological effects of radiation

4. Radiation safety and protection measures

5. Principles of image production

6. Radiographic techniques:

   (i) Intra-Oral:

   (a) Periapical radiographs (Bisecting and parallel techniques) (b) Bite wing radiographs

   (c) Occlusal radiographs

   (ii) Extra-oral:

   (a) projections of skull and jaw bones and paranasal sinuses (c) Cephalograms (d) Orthopantomograph (e) Projections of Temporomandibular joint and condyle of mandible (f) Projectionsfor Zygomatic arches

   (iii) Specialized techniques:

   (a) Sialography (b) Xeroradiography (c) Tomography

7. Factors in production of good radiographs :

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

8. Radiographic normal anatomical landmarks

9. Faulty radiographs and artifacts in radiographs

10. Interpretation of radiographs in various abnormalities of teeth, bones and other orofacial tissues

11. Principles of radiotherapy of oro-facial malignancies and complications of radiotherapy

12. Contrast radiography

13. Radiography in Forensic Odontology - Radiographic age estimation and post-mortem radiographic

methods

14. Advanced radiography.

PRACTICALS / CLINICALS :

1. A Student is trained to arrive at proper diagnosis by following a scientific and systematic procedure of history taking and examination of the Orofacial region. Training is also imparted in management wherever possible. Training also shall be imparted in various radiographic procedures and interpretation of radiographs.
2. In view of the above each student shall maintain a record of work done, which shall be evaluated for marks at the time of university examination
3. The following is the minimum of prescribed work for recording
   a. Recording of detailed case histories of interesting cases……. 20
   b. Intra-oral radiographs (Periapical, bitewing, occlusal)……. 25
   c. Routine investigative procedure

BOOKS RECOMMENDED:

1. Oral Diagnosis, Oral Medicine & Oral Pathology

- Burket's – Oral Medicine: Diagnosis & Treatment – J.B. Lippincott Company
- Coleman – Principles of Oral Diagnosis – Mosby Year Book
- Jones – Oral Manifestations of Systemic Diseases – W.B. Saunders company
- Mitchell – Oral Diagnosis & Oral Medicine
- Kerr – Oral Diagnosis
- Miller – Oral Diagnosis & Treatment
- Hutchinson – clinical Methods
- Oral Pathology – Shafers

- Sonis.S.T., Fazio.R.C. and Fang.L - Principles and practice of Oral Medicine

2. Oral Radiology

- White & Goaz – Oral Radiology – Mosby year Book
- Weahrman – Dental Radiology – C.V. Mosby Company
- Stafne – Oral Roentgenographic Diagnosis – W.B.Saunders Co.,
- Whaites Eric – Essentials of oral radiography and oral radiology

3. Forensic Odontology

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

15. ORTHODONTICS & DENTOFACIAL ORTHOPAEDICS

COURSE OBJECTIVE:

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

1. Introduction, Definition, Historical Background, Aims and Objectives of Orthodontics and need for Orthodontic care.

2. Growth and Development :
   a. Definition
   b. Growth spurts and Differential growth
   C. Factors influencing growth and Development
   d. Methods of measuring growth
   e. Growth theories (Genetic, Sicher‘s, Scotts, Moss‘s, Petrovics, Multifactorial).
   f. Genetic and epigenetic factors in growth
   g. Cephalocaudal gradient in growth

3. Morphologic Development of Craniofacial Structures
   a. Methods of bone growth
   b. Prenatal growth of craniofacial structures
   c. ostnatal growth and development of cranial base, maxilla, mandible, dental arches and occlusion

4. Functional Development of Dental Arches and Occlusion
   a. Factors influencing functional development of dental arches and occlusion
   b. Forces of occlusion
   c. Wolf‘s law of transformation of bone
   d. Trajectories of forces

5. Clinical Application of Growth and Development

6. Malocclusion

a. Concept of normal occlusion

b. Definition of malocclusion

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

7. Classification of Malocclusion

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

8. Normal and Abnormal Function of Stomatognathic System

9. Etiology of Malocclusion

a. Definition, importance, classification, local and general etiologicalfactors

b. Etiology of following different types of malocclusion:

1) Midline diastema

2) Spacing

3) Crowding

4) Cross-Bite : Anterior / Posterior

5) Class III Malocclusion

6) Class II Malocclusion

7) Deep Bite

8) Open bite

10. Diagnosis and Diagnostic Aids

a. Definition, Importance and classification of diagnostic aids

b. Importance of case history and clinical examination in orthodontics

c. Study models: - Importance and uses. Preparation and preservation ofstudy models

d. Importance of intaoral X-rays in orthodontics

e. Panoramic radiographs : - Principles, Advantages, disadvantages anduses

f. Cephalometrics : Its advantages, disadvantages

1. Definition

2. Description and use of cephalostat

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

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

g. Electromyography and its use in orthodontics

h. Wrist X-rays and its importance in orthodontics

11. General Principles in Orthodontic Treatment Planning of Dental and Skeletal Malocclusions

12. Anchorage in Orthodontics – Definition, Classification, Types and Stability of Anchorage

13. Biomechanical Principles in Orthodontic Tooth Movement

a. Different types of tooth movement

b. Tissue response to orthodontic force application

c. Age factor in orthodontic tooth movement

14. Preventive Orthodontics

a. Definition

b. Different procedures undertaken in preventive orthodontics and theirlimitations

15. Interceptive Orthodontics

a. Definition

b. Different procedures undertaken in interceptive orthodontics

c. Serial extractions: Definition, indications, contra-indication, technique, advantages and disadvantages

d. Role of muscle exercises as an interceptive procedure

16. Corrective Orthodontics

a. Definition, factors to be considered during treatment planning

b. Model analysis: Pont‘s, Ashley Howe‘s, Bolton, Careys, Moyer‘s MixedDentition Analysis

c. Methods of gaining space in the arch : Indications, relative merits and demerits of proximal stripping,arch expansion and extractions

d. Extractions in Orthodontics indications and selection of teeth for extraction

17. Orthodontic Appliances : General

a. Requisites for orthodontic appliances

b. Classification, indications of removable and functional appliances

c. Methods of force application

d. Materials used in construction of various orthodontic appliances – use of

stainless steel, technical considerations in curing of acrylic, Principles of welding and soldering,

fluxes and antifluxes

e. Preliminary knowledge of acid etching and direct bonding

REMOVABLE ORTHODONTIC APPLIANCES

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

FIXED ORTHODONTIC APPLIANCES

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

EXTRAORAL APPLIANCES.

1. Headgears
2. Chincup
3. Reverse pull headgears

MYOFUNCTIONALAPPLIANCES

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

18. Orthodontic Management of Cleft lip and Palate

19. Principles of Surgical OrthodonticsBrief knowledge of correction of :
   a. Mandibular Prognathism and Retrognathism
   b. Maxillary Prognathism and Retrognathism

c. Anterior open bite and deep bite

d. Cross bite

20. Principles of Differential Diagnosis & Methods of Treatment of

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

21. Retention and Relapse

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

22. Obstructive Sleep Apnea

Diagnosis, risk factors, features, treatment-intra oral devices

CLINICALS AND PRACTICALS IN ORTHODONTICS.

I. Basic wire bending exercises Gauge 22 or 0.7 mm

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
6. Bending of U.V

II. Construction of Clasps (Both sides upper / lower) Gauge 22 or 0.7 mm

1. 3/4 Clasp (C-Clasp)
2. Full Clasp (Jackson‘s Crib)
3. Adam‘s Clasp
4. Triangular Clasp

III. Construction of Springs (on upper both sides) Gauge 24 or 0.5 mm

1. Finger Spring
2. Single Cantilever Spring
3. Double Cantilever Spring (Z-spring)
4. T-Springs on premolars

IV. Construction of Canine retractors Gauge 23 or 0.6 mm

1. U-Loop canine retractor

   (Both sides on upper & lower)
2. Helical canine retractor

   (Both sides on upper & lower)
3. Buccal canine retractor - Self supported buccal canine retractor with

   a) Sleeve – 5 mm wire or 24 gauge

   b) Sleeve – 19 gauge needle on any one side
4. Palatal canine rtractor on upper both sides. Gauge 23 or 0.6 mm

V. Labial Bow

Gauge 22 or 0.7 mm

One on both upper an lower

CLINICAL TRAINING DURING III YEAR B.D.S. NO. EXERCISE

01.Making upper Alginate impression

02.Making lower Alginate impression

03.Study Model preparation

04.Model Analysis

a. Pont‘s Analysis

b. Ashley Howe‘s Analysis

c. Carey‘s Analysis

d. Bolton‘s Analysis

e. Tweed‘s Analysis

CLINICAL TRAINING DURING Final YEAR B.D.S.NO. EXERCISE

01. Case History taking

02. Case discussion

03. Discussion on the given topic

04. Cephalometric tracings

a. Down‘s Analysis

b. Steiner‘s Analysis

c. Tweed‘s Analysis

PRACTICAL TRAINING DURING FINAL YEAR B.D.S.

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

Appliance Construction in Acrylic

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

RECOMMENDED REFERENCE BOOKS.

1.	CONTEMPORARY ORTHODONTICS.	WILLIAM R. PROFFIT
2.	ORTHODONTICS FOR DENTAL STUDENTS.	WHITE AND GARDINER
3.	HANDBOOK OF ORTHODONTICS.	MOYERS
4.	ORTHODONTICS – PRINCIPLES AND PRACTICE.	GRABER
5.	DESIGN, CONSTRUCTION AND USE OF REMOVABLE **ORTHODONTIC APPLIANCES.**	C. PHILIP ADAMS

6. CLINICAL ORTHODONTICS : VOL. 1 & 2. SALZMANN

COMPETENCIES

ORTHODONTICS AND DENTOFACIAL ORTHOPAEDICS.

- To understand normal growth and development of facial skeleton and dentition
- Pinpoint aberrations in growth process both dental and skeletal and plan necessary treatment
- Diagnose the various categories of malocclusion
- Able to motivate and explain to the patient (and parent or guardian) about the necessity of treatment
- Plan and execute preventive orthodontics (space maintainers or space regainers)
- Plan and execute interceptive orthodontics (habit breaking appliances.)
- Manage treatment of simple malocclusion such as anterior spacing using removable appliances
- Handle delivery and activation of removable orthodontic appliances
- Diagnose and appropriately refer patients with complex malocclusion to the specialist

16. PAEDIATRIC & PREVENTIVE DENTISTRY

THEORY :

1. INTRODUCTION TO PAEDODONTICS & PREVENTIVE DENTISTRY

- Definition, Scope, Objectives and Importance.

2. GROWTH & DEVELOPMENT:

- Importance of study of growth and development in Peadodontics
- Prenatal and Postnatal factors in growth & development
- Theories of growth & development
- Development of maxilla and mandible and related age changes

3. DEVELOPMENT OF OCCLUSION FROM BIRTH THROUGH ADOLESCENCE.

- Study of variations and abnormalities

4. DENTAL ANATOMY AND HISTOLOGY:

- Development of teeth and associated structures
- Eruption and shedding teeth
- Chronology of eruption of teeth
- Differences between deciduous and permanent teeth
- Importance of first permanent molar

5. DENTAL RADIOLOGY RELATED TO PAEDODONTICS.

6. ORAL SURGICAL PROCEDURES IN CHILDREN

- Indications and contraindications of extractions of primary and permanent teeth in children
- Knowledge of Local Anesthesia/General Anesthesia

7. DENTAL CARIES :

- Historical background
- Definition, aetiology & pathogenesis.
- Caries pattern in primary, young
- Rampant caries, early childhood caries and extensive caries:

* Definition, aetiology, Pathogenesis, Clinical features, Complications &Management

- Role of diet and nutrition in Dental Caries.

- Dietary modifications & Diet counseling
- Caries activity, tests, caries prediction, caries susceptibility & their clinical application

8. GINGIVAL & PERIODONTAL DISEASES IN CHILDREN

- Normal gingival & periodonium in children
- Definition, aetiology & Pathogenesis
- Prevention & Management of gingival & Periodontal diseases

9. CHILD PSYCHOLOGY :

- Definition
- Theories of child psychology
- Psychological development of children with age
- Principles of psychological growth & development
- Factors affecting child's reaction to dental treatment

10. BEHAVIOUR MANAGEMENT :

- Definitions
- Types of behavior encountered in the dental clinic
- Non-pharmacological & pharmacological methods of Behavior Management

11. PAEDIATRIC OPERATIVE DENTISTRY:

- Principles of Pediatric Operative Dentistry
- Modifications required for cavity preparation in primary and young permanent teeth
- Various Isolation Techniques
- Children using various restorative materials like Glass Ionomer, Composites & Silver Amalgam
- Stainless steel, Polycarbonate & Resin Crowns

12. PAEDIATRIC ENDODONTICS

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

Management ofPulpally involved primary, young permanent & permanent teeth.

- Pulp capping – direct & indirect
- Pulpotomy
- Apexogenesis
- Apexification

13. TRAUMATIVE INJURIES IN CHILDREN:

- Classifications & Importance
- Sequelae & reaction of teeth to trauma
- Management of Traumatised teeth.

14. PREVENTIVE & INTERCEPTIVE ORTHODONTICS

- Definitions
- Problems encountered during primary and mixed dentition phases & theirmanagement.
- Serial extractions
- Space management.

15. ORAL HABITS IN CHILDREN :

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

16.DENTAL CARE OF HANDICAPPED CHILDREN AND SPECIAL PATIENTS

- Definition, Aetiolgy, Classification, behavioral and Clinical features & Management of children with:

- Physically handicapping conditions.
- Mentally compromising conditions.
- Medically compromising conditions.

- Genetic disorders.

17. CONGENITAL ABNORMALIETES IN CHILDREN :

- Definition, Classification, Clinical features & Management

18.DENTAL EMERGENCIES IN CHILDREN & THEIR MANAGEMENT.

19.DENAL MATERIALS USED IN PAEDIATRIC DETISTRY

20.PREVENTIVE DENTISTRY :

- Definition
- Principles & Scope
- Types of prevention
- Different preventive measures used in Pediatric Dentistry - pit and fissure Sealants, caries vaccine, etc.

21. DENTAL HEALTH EDUCATION & SCHOOL DENTAL HEALTH PROGRAMMES

22. FLUORDIES :

- Historical background
- Systemic & topical fluorides
- Mechanism of action
- Defluoridation techniques

23.CASE HISTORY RECORDING :

- Outline of principles of examination, diagnosis & treatment planning.

24.SETTING UP OF PAEDODONTICS CLINIC

25.PRACTICALS :

- **OAP (Observe, Assist and Perform method)**

The Under graduate students have to **observe** two or more cases following which they will be allowed to **assist** two or more cases. This will help to train the students in clinical work and increase their confidence while P**erforming** a clinical procedure on patients on their own. The OAP protocol is designed to accommodate step by step procedure before actually an UG student performs the dental treatment on the patient.

- Role play a clinical situation.

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

1. Restorations (silver amalgam, glass lonomer) -10 each.
2. Preventive measures e.g. Oral Prophylaxis -10 cases.
3. Fluoride application -10 cases
4. Extractions -25 cases
5. Case History Recording & Treatment Planning -10 patients
6. Education & motivation of the patients using disclosing agents. educating patients about oral hygiene measureslike tooth brushing, flossing etc.-10 patients
7. Removable space maintainers -2 nos
8. Composite restorations – 5 nos.

BOOKS RECOMMENDED & REFERENCES:

1. Pediatric Dentistry (Infancy through Adolescences)-Pinkham.
2. Kennedy‘s Pediatric Operative Dentistry –Kennedy & Curzon.
3. Occlusal guidance in Pediatric Dentistry –Stephen H.Wei.
4. Clinical Use of Fluorides-Stephen H. Wei.
5. Pediatric Oral & Maxillofacial Surgery –Kaban.
6. Pediatric Medical Emergencies- P.S Whatt.
7. Understanding of Dental Caries –Niki Foruk.
8. An Atlas of Glass Ionomer cements-G.J Mount.

9. Clinical Pedodontics –Finn.
10. Textbook of Pediatric 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. Behavior Management –Wright.
18. Traumatic Injuries –Andreason.
19. Occlusal guidance in Pediatric Dentistry –Nakata.
20. Pediatric Drug Therapy- Tomare.
21. Contemporary Orthodontics – Profitt.
22. Preventive Dentistry-Depaola.
23. Metabolism & Toxicity of Fluoride-Whitfor, G.M.
24. Endodontic Practice – Grossman.
25. Principles of Endodontics-Munford.
26. Endodontics –Ingle.
27. Pathways of Pulp-Cohen.
28. Management of Traumatized anterior Teeth-Hargreaves.

COMPETENCIES

At the completion of the undergraduate training programme the graduates shall be competent in the following.

Paediatric & Preventive Dentistry

Ø Able to instill a positive attitude and behaviour in children towards oral health and understand the principlesof prevention and preventive dentistry right form birth to adolescence.

Ø Able to guide and counsel the guardian/parents with regard to various treatment modalities including different facets of preventive dentistry.

Ø Able to treat dental diseases occurring in the child patient.

Ø Able to manage physically and mentally challenged/ disabled children effectively and efficiently, tailored tothe needs of individual requirement and conditions

17. PUBLIC HEALTH DENTISTRY

A. SYLLABUS

1. Introduction to public health Dentistry: Definition, History, Concepts, Scope , Aims and Objectives of publichealth dentistry
2. Health and Disease – Concepts, Philosophy, Definition and Characteristics
3. General Epidemiology – Definition, epidemiological triad, aims, epidemiological methods, uses
4. Environmental Health – Concepts, sources of water and purification of water, methods of waste disposal,role of dentist in mass disaster
5. Health Education- Definitions, principles, methods and barriers of communication
6. Nutrition and oral health
7. Behavioural science –Definition of sociology, anthropology and psychology and their relevance in dentalpractice and community programmes
8. Health care delivery system in India – oral health care delivery system, primary health care, National healthcare programmes, Health organizations

B. Dental Public Health:

1. Introduction to Dental Public Health Definition , Difference between public health dentist and private practitioner.
2. Epidemiology of oral diseases - Epidemiology of dental caries, Epidemiology of periodontal diseases,Epidemiology of oral cancer.
3. Survey procedure- Definition, steps in survey, different types of survey
4. Planning and evaluation - oral health care planning, planning of prevention of oral diseases ,dental manpowerplanning, planning oral health education for the community, steps of evaluation
5. Delivery of dental care- dental auxiliary, incremental dental care, comprehensive dental care
6. School dental health programme- Aims , Principles , Different school dental health programme
7. Payment plans in dental care -Methods of payment, Dental insurance, Third party payment plans, Postpayment plans
8. Indices- Definition, ideal requisites, classification, various indices used in measurement of oral diseases,criteria, advantages , limitations of indices

9. Interprofessional Education and Care

C. Preventive Dentistry

1. Definitions
2. Levels of prevention
3. Prevention at individual, community and professional levels
4. Diet and Dental caries
5. Plaque control programme
6. Fluorides in dentistry

   History, sources, mechanism of action ,Systemic fluoride, Water fluoridation

   Salt fluoridation, Milk fluoridation, Fluoride tablets, fluoride drops, Topical fluorides Fluoride toxicity, Defluoridation

D. Research Methodology and Biostatistics

1. Definition
2. Types of research
3. Defining and writing a protocol

   Biostatistics –Introduction, collection of data, presentation of data Measures of central tendency, Measures of dispersion, Normal curve,Tests of significance, Sampling methods, Bias, Blind trials, Calibration

E. General Topics

1. Dentist act of India with amendment
2. DCI composition and responsibility
3. Indian Dental Association
4. Practice management- Place and locality, premises and layout, Selection and equipments,

   Maintenance ofthe records, accounts, audit.

PRACTICALS/CLINICALS/ FIELD PROGRAMME IN COMMUNITY DENTISTRY

These exercises designed to help the IV year students :

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

Exercises :

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

literacy, per capita income- coordinating with Family adoption program of Community medicine and collecting additionally oral health data using proforma

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

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

d) Oral health status assessment of the community using indices, Oral hygiene index-simplified, DMFT/DMFS, CPITN, CPI and WHO basic Oral health survey methods-10 cases with proper history recordings

e) Exploring and planning setting of private dental clinics in rural, semi urban and urban locations, availment offinances for dental practices-preparing project report

f) Visit to primary health centre to acquaint with activities and primary health care delivery

g) Visit to water purification plant/public health laboratory/centre for treatment of waste and sewage water

h) Visit to schools -to assess the oral health status of school children ,emergency treatment and health educationincluding possible preventive care at school (tooth brushing technique, demonstration and oral rinse programme)

i) Visit to institution for the care of handicapped, physically, mentally or medically compromised patients

j) Preventive Dentistry : in the department application of pit and fissure sealants, fluoride gel application procedure, A.R.T , Comprehensive oral health care for 5 patients.

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

socialwork in rural areas

SUGGESTED INTERNSHIP PROGRAMME IN PUBLIC HEALTH DENTISTRY

1. **AT THE COLLEGE**

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

a) Total oral health care approach in order to prepare the new graduates in their approach to diagnosis, treatment planning , cost of treatment ,prevention of treatment on schedule, recall maintenance of recordsetc at least 10 patients (both children and adults of all types posting for at least one month)

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

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

Graduates posted for at least one month to familiarize in :

a) Survey methods, analysis and presentation of oral health assessment of school children and communityindependently using WHO basic oral health survey methods

b) Participation in rural oral health education programmes

c) Stay in the village to understand the problems and life in rural areas

III. **DESIRABLE :** Learning use of computers at least basic programme

EXAMINATION PATTERN

1. Case history recording

Oral health assessment using following indices

OHI-S –Green and Vermillion

CPITN

CPI

DMFT, DMFS, def

W H O oral health assessment form (latest)

II Health Education

1. Make one –audio visual aid/poster
2. Delivering health education talk

III Practical work

1. Pit and fissure sealant application
2. Topical fluoride application

BOOKS RECOMMENDED AND REFERENCE

1. Dentistry Dental Practice and the Community By David F Striffler and Brian A. Burt, W.B. Saunders company.
2. Principles of Dental Public Health by James Morse Dunning
3. Dental public health and community dentistry edited. by Anthony Jong, pub. by the C.V. Mosby company
4. Community Oral Health - A system approach by Patricia P. Cormeir & Joyce I. Levy, Published byAppleton-Century-Crofts/New York
5. Community Dentistry – A problem oriented approach by P.C. Dental Hand Book series by Stephen L. Silverman, Ames F Tryon. Series editor -Alvin F. Gardner.PSG publishing comp. any Inc. Littleton Massachusetts
6. Dental Public Health – An introduction to Community Dentistry edited by Geoffrey L. Slack and Brian Burt,Published. by John Wright & sons Bristol
7. Oral Health Surveys - Basic methods 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 & sons Bristol, 1980
10. Preventive Dentistry – by Murray
11. Preventive and Social Medicine by Park and Park

12. Community dentistry by Dr. Soben Peter
13. Introduction to Biostatistics by B.K Mahajan
14. Research Methodology and Biostatistics – Visheshwar Rao
15. Introduction to Statistical Methods by Grewal
16. Textbook of Preventive and Community Dentistry by SS Hiremath 2007

18. PERIODONTOLOGY

OBJECTIVES

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

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

1. Introduction: Definition of Periodontolgy, Periodontics, Periodontia, Brief historical background, Scope ofPeriodontics.
2. Development of periodontal tissues, microstructural anatomy and biology of periodontal tissues in detail Gingiva, Junctional epithelium, Epithelial- mesenchymal interaction, Periodontal ligament, Cementum, Alveolarbone.
3. Defensive mechanisms in the oral cavity: Role of epithelium, Gingival fluid, Saliva and other defensive mechanisms in the oral environment.
4. Age changes in teeth and periodontal structures and their association with periodontal diseases.
5. Classification of Periodontal diseases: Need for classification, Scientific basis for classification, Classificationof gingival and Periodontal diseases as described in World Workshop 1989

Gingivitis :

Plaque associated, ANUG, Steroid hormone influence, Medication influenced, Desquamative gingivitis, other formsof gingivitis as in nutritional deficiency, bacterial and viral infections etc.

Periodontitis :

Adult Periodontitis, Rapidly progressive Periodontitis A & B, Juvenile Periodontitis (localized, generalized andpost juvenile) Prepubertal Periodontitis, Refractory Periodontitis.

6. Gingival diseases: Localized and Generalized gingivitis, Papillary, marginal and diffuse

gingivitis. Etiology,pathogenesis, clinical signs, symptoms and management of:

i) Plaque associated gingivitis

ii) Systemically aggravated gingivitis (sex hormones, drugs and systemic diseases)

iii) ANUG

iv) Desquamative gingivitis – gingivitis associated with lichen planus, pemphigoid, pemphigus and othervesiculobullous lesions

v) Allergic gingivitis

vi) Infective gingivitis- Herpetic, bacterial and candidal

vii) Pericoronitis

viii) Gingival Enlargement (classification and differential diagnosis)

7. Epidemiology of Periodontal diseases :

- Definition of Index, Incidence, prevelance, Epidemiology, endemic, epidemic, and pandemic.
- Classification of Indices (Reversible and Irreversible)
- Deficiencies of Earlier Indices used in Periodontics.
- Detailed understanding of Silness and Loe Plaque index, Loe and Silness gingival Index, CPITN & CPI
- Prevalence of Periodontal diseases in India and other countries.
- Public health significance. All these topics are covered at length in community dentistry. Hence the topicsmay be discussed briefly. However, questions may be asked from the topics for examination

8. Extension of inflammation from gingiva :

- Mechanism of spread of inflammation from gingival area to deeper periodontal structures.
- Factors that modify the spread

9. Pocket :

- Definition, signs and symptoms, classification, pathogenesis, histopathology, root surface

changes and contentsof the pocket

10. Etiology :

- Dental plaque biofilm
- Definition, new concept of biofilm
- Types, composition, bacterial colonization, growth, maturation & disclosing agents
- Role of dental plaque in Periodontal diseases
- Plaque microorganisms in detail and bacteria associated with periodontal diseases.
- Plaque retentive factors
- 1 concepts about cells, Mast cells, Neutrohils, macrophages, lymphocytes, immumoglobulins, complementsystem, immune mechanisms and cytokines in brief.
- Stages in gingivitis- Initial, Early, Established & Advanced
- Periodontal disease activity, continuous paradigm, random burst & asynchronous multiple burst hypothesis.

13. Periodontitis :

- Etiology, histopathology, clinical signs and symptoms,diagnosis and treatment of adult Periodontitis
- Periodontal abscess; definition, classification, pathogenesis, differential diagnosis and treatment
- Furcation involvement, Glickmans classification, prognosis and management
- Rapidly progressive Periodontitis
- Juvenile Periodontitis: Localized and Generalized
- Post- Juvenile Periodontitis
- Periodontitis associated with systemic diseases.
- Refractory Periodontitis

14. Diagnosis :

- Routine procedures, methods of probing, types of probes (according to case history)
- Halitosis : Etiology and treatment

- Mention advanced diagnostic aids and their role in brief

15. Prognosis :

- Definition, types, purpose and factors to be taken in to consideration

16. Treatment plan :

- Factors to be considered

17. Periodontal therapy :

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

B. Plaque control

i. Mechanical toothbrushes, interdental cleaning aids, Dentrifrices

ii. Chemical: classification and mechanism of action of each & pocket irrigation

18. Pocket eradication procedures :

- Scaling and root planning
- Indications
- Aims & objectives
- Healing following root planning
- Hand instruments, sonic, ultrasonic & piezo- electric scalers
- Curettage & present concepts
- Definition
- Indications
- Aims & objectives
- Healing following root planning
- Hand instruments, sonic, ultrasonic & piezo- electric scalers
- Curettage &present concepts
- Definition

- Indications
- Aims & objectives
- Procedures and healing response
- Flap surgery
- Definition
- Types of Flaps, Design of flaps, papilla preservation flap
- Indication & contraindication
- Armamentarium
- Surgical procedure and healing response

19. Osseous surgery :

Osseous defects in Periodontal disease

- Definition
- Classification
- Surgery: resective, additive osseous surgery (osseous grafts with classification of grafts)Plasma Concentrates
- Healing responses
- Other regenerative procedures; root conditioning
- Guided tissue regeneration

20. Mucogingival surgery & periodontal plastic surgeries:

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

21. Splints :

- Periodontal splints
- Purpose & classification
- Principles of splinting

22. Hypersensitivity :

- Causes, Theories& management

23. Implants :

- Definition, types, scope & biomaterials used. Periodontal considerations : such as implant-bone interface,implant- gingiva interface, implant failure, peri-implantitis & management

24. Maintenance phase (SPT) :

- Aims, objectives and principles
- Importance
- Procedures
- Maintenace of implants

25. Pharmaco-therapy

- Periodontal dressings
- Antibiotics & anti-inflammatory drugs
- Local drug delivery system

26. Periodontal mangement of medically compromised patients :

- Topics concerning periodontal management of medically compromised patients

27. Interdisciplinary care :

- Pulpo-periodontal involvement
- Routes of spread of infection
- Simon‘s classification
- Management

28. Periodontal Medicine :Systemic effects of periodontal diseases in brief :

- Cardiovascular diseases, Low birth weight babies etc.

29. Infection control protocol :
    - Sterilisation and various aseptic procedures
30. Ethics
31. Microsurgery
32. Lasers
33. Piezo Surgery

TUTORIALSDURINGCLINICALPOSTING

1. Infection control
2. Periodontal instruments
3. Chair position and principles of instrumentation
4. Maintenance of instruments (sharpening)
5. Ultrasonic, Piezoelectric and sonic scaling- demonstration of technique
6. Diagnosis of Peridontal diseases and determination of prognosis
7. Radiographic interpretation and lab investigation
8. Motivation of patients- oral hygiene instructions

   Students should be able to record a detailed periodontal case history, determine diagnosis, prognosis andplan treatment. Student should perform scaling, root planning, local drug delivery and SPT. Shall be givendemonstration of all periodontal surgical procedures.
9. Case- based learning: Learner centered teaching learning with 5 clinical scenarios with detailed case description and interaction.

OAP (Observe, Assist and Perform method)

The Under graduate students have to **observe** two or more cases following which they will be allowed to **assist** two or more cases. This will help to train the students in clinical work and increase their confidence while P**erforming** a clinical procedure on patients on their own. The OAP protocol is

designed to accommodate step by step procedure before actually an UG student performs the dental treatment on the patient.

DEMONSTRATIONS

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

REQUIREMENTS

1. Diagnosis, treatment planning and discussion and total periodontal treatment- 25 Cases
2. Dental scaling, oral hygiene instructions – 50 complete cases
3. Assistance in periodontal surgery- 5 cases
4. Seminar presentation: One seminar presentation by the student under the supervision of faculty in a small group of 15-25 (micro-seminar).
5. A work record should be maintained by all the students and should be submitted at the time of examinationafter due certification from the head of the department.

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

PRESCRIBEDBOOK:

1. Glickman‘s Clinical Periodontology- Carranza

REFERENCE BOOKS

1. Essentials of Periodontology and Periodontics- Torquil Macphee
2. Contemporary Periodontics- Cohen
3. Periodontal therapy- Goldman
4. Orbans‘ Periodontics- orban
5. Oral health survey - W. H. O
6. Preventive Periodontics- Young and Stiffler
7. Public health dentistry- Slack
8. Advanced Periodontal disease – John Prichard
9. Preventive Dentistry- Forrest
10. Clinical Periodontology- Jan Lindhe
11. Periodontics – Baer & Morris

19. PROSTHODONTICS AND CROWN & BRIDGE

COMPLETE DENTURES

A. Applied Anatomy and Physiology

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

B. Communicating with the patient

1. Understanding the patient‘s mental attitude
2. Instructing the patient

C. Diagnosis and treatment planning for patients-

1. With some teeth remaining
2. With no teeth remaining
   a) Systemic status
   b) Local factor
   c) The geriatric patient
   d) Diagnostic procedures

D. Articulators- discussion

E. Improving the patient‘s denture foundation and ridge relation -an overview.

a) Pre-operative examination
b) Initial hard tissue & soft tissue procedure
c) Secondary hard & soft tissue procedure
d) Implant procedure
e) Congenital deformities
f) Postoperative procedure

F. Principles of Retention, Support and Stability

Definition

Types

Factors affecting retention

Factors affecting stability

Factors affecting support

G. Impressions - detail.

a) Muscles of facial expression.
b) Biologic considerations for maxillary and mandibular impression including anatomical landmarks andtheir interpretation
c) Impression objectives
d) Impression materials
e) Impression techniques
f) Maxillary and mandibular impression procedures
i. Preliminary impressions
ii. Final impressions
g) Laboratory procedures involved with impression making (Beading & Boxing, and cast preparation)

H. Record bases and occlusion rims - in detail

a) Materials & techniques
b) Useful guidelines and ideal parameters
c) Recording and transferring bases and occlusal rims

I. Biological consideration in jaw relation & jaw movements - craniomandibular relations

a) Mandibular movements
b) Maxillo -mandibular relation including vertical and horizontal jaw relations
c) Concept of occlusion- discuss in brief

J. Relating the patient to the articulator

a) Face bow types & uses– discuss in brief

b) Face bow transfer procedure - discuss in brief

K. Recording maxillo mandibular relation

a) Vertical relations
b) Centric relation records
c) Eccentric relation records
d) Lateral relation records

L. Tooth selection and arrangement

a) Anterior teeth
b) Posterior teeth
c) Esthetic and functional harmony

M. Relating inclination of teeth to concept of occlusion- in brief

a) Neutrocentric concept
b) Balanced occlusal concept

N. Trial dentures

O. Laboratory procedures

a) Wax contouring
b) Investing of dentures
c) Preparing of mold
d) Preparing & packing acrylic resin
e) Processing of dentures
f) Recovery of dentures
g) Lab remount procedures
h) Recovering the complete denture from the cast
i) Finishing and polishing the complete denture
j) Plaster cast for clinical denture remount procedure

P. Denture insertion

a) Insertion procedures
b) Clinical errors

c) Correcting occlusal disharmony

d) Selective grinding procedures

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

R. Treating abused tissues - discuss in brief

S. Relining and rebasing of dentures- discuss in brief

T. Immediate complete dentures construction procedure- discuss in brief

U. The single complete denture- discuss in brief

V. Overdentures denture- discuss in brief

W. Dental implants in complete denture - discuss in brief

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

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

Removable Partial Dentures

1. Introduction Terminologies and scope
2. Classification
3. Examination, Diagnosis & Treatment planning & evaluation of diagnostic data.
4. Components of a removable partial dentureMajor connectors
   Minor connectors Rest and rest seats
5. Components of a Removable Partial DentureDirect retainers
   Indirect retainers Tooth replacement

6. Principles of Removable Partial Denture Design
7. Survey and design – in briefSurveyors SurveyingDesigning
8. Mouth preparation and master cast
9. Impression materials and procedures for removable partial dentures
10. Preliminary jaw relation and esthetic try-in for some anterior replacement teeth
11. Laboratory procedures for framework construction-in brief
12. Fitting the framework - in brief
13. Try-in of the partial denture - in brief
14. Completion of the partial denture - in brief
15. Inserting the Removable Partial Denture - in brief
16. Post insertion observations
17. Temporary Acrylic Partial Dentures
18. Immediate Removable Partial Denture
19. Removable Partial Dentures opposing Complete denture

Note : It is suggested that the above mentioned be dealt with wherever appropriate in the following order soas to cover-

1. Definition
2. Diagnosis and treatment planning
3. Types / Classification
4. Materials
5. Methodology – Lab /Clinical
6. Advantages & disadvantages
7. Indications, contraindications
8. Maintenance Phase

Fixed Partial Dentures

Topics to Be Covered In Detail -

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

Topics To Be Covered In Brief -

1. Solder Joints and Other Connectors
2. All - Ceramic Restorations
3. Metal - Ceramic Restorations
4. Preparations of intracoronal restorations.
5. Preparations for extensively damaged teeth.
6. Preparations for periodontally weakened teeth

7. The Functionally Generated Path Technique
8. Investing and Casting
9. Resin - Bonded Fixed Partials Denture

Note : The above mentioned topics be dealt with wherever appropriate in the following orderso as to cover

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

Incorporation of casting lab visit and demonstration of fixed partial denture processing for IV BDS part II students during Final Year part II tooth preparation practical classes

There will be 2 visits of each student in small groups of 2 Hours each wherein they will be demonstrated the various laboratory procedures involved in fabrication of a FPD.

Recommended Books

1. Boucher‘s Prosthodontic Treatment for endontulous patients
2. Syllabus of Complete Dentures/Heartwell
3. Text book of complete Denture/Prothodontics/Winkler
4. Dental laboratory procedures/Rhoads Vol. I, II & III
5. Mastering of the art of complete dentures/Halperin et al
6. Clinical removable partial prosthodontics/Stewart
7. Tylman‘s theory and practice of fixed prosthodontics/Malone
8. Fundamentals of tooth preparation for cast metal and porcelain Restoration/Shillingburg
9. Fundamentals of fixed prosthondontics/Shillingburg
10. McCrakens/Removable partial prosthodontics

11. Macgregor/Clinical dental prosthetics
12. Contemporary fixed prosthodontics/Rosential
13. Contemporary implant dentistry/Misch
14. Tissues intergrated Prosthetics/Branmark
15. Occlusion/Ramfjord and Ash
16. Overdentures/Brewer
17. Maxillo facial prosthetics/John Beumer
18. Implant Dentistry/Babbush
19. Maxillofacial Prosthetics - William Laney
20. Removable Partial Prosthodontics-Ernest L. Miller and Joseph e. Grasso

- **OAP (Observe, Assist and Perform method)**

The Under graduate students have to **observe** two or more cases following which they will be allowed to **assist** two or more cases. This will help to train the students in clinical work and increase their confidence while P**erforming** a clinical procedure on patients on their own. The OAP protocol is designed to accommodate step by step procedure before actually an UG student performs the dental treatment on the patient.

20. AESTHETIC DENTISTRY

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

Recommended books :

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

21. FORENSIC ODONTOLOGY (30 hrs of instruction)

Definition

Forensic is derived from the Latin word forum, which means ‗court of law.' Odontology literally implies ‗the study of teeth.' Forensic odontology, therefore, has been defined by the Federation Dentaire International (FDI) as "that branch of dentistry which, in the interest of justice, deals with the proper handling and examination of dental evidence, and with the proper evaluation and presentation of dental findings".

Objectives of the undergraduate curriculum

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

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

Curriculum for forensic odontology

1. Introduction to forensic dentistry

- § Definition and history
- § Recent developments and future trends

2. Overview of forensic medicine and toxicology

- § Cause of death and postmortem changes
- § Toxicological manifestations in teeth and oral tissues

3. Dental identification

- § Definition
- § Basis for dental identification

- Postmortem procedures
- Dental record compilation and interpretation
- Comparison of data, and principles of report writing
- Identification in disasters and handling incinerated remains
- Postmortem changes to oral structures

4. Maintaining dental records

- Basic aspects of good record-keeping
- Different types of dental records
  - Dental charts
  - Dental radiographs
  - Study casts
  - Denture marking
  - Photographs
- Dental notations
- Relevance of dental records in forensic investigation

5. Age estimation

- Age estimation in children and adolescents
  - Advantages of tooth calcification over ‗eruption' in estimating age
  - Radiographic methods of Schour & Massler, Demirjian et al
- Age estimation in adults
  - Histological methods – Gustafson's six variables and Johanson's modification, Bang & Ramm's dentine translucency
  - Radiographic method of Kvaal et al
- Principles of report writing

6. Sex differentiation

- Sexual dimorphism in tooth dimensions (Odontometrics)

7. Ethnic variations ('racial' differences) in tooth morphology

- Description of human population groups
- Genetic and environmental influences on tooth morphology

§ Description of metric and non-metric dental features used in ethnic differentiation

8. Bite mark procedures

§ Definition and classification

§ Basis for bite mark investigation

§ Bite mark appearance

§ Macroscopic and microscopic ageing of bite marks

§ Evidence collection from the victim and suspect of bite mark

§ Analysis and comparison

§ Principles of report writing

§ Animal bite investigation

9. Dental DNA methods

§ Importance of dental DNA evidence in forensic investigations

§ Types of DNA and dental DNA isolation procedures

§ DNA analysis in personal identification

§ Gene-linked sex dimorphism

§ Population genetics

10. Jurisprudence and ethics

§ Fundamentals of law and the constitution

§ Medical legislation and statutes (Dental and Medical Council Acts, etc)

§ Basics of civil law (including torts, contracts and consumer protection act)

§ Criminal and civil procedure code (including expert witness requirement)

§ Assessment and quantification of dental injuries in courts of law

§ Medical negligence and liability

§ Informed consent and confidentiality

§ Rights and duties of doctors and patients

§ Medical and dental ethics (as per Dentists‘ Act)

Theory sessions and practical exercises

Total hours for the course

§ Didactic – 10-12 hours

§ Practical – 20-25 hours

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

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

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

Approach to teaching forensic odontology

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

Preclinical stream

§ Introduction to forensic odontology

§ Sex differences in odontometrics

§ Dental DNA methods

§ Bite marks procedures

§ Overview of forensic medicine and toxicology

It could prove useful to undertake the preclinical stream in II or III year under Oral Biology/Oral Pathology since these aspects of forensic odontology require grounding in dental morphology, dental histology and basic sciences,which, students would have obtained in I and/or II BDS.

Clinical stream

§ Dental identification

§ Maintaining dental records

§ Radiographic age estimation

§ Medical jurisprudence and ethics

It would be suitable to undertake these topics as part of Oral Medicine and Radiology, since students requirereasonable clinical exposure and acumen to interpret dental records, perform dental postmortems and analyse dental radiographs for age estimation.

- § E t h n i c variations in tooth morphology
- § H i s t o l o g i c a l age estimation

Reference Books :

Text book of oral pathology by, NEVILLEText book of oral pathology by, SHAFER SHAFER'S Text book of oral pathology by, RAJENDRAN

22. ORAL IMPLANTOLOGY (30 hrs of instruction)

Topics in Oral Implantology shall be covered in association with dept. of Oral and Maxillofacial Surgery. Thefollowing topics shall be taught after the surgical phase is covered by Oral Surgery dept.

1. General considerations in prosthodontic reconstruction & biomechanics
2. Prosthodontic components of the Branemark system as a role model
3. Impression procedures & preparation of master cast
4. Jaw relation records and construction of superstructure with special emphasis on occlusion for osseointegrated prosthesis
5. Management of prosthodontic complications & failures
6. Recall & maintenance phase
7. Criteria for success of osseointegrated implant supported prosthesis

Suggested books for reading :

1. Contemporary Implant Dentistry —Carl E. Misch, Mosby, 1993, I edition

2.Osseointegration and Occlusal Rehabilitation……Hobo S, Ichida, E, Garcia L.T.

3.Quintessence Publishing Company, 1989, I edition

Other curricular activities

The following curricular activities should be encouraged in addition to regular lectures and practicals/clinicals

1. Seminars
2. Problem based learning
3. Chair side assisting the teaching staff
4. Class tests at regular intervals
5. Group discussions/ Forum discussions
6. Tutorials

23. BEHAVIOURAL SCIENCES (20 hrs of instruction) Goal:

The aim of teaching behavioural sciences to undergraduate student is to impart such knowledge & skills thatmay enable him to apply principles of behaviour-

a) For all round development of his personality

b) In various therapeutic situations in dentistry

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

Objectives :

A) Knowledge & Understanding :

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

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

B) Skills :

The student shall be able to :

1) Interview the patient and understand different methods of connunication skills in dentist – patientrelationship.
2) Improve patient compliance behaviour.

3) Develop better interpersonal, managerial and problem solving skills.
4) Diagnose and manage minor psychological problems while treating dental patients.

Integration :

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

Training should be integrated with all the departments of Dentistry, Medicine, pharmacology, Physiology andBiochemistry.

Psychology :

1. Definition & Need of Behavioural Science. Determinants of Behaviour. Scope of Behavioural Science.
2. Sensory process & perception perceptual process – clinical applications.
3. Attention – Definition – factors that determine attention. Clinicalapplication.
4. Memory – Memory process – Types of memory, Forgetting.
5. Definition – Laws of learning

   Type of learning. Classical conditioning, operant conditioning, cognitive learning, Insight learning, sociallerning, observational learning, principles of learning – Clinical application.
6. Intelligence – Definition: Nature of intelligence stability of intelligence Determinants of intelligence, clinicalapplication
7. Thinking – Definition: Types of thinking, delusions, problem solving
8. Motivation – Definition: Motive, drive, needs classification of motives
9. Emotions – Definition differentiation from feelings – Role of hypothalamus, Cerebral cortex, adrenal glandsANS. Theories of emotion, Types of emotions.

   Personality. Assessment of personality: Questionnaires, personality inventory, rating scales, Interview projective techniques – Rorshach ink blot test, RAT, CAT

Sociology :

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

Reference Books :

1. General Psychology – S.K. Mangal
2. General Psychology – Hans Raj, Bhatia
3. General Psychology – Munn
4. Behavioural Sciences in Medical practice – Manju Mehta
5. Sciences basic to Psychiatry – Basanth Puri & Peter J. Tyrer

24. ETHICS (20 hrs. of instruction)

INTRODUCTION

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

COURSECONTENT

Introduction to Ethics -

- What is Ethics?
- What are values and norms?
- How to form a value system in one‘s personal and professional life?
- Hippocratic Oath
- Declaration of Helsinki, WHO declaration of Geneva, International code of ethics, DCI Code of ethics.

Ethics in Dentistry -

- Right to be respected
- Truth and confidentiality
- Code of conduct
- Contract and confidentiality
- Charging of fees
- Prescription of drugs
- Malpractice and negligence

Ethics in Research-

- Animal and experimental research

-Human experimentation

- Human volunteer research- informed consent
- Drug trials

RECOMMENDEDREADING

Medical Ethics, Francis C.M, 1 ED 1993, Jaypee Brothers, New Delhi

25. CURRICULUM OF DENTAL INTERNSHIP PROGRAMME

1. The duration of Internship shall be one year
2. All parts of Internship shall be done in a Dental College duly recognized / approved by the Dental Councilof India for the purpose of imparting education and training to Dental graduates in the country
3. The Interns shall be paid stipendiary allowance during the period of an internship not extending beyond aperiod of one year
4. The internship shall be compulsory and rotating as per the regulations prescribed for the purpose.
5. The degree – BDS shall be granted after completion of Internship

Determinants of Curriculum for internship for Dental Graduates :

The curricular contents of Internship training shall be based on

i. Dental health needs of the society
ii. Financial, material and manpower resources available for the purpose
iii. National Dental Health Policy
iv. Socio-economic conditions of the people in general
v. Existing Dental as also the primary health care concept for the delivery of health services.
vi. Task analysis of what graduates in Dentistry in various practice settings, private and government serviceactually perform.
vii. Epidemiological studies conducted to find out prevalence of different dental health problems, taking into consideration the magnitude of dental problems, severity of dental problems and social disruption causedby

these problems.

Objectives

A. To facilitate reinforcement of learning and acquisition of additional knowledge:

a) Reinforcement of knowledge

b) Techniques and resources available to the individual and the community;

social and cultural setting

c) Training in a phased manner, from a shared to a full responsibility

B. To facilitate the achievement of basic skills, attaining competence Vs. maintaining competence in:

I. History taking

II. Clinical examination

III. Performance and interpretation of essential laboratory data

IV. Data analysis and inference

V. Communication skills aimed at imparting hope and optimism in the patient

VI. Attributes for developing working relationship in the Clinical setting and community team work.

C. To facilitate development of sound attitudes and habits

i. Emphasis on individual and human beings and not on disease/symptoms

ii. Provision of comprehensive care, rather than fragmentary treatment

iii. Continuing Dental Education and learning of accepting the responsibility

D. To facilitate understanding of professional and ethical principles:

- Right and dignity of patients
- Consultation with other professionals and referral to seniors / Institutions

- Obligations to peers, colleagues, patients, families and community
- Provision of free professional services in an emergent a situation

E. To initiate individual and group action, leading to disease prevention and dental health promotion at thelevel of individuals families and the community

Content (subject matter)

The compulsory rotating paid Dental Internship shall include training in Oral Medicine & Radiology; Oral & Maxillofacial Surgery; Prosthodontics; Periodontics, Conservative Dentistry, Pedodontics; Oral Pathology& Microbiology; Orthodontics and Public Health Dentistry.

General Guidelines :

1. It shall be task-oriented training. The Interns should participate in various Institutional and field programmes and be given due responsibility to perform the activities in all departments of the Dental Colleges and associated Institutions.

2. To facilitate achievement of basic skills and attitudes the following facilities should be provided to all dental graduates.

I. History taking, examination, diagnosis, charting and recording treatment plan of cases

II. Presentation of cases in a group of Seminar

III. Care and sterilization of instruments used

IV. Performance and interpretation of essential laboratory tests and other relevant investigations

V. Data analysis and inference

VI. Proper use of antibiotics, anti-inflammatory and other drugs, as well as other therapeutic modalities.

VII. Education of patients, their relatives and community on all aspects of dental health care while working in the Institution as also in the field.

VIII. Communication aimed at inspiring hope, confidence and optimism.

IX. Legal rights of patients and obligations of dental graduate under forensic jurisprudence.

1. Oral Medicine & Radiology:

1.	Standardized examination of patients	25 cases
2.	Exposure to clinical pathological laboratory procedure And biopsies	5 cases
3.	Effective training in taking of Radiographs :	2 Full Mouth
	(Intra – oral) I,O (Extra oral) E.O	1
	Cephalogram	1
4.	Effective management of cases in wards	2 cases

2. Oral and Maxillofacial Surgery

A. The Interns 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 & Frenectories, etc.	3

B. The Interns 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 Interns 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 toall 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, bleedingdisorder or haemophylia; (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 aneasthesia.

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. Theyshould have visits to law courts.

3. Prosthodontics and Crown & Bridge

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 Maxillofaical Prosthesis	1
6.	Learning use of Face bow and Semi anatomic articulator technique	
7.	Crowns	

8. Introduction of Implants

4. Periodontics

A. The Interns shall perform the following procedures

1.	Prophylaxis cases	15
2.	Flap Operation cases	2
3.	Root Planning	1 case
4.	Curettage	1 case
5.	Gingivectomy	1 case
6.	Perio-Endo cases	1 case

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

5. Conservative Dentistry & Endodontics

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	5 cases
2.	Inlay and onlay preparations	1 Case
3.	Use of tooth coloured restorative materials	4 cases
4.	Treatment of discoloured vital and non- vital teeth	1 case
5.	Management of dento alveolar fracture	1 case
6.	Management of pulpless, single – rooted teeth without periapical Lesion	4 cases

7.	Management of acute deto alveolar infections	2 cases
8.	Management of pulpless, single – rooted teeth with periapical Lesion.	1 case
9.	Non surgical management of traumatized teeth during formative Period.	

6. Pediatric Pedodontics and Preventive Dentistry :

During their posting in Pedodontics the Interns shall perform :

1.	Topical application of fluorides including varnish	5 cases
2.	Restorative procedures of carious deciduous teeth in children	10 cases
3.	Pulpotomy	2 Cases
4.	Pulpectomy	2 Cases
5.	Fabrication and Insertion of space maintainers	1 Case
6.	Oral Habit breaking appliances	1 Case

7. Oral pathology and microbiology

The Interns shall perform the following

1.	History – recording and clinical examination	5 cases
2.	Blood and Sputum examination	5 cases
3.	Exfoliative Cytology and smears study	2 case
4.	Biopsy – Laboratory Procedure & reporting	1 case

8. Orthodontics

A. The Interns 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 andprocessing 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. Handling of patients with oral habits causing malocclusions

B. The Interns shall do the following laboratory work

1. Wire bending for removable appliances and space maintainers
   Including weldoing and heat treatment procedures 5 cases
2. Soldering exercises, banding & bonding procedures 2 cases
3. Cold – cure and heat –cure acryllsation of simple orthodontic Appliances 5 cases

9. Public Health Dentistry :

1. The Interns shall conduct Helath education sessions for individuals and groups on oral health publichealth nutrition, behavioral sciences, environmental health, preventive dentistry and epidemlology.
2. They shall conduct a short term epedimiological survey in the community or in the

a) Preventive and Interceptived producers for prevalent dental 5 cases
b) diseasesMouth-rinsing and other oral hygiene demonstrations 5 cases
c) Tooth brushing techniques

4. Conduction of oral health education programmes at

A. School setting 2
B. Community setting 2
C. Adult education programmes 2

alternative,participate in the planning and methodology.

3. They shall arrange effective demonstrations of:

5. Preparation of Health Education materials

6. Exposure to team concept and National Health Care systems:

   a) Observation of functioning of health Infrastructure.

   b) Observation of functioning of health case team including multipurpose workers male and female,health educators and other workers

   c) Observation of at least one National Health Programme

   d) Observation of inter linkages of delivery of oral health care with Primary Health care Mobile dental clinics, as and when available, should be provide for this teachings.

10. Elective Posting

The Interns shall be posted for 15 days in any of the dental departments of their choice mentioned in the foregoing.

Organisation of content :

The Curriculum during the 4 years of BDS training is subject based with more emphasis on learning practicalskills. During one year Internship the emphasis will be on competency-based, community oriented training. Thepractical skills to be mastered by the Interns along with the minimum performance level are given under the course content of different departments of Dental Education.

Specification of teaching activities

Emphasis shall be on chair-side teaching, small group teaching and discussions, tutorials, seminars, ward posting,laboratory posting, field visits and self learning.

Use of Resource Materials :

Overhead projectors, slide projectors, film projectors charts diagrams, photographs, posters, specimens, models and other audiovisual aids shall be provided in all the Dental Colleges and attached institutions and field area. If possible, television, video and tapes showing different procedures and techniques to be mastered by the Interns should be provided.

Evaluation

1. Formative Evaluation :

Day-to-day assessment of the Interns during their internship posting should be done. The objective that as the Interns must acquire necessary minimum skills required for carrying out day-to-day professional work competently.

This can be achieved by maintaining records and prerformance data book by all Interns. This will not only provide a demonstrable evidence of the processes of training but more importantly of the Interns own acquisition of competencies as related to performance. It shall form a part of formative evaluation and shall also constitutea component of final grading of Interns.

2. Summative Evaluation :

It shall be based on the observation of the supervisors of different departments and the records and performancedata book maintained by the Interns. Grading shall be done accordingly.

10. Rural Services

In the rural services, the student will have to participate in -

1. Community Health Monitoring programmes and services which include Preventive, Diagnostic andcorrective procedures
2. To create educational awareness about dental hygiene and diseases
3. Conduction of Oral Health Education Programme at -

a.	School setting	-	5
b.	Community Setting	-	5
c.	Adult Education Programme	-	5
4.	Compulsory setup of satellite clinics in remote areas	-	1

5. Lectures to create awareness and education in public forums about the harmful effects of tobaccoconsumption and the predisposition to oral cancer – two Lectures per student

Period of Postings :

1.	Oral Medicine & Radiology	-	1 month
2.	Oral & Maxillofacial Surgery	-	1 ½ months
3.	Prosthodontics & Crown & Bridge	-	1 ½ months
4.	Periodontics	-	1 month
5.	Conservative Dentistry	-	1 Month
6.	Pedodontics	-	1 month
7.	Oral Pathology & Microbiology	-	15 days
8.	Orthodontics	-	1 month
9.	Public Health Dentistry / Rural Services	-	3 months
10.	Elective	-	15 days