

# SUMANDEEP VIDYAPEETH

(Declared as Deemed to be University under Section 3 of the UGC Act 1956)

Accredited by NAAC with a CGPA of 3.53 out of four-point scale at 'A' Grade

Category – I deemed to be university under UGC Act - 2018

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## CURRICULUM

## BACHELOR OF DENTAL SURGERY

(BDS)

Attested CTC

*Sharaney*  
15/2/2021

Vice-Chancellor

Sumandeep Vidyapeeth

An Institution Deemed to be University

Vill. Piparia, Taluka: Waghodia.

Dist. Vadodara-391 760. (Gujarat)



*Umesh*

*Dee*

Dean

K.M.Shah Dental College & Hospital

Sumandeep Vidyapeeth

Piparia, Tal. Waghodia (Vadodara)

AMENDED UP TO DECEMBER -2020

**SUMANDEEP VIDYAPEETH**

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Accredited by NAAC 'A' grade with CGPA score 3.53 on 4 point scale

Category I deemed to be university under UGC regulation 2018

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**REVISED**

**REGULATIONS AND CURRICULUM**

**FOR**

**BACHELOR OF DENTAL SURGERY COURSE**

**Attested CTC**

*Sharaney*  
15/2/2021

**Vice-Chancellor**

**Sumandeep Vidyapeeth**

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**Vill. Piparia, Taluka- Waghodia.**

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## Our Vision:

SUMANDEEP VIDYAPEETH should be a world class centre of excellence for learning and innovation driven by social sensitivity and state-of-the-art technology. The University is amongst the top rated Educational Institute offering contemporary education, high quality research, and training and consultancy services in Health sciences to suit the ever changing needs of society.


## Our Philosophy:

- To train the students through Evidence Based Education System
- To encourage Research in all the disciplines of health sciences.
- To set the Benchmark in Educational Standards, Policies and Practice.
- To function with spirit of humanity, liberty, integrity, responsibility and togetherness.
- To encourage new ideas and inculcate spirit of Entrepreneurship.
- To create and maintain National as well as Global identity.
- To create a rewarding sense of belonging for mutual growth.
- To develop a sense of partnership amongst all.
- To strive hard towards creating human centered development and building knowledge-centered society and nation.

## Our Strength:

- First Largest and Recognized Deemed Health University of Gujarat State.
- First University in India to introduce Evidence Based Education System in Dental Curriculum.
- First deemed university of Gujarat State to start Dental Postgraduate courses (MDS) in all speciality of Dentistry.
- Largest Dental Hospital of Gujarat state having 400 hi-tech dental chairs.

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## SECTION-I

### GOALS OF EDUCATION AND TRAINING IN DENTAL SCIENCE

- The Dental curriculum is oriented towards educating students of B.D.S. course to:
  1. Take up the responsibilities as dental surgeon and be capable of functioning independently in both urban and rural environment with special attention to diagnosis, prevention and treatment planning of the society by being abreast to scientifically proven empirical evidence.
  2. Provide educational experience that allows hands-on-experience both in hospital as well as in community setting with systematic evidence based approach.
  3. Make maximum efforts to encourage substantial evidence based integrated teaching and de-emphasize compartmentalization of disciplines so as to achieve horizontal and vertical integration in different phases.
  4. Offer educational experience that emphasizes health rather than only disease.
  5. Use learner oriented methods, which would encourage clarity of expression, independence of judgment, scientific habits, problem solving abilities, self initiated and self-directed learning thus making a paradigm shift from passive traditional learning to an active, learner-centered and result-oriented approach to learning.
  6. **The following amendments in Teaching Methodology is as under: (Board of Studies Letter No. KMSDCH/BOS/12/2019 dated 26/08/2019 and Board of Management resolution Ref: No. SVDU/NOTFN/06/2019-20 dated 25/11/2019).**

*The changes in Teaching Methodology shall be as following:*

1. *Addition of active learning methods such as flipped classroom, group discussions, seminars etc,*
2. *Use of role play, field visits, student exchange and field projects, demonstrations, peer interactions etc.*

*These will enable students to develop personality, communication skills and other qualities.*

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7. Inculcate in the student the technique to reason out the basic need to understand the evidence, the nature and hierarchy of the evidence, choose the best evidence and how to apply it.

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- Towards achieving these goals, the Dental College shall:
  1. Evolve institutional objectives, which would be in consonance with the national goals and health policy. The institutional objectives should describe the attributes of their product.
  2. Shift the role of Dental teachers from merely imparting knowledge to that of a facilitator and motivator of student learning.
  3. Establish a Dental Education Unit for faculty development, preparation of learning resource materials and for improving evaluation methods.
  4. Continuous upgradation of the faculty to appraise self and the students in implementation of evidence based education system.
- Regular periodic assessment shall be done throughout the course. The examinations are designed with a view to assess the knowledge along with practical and clinical skills, habits and values which are necessary for a Graduate to carry out professional day to day work competently. These assessments are done on an evaluation methodology directed to appraise the didactic as well as the evidence based practice of the student.

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## SECTION-II

### AIM AND OBJECTIVES OF BDS COURSE

#### AIM:

The dental graduates during training in the institutions shall acquire adequate knowledge, necessary skills and such attitudes which are required for carrying out all the activities appropriate to general dental practice involving the prevention, diagnosis and treatment of anomalies and diseases of the teeth, mouth, jaws and associated tissues in line with Evidence based basic and Advanced dental sciences. The graduate shall also understand the concept of community oral health education and be able to participate in the rural health care delivery programs existing in the country. The course aims to cater to an overall multi-dimensional academic upbringing of the student with quality improvement initiatives, evidence-based practice, professional accountability and public expectations.

#### OBJECTIVES:

The objectives shall deal with (a) Knowledge and Understanding (b) Skills and (c) Attitudes.

##### A. Knowledge and understanding-

The graduate shall acquire the following during the period of training-

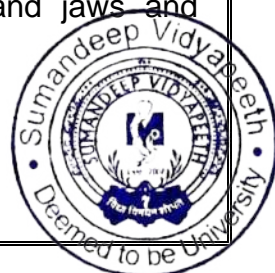
- Adequate knowledge of the scientific foundations on which dentistry is based and good understanding of various relevant scientific methods, principles of biological functions and shall be able to evaluate and analyze scientifically various established facts and data.
- Adequate knowledge of the development, structure and function of the teeth, mouth and jaws and associated tissues both in health and disease and their relationship and effect on general-state of health and also the bearing on physical and social well-being of the patient.

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

  
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- Adequate clinical experience and decision making based on an approach that is beyond the arena of learning to reasoning what is present worldwide.
- Adequate knowledge of biological function and behavior of persons in health and sickness as well as the influence of the natural and social environment on the state of health so far as it affects dentistry.
- Acquire knowledge of basic research methodology and perform research as a part of their dental curriculum.

## B. Skills-

A graduate shall be able to demonstrate the following skills necessary to practice dentistry.

- Able to diagnose and manage various common dental problems encountered in general dental practice, keeping in mind the expectations and the right of the society to receive the best possible treatment available wherever possible.
- Skills needed for Evidence Based Practice for eg. Formulating a question, conducting a literature search, computer skills etc. This will enable the learner to analyze the information at a fairly deep level. Thus the learner shall be fine tuned in the skill to delete some information (trivial and redundant), substitute some information and keep some information.
- Acquire skills to prevent and manage complications if encountered while carrying out various dental surgical and other procedures with scientifically driven inductive techniques to compare published literature as studies, ideas or problems that share a similar concept. This shall foster the synthesis and analysis of information to identify the concept being learned.
- Possess evidence based decision skill to carry out required investigative procedures and ability to interpret laboratory findings
- Inculcate in the student a deliberate practice to concentrate on critical aspects and gradually refining performance through instructor explanatory feedback and repetition.
- Supporting deliberate practice with feedback information will enlighten learners not only of the correctness of their response but the reason behind a correct or

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incorrect response. This shall be done through a continuous assessment of both didactic and psychomotor skills and EBES integrated assignments.

g. Promote oral health and help to prevent oral diseases wherever possible with critical appraisal of observational cross sectional, case control or cohort studies especially pertaining to the Indian sub-continent.

h. Competent in controlling pain and anxiety during dental treatment.

### C. Attitudes-

A graduate shall develop during the training period the following attitudes-

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

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

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

l. Willingness to participate in the continuing education programs to update knowledge and professional skills from time to time.

m. To help & participate in implementation of National Health programs.

n. To become a creative, flexible and critical in thinking to make treatment effective

### Program Outcome

- Adequate knowledge of the scientific foundations on which dentistry is based and good understanding of various relevant scientific methods, principles of biological functions and shall be able to evaluate and analyze scientifically various established facts and data.

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

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- Adequate knowledge of clinical disciplines and methods, which provide a coherent picture of anomalies, lesions and diseases of the teeth, mouth and jaws and preventive, diagnostic and therapeutic aspects of dentistry.
- Adequate clinical experience and decision making based on an approach that is beyond the arena of learning to reasoning what is present worldwide.
- Adequate knowledge of biological function and behavior of persons in health and sickness as well as the influence of the natural and social environment on the state of health so far as it affects dentistry.
- Adequate training in identifying research questions analyze and interpret existing evidences and use this background for designing pertinent researches
- Acquire a quality of lifelong learning to update with basic and recent advances within the program
- Adopt ethical principles in all aspects of practice.
- Possess Professional honesty and integrity and deliver patient care irrespective of social status, caste, creed or religion of the patient.

❖ The educational literature recognizes four approaches to learning: Receptive, Directive, Guided discovery and Exploratory. Each has its merits, depending on the intended instructional outcome. The oldest and most traditional approach to learning is receptive. In this means of delivering content, the learner is passive. An analogy is that the instructor

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opens up the head of the learner, pours in the content, and hopes the brain absorbs it like a sponge. Examples include traditional lecture, a video, or a textbook.

- Although receptive learning environments do not provide active engagement with the content, they can still promote learning.
  - In the directive approach, learners gradually build skills and knowledge by progressing from basic to advanced skills. The learner responds to questions, and the instructors provide corrective feedback. This approach can be used to teach procedural skills for eg. routine traditional methods of diagnosis and treatment planning.
  - Guided discovery learning allows for the development of knowledge and skills through real work-related experiences. Instructors provide relevant problems, resources, and guidance. For e.g. problem or case-based studies and researches conducted by the student in person.
  - Exploratory approaches incorporate a collaborative structure whereby learners can exchange ideas and resources with other clinicians with respect to a common outcome goal. Examples of this include use of the Internet to explore current research and evidence-based practice. Many educational activities are a combination of one or more of these approaches. The best approach needs to match the instructional goals and the learner's level of knowledge and skill.
- ❖ Our University, as an instructional planner, has selected the best mix of modes, methods, and learning approaches to achieve the intended educational outcome of course with the greatest credence given to an Evidence Based Education System.
- ❖ Thus in nutshell the Dental curriculum is designed and custom made to:
1. Transfer, translate and integrate basic and research findings into curriculum.
  2. Involve and integrate health research in teaching and learning.
  3. Provide students with focused tasks for research and integration of the same.
  4. Develop seminars and workshops for faculty and students to provide updates.
  5. Practice based on Evidence Based Education System.

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## SECTION-III REGULATIONS

### 1. Eligibility Criteria for admission:

#### 1.1. QUALIFYING EXAMINATION-

A candidate seeking admission to First BDS course:

1.1.1. Shall have passed the Two years Pre-University Examination with English, Physics Chemistry and Biology,

OR

1.1.2. Shall have passed any other examination conducted by Boards/Councils/Intermediate Education established by State Governments/ Central Government and recognized as equivalent to two year Pre-University examination by the Sumandeep Vidyapeeth/Association of Indian Universities (AIU), with English as one of the subjects and Physics, Chemistry and Biology as optional subjects and the candidate shall have passed subjects of English, Physics, Chemistry and Biology individually.

OR

1.1.3. Shall have passed Intermediate examination in Science of an Indian University/Board/Council or other recognized examining bodies with Physics, Chemistry and Biology, which shall include a practical test in these subjects and also English as compulsory subject. The candidate shall have passed subjects of English, Physics, Chemistry and Biology individually.

OR

1.1.4. Shall have passed pre- professional/ pre- medical examination with Physics, Chemistry and Biology, after passing either the higher secondary school examination. The pre-professional/ pre- medical examination shall include a practical test in Physics, Chemistry and Biology and also English as compulsory subject.

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1.1.5. Shall have passed first year of the three year degree course of a recognized University with Physics, Chemistry and Biology including a practical test in these

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subjects provided the examination is an 'University Examination' provided that the candidate shall have passed subjects of English, Physics, Chemistry and Biology individually in the pre university or other examinations mentioned in the clauses above.

OR

1.1.6. Shall have passed B.Sc. Examination of an Indian University, provided that he/she has passed the B.Sc. examination with not less than two of the following subjects:

Physics, Chemistry, Biology (Botany, Zoology) provided the candidate has passed subjects of English, Physics, Chemistry and Biology individually in the qualifying examinations mentioned in clause 1.1.1, 1.1.2, 1.1.3.

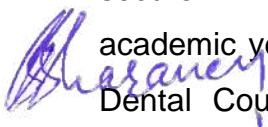
AND

1.2. National Eligibility-cum- Entrance Test for admission to BDS course

- There shall be a single eligibility-cum-entrance examination namely “National Eligibility-cum-Entrance Test for admission to BDS course” in each academic year.”
- In order to be eligible for admission to BDS Course for a particular academic year, it shall be necessary for a candidate to obtain minimum of marks of 50<sup>th</sup> percentile in ‘National Eligibility-cum-Entrance Test to BDS course’ held for the said academic year. However, in respect of candidates belonging to Scheduled Castes, Scheduled Tribes, Other Backward Classes, the minimum marks shall be at 40<sup>th</sup> percentile. In respect of candidates with locomotory disability of lower amendments, the minimum marks shall be at 45<sup>th</sup> percentile. The percentile shall be determined on the basis of highest marks secured in the All-India common merit list in “National Eligibility-cum-Entrance Test for admission to BDS course.”

• Provided when sufficient number of candidates in the respective categories fail to secure minimum marks as prescribed in National Eligibility-cum-Entrance Test held for any academic year for admission to BDS Course, the Central Government in consultation with Dental Council of India may at its discretion lower the minimum marks required for

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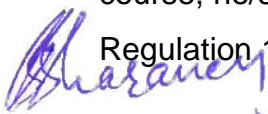


admission to BDS Course for candidates belonging to respective categories and marks so lowered by the Central Government shall be applicable for the said academic year only.

- The reservation of seats in dental colleges for respective categories shall be as per applicable laws prevailing in States/Union Territories. An all India merit list as well as State-wise merit list of the eligible candidates shall be prepared on the basis of the marks obtained in National Eligibility-cum-
- Entrance Test and candidates shall be admitted to BDS course from the said lists only.
- No Candidate who has failed to obtain the minimum eligibility marks as prescribed in Clause (ii.) above shall be admitted to BDS course in the said academic year.
- All admissions to BDS course within the respective categories shall be based solely on marks obtained in the National Eligibility-cum-Entrance Test.
- To be eligible for admission to BDS Course, a candidate must have passed in the subjects of Physics, Chemistry, Biology/Biotechnology and English individually and must have obtained a minimum of 50% marks taken together in Physics, Chemistry and Biology/Biotechnology at the qualifying examination as mentioned in Sub-regulation 2 of Regulation 1 and in addition must have come in the merit list of "National Eligibility-cum-Entrance Test" for admission to BDS course. In respect of candidates belonging to Scheduled Castes, Scheduled Tribes or other Backward Classes the minimum marks obtained in Physics, Chemistry and Biology/Bio-technology taken together in qualifying examination shall be 40% instead of 50%. In respect of candidates with locomotory disability of lower limbs in terms of sub-regulation 4, after the commencement of these amendments, of Regulation 1 above, the minimum marks in qualifying examination in Physics, Chemistry and Biology/Bio-technology taken together in qualifying examination shall be 45% instead of 50%.
- Provided that a candidate who has appeared in the qualifying examination the result of which has not been declared, he/she may be provisionally permitted to take up the National Eligibility-cum-Entrance Test and in case of selection for admission to the BDS course, he/she shall not be admitted to that course until he fulfills the eligibility criteria under

Regulation 1.

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### 1.3. Common Counselling:

- 1.3.1. There shall be a common counselling for admission to BDS course in all dental educational institutions on the basis of merit list of the National Eligibility-cum-Entrance Test.
- 1.3.2. The designated authority for counselling for the 15% All India Quota seats of the contributing States and all BDS seats of Dental Education Institutions of the Central Government universities established by an Act of Parliament and the Deemed Universities shall be the Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India.
- 1.3.3. The counselling for admission to BDS course in a State/Union Territory, including Dental Education Institutions established by the State Government, University established by an Act of State/Union Territory Legislature, Trust, Society, and Minority Institutions shall be conducted by the State/Union Territory Government.
- 1.3.4. In case any dispute arises on such common counselling, the respective State Governments shall refer the matter to the Central Government and its decision shall be final, in this regard.

### 2. Age Limit:

The candidate shall have completed the age of 17 years at the time of admission or shall complete this age on 31<sup>st</sup> December of the year in which he/she seeks admission.

### 3. Duration of the course:

Is a total of FOUR Academic years and ONE year of rotating Internship program. There shall be at least 240 teaching days in each Academic year.

Any student who does not clear the BDS course in all subjects within a period of 9 years, including one year compulsory rotary paid internship from the date of admission shall be discharged from the course.

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### 4. Titles and Year Wise Distribution of the Subjects for Study:

**FIRST YEAR BDS-**

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1. General Human Anatomy including Embryology and Histology
2. General Human Physiology and Biochemistry, Nutrition and Dietetics
3. Dental Anatomy, Embryology and Oral Histology
4. Dental Materials
5. Preclinical Prosthodontics and Crown & Bridge
6. Evidence Based Dentistry
7. Management science
8. Behavioural science

### **SECOND YEAR BDS-**

1. General Pathology and Microbiology
2. General and Dental Pharmacology and Therapeutics
3. Dental Materials
4. Oral Pathology & Oral Microbiology
5. Preclinical Prosthodontics and Crown & Bridge
6. Preclinical Conservative Dentistry & Endodontics
7. Preclinical orthodontics
8. Evidence Based Dentistry

### **THIRD YEAR BDS-**

1. General Medicine
2. General Surgery
3. Oral Pathology and Microbiology
4. Oral Medicine and Radiology
5. Public Health Dentistry
6. Prosthodontics and Crown & Bridge
7. Periodontology
8. Oral & Maxillofacial Surgery
9. Conservative Dentistry & Endodontics
10. Orthodontics & Dentofacial Orthopedics
11. Paediatric & Preventive Dentistry
12. Evidence Based Dentistry

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## FOURTH YEAR BDS-

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

### 5. Teaching Hours:

The Teaching hours for each subject from First to Fourth year – Theory and Practical/Clinical are shown in the Tables I to VI-

TABLE I: TOTAL TEACHING/LEARNING HOURS FOR BDS PROGRAM-

Sr. No.	Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
1	General Human Anatomy including Embryology, Osteology & Histology	100	175	-	275
2	General Human Physiology	120	60	-	180
	Biochemistry, Nutrition & Dietetics	70	60	-	130
3	Dental Materials	80	240	-	320
4	Dental Anatomy, Embryology and Oral Histology	105	250	-	355
5	Dental Pharmacology and Therapeutics	70	20	-	90
6	General Pathology	55	55	-	110
	Microbiology	65	50	-	115
7	General Medicine	60	-	90	150
8	General Surgery	60	-	90	150

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9	Oral Pathology and Microbiology	145	130	-	275
10	Oral Medicine and Radiology	65	-	170	235
11	Paediatric & Preventive Dentistry	65	-	170	235
12	Orthodontics & Dental Orthopedics	50	80	140	220
13	Periodontology	80	-	170	250
14	Oral & Maxillofacial Surgery	70	-	270	340
15	Conservative Dentistry & Endodontics	135	200	370	705
16	Prosthodontics and Crown & Bridge	135	300	370	805
17	Public Health Dentistry including Lectures on Tobacco Control & Habit Cessation	60	-	200	260
18	Evidence Based Dentistry	64	-	-	64
	Total	1654	1540	2070	5264

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TABLE –II: TEACHING HOURS FOR FIRST YEAR BDS

Sr. No.	Subject	Lecture Hours	Practical Hours	Total Hours
01	General Human Anatomy including Embryology, Osteology and Histology	100	175	275
02	General Human Physiology,	120	60	180
03	Biochemistry, Nutrition and Dietetics	70	60	130
04	Dental Anatomy, Embryology, and Oral Histology	105	250	355
05	Dental Materials	20	40	60
06	Preclinical Prosthodontics and Crown & Bridge	-	100	100
07	Evidence Based Dentistry	16	-	16
08	Management Science	40	-	40
09	Behavioral Science	20	-	20
	Total	491	685	1176

TABLE –III: TEACHING HOURS FOR SECOND YEAR BDS

Sr. No.	Subject	Lecture Hours	Practical Hours	Total Hours
01	General and Dental Pharmacology and Therapeutics	70	20	90
02	General Pathology	55	55	110
03	Microbiology	65	50	115
04	Dental Materials	60	200	260
05	Oral Pathology and Microbiology	25	50	75
06	Pre-clinical Prosthodontics and Crown & Bridge	25	200	225
07	Pre-clinical Conservative Dentistry	25	200	225
08	Pre-clinical Orthodontics and Dentofacial Orthopedics	-	50	50
09	Evidence Based Dentistry	16	--	16
	Total	341	775	1116

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**TABLE-IV: TEACHING HOURS FOR THIRD YEAR BDS**

Sr. No.	Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
01	General Medicine.	60	-	90	150
02	General Surgery.	60	-	90	150
03	Oral Pathology and Microbiology.	120	80	-	200
04	Oral Medicine and Radiology	20	-	70	90
05	Conservative Dentistry & Endodontics.	30	-	70	100
06	Oral & Maxillofacial Surgery.	20	-	70	90
07	Orthodontics & Dentofacial Orthopedics.	20	-	80	100
08	Paediatric& Preventive Dentistry.	20	-	70	90
09	Periodontology.	30	-	70	100
10	Prosthodontics and Crown & Bridge.	30	-	70	100
11	Public Health Dentistry	40	-	56	96
12	Evidence Based Dentistry	16	-	-	16
	<b>Total</b>	<b>466</b>	<b>80</b>	<b>736</b>	<b>1282</b>

**TABLE -V: TEACHING HOURS FOR FOURTH YEAR BDS**

Sr. No.	Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
01	Oral Medicine and Radiology.	45	-	100	145
02	Orthodontics & Dentofacial Orthopedics.	30	30	70	130
03	Paediatric& Preventive Dentistry.	45	-	100	145
04	Periodontology.	50	-	100	150
05	Oral & Maxillofacial Surgery.	50	-	200	250
06	Prosthodontics and Crown and Bridge.	80	-	300	380
07	Conservative Dentistry & Endodontics.	80	-	300	380
08	Public Health Dentistry.	60	-	200	260

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09	Evidence Based Dentistry	16	-	-	16
	Total	456	-	1420	1876

## 6. EXAMINATION

### 6.1 INTERNAL ASSESSMENT EXAMINATIONS:

***The following amendments in Internal theory exam for all subjects is as under: (Board of Studies Letter No. KMSDCH/BOS/06/AY2016-17 dated 24/01/2017 and Board of Management resolution Ref: No. SVDU/R/2017-18/1565 dated 21.09.2017)***

*The change in internal theory examination for all subjects shall be as following:*

*The university examination shall comprise of 10 MCQs for 10 marks*

*This enables the student to well prepared for the NEET examination*

6.1.1 The Internal assessment examination for each year of BDS course shall be conducted by the authorities of the dental college.

6.1.2 There shall be THREE Internal examinations (including Preliminary examination) during each year of BDS course. All these three internal examinations are compulsory and shall include Theory as well as Practical/Clinical examination. The average marks of these examinations shall be considered for calculation of internal assessment marks.

6.1.3 The First Internal examination (TERMINAL): shall be conducted at the end of First term of the academic year in the following manner-

- Theory examination- It shall consist of 100 marks with two sections-I & II. Section I and II shall have Two long questions of 15 marks each two short notes to attempted out of three for 5 marks each and five multiple choice questions of 2 marks each.
- Practical/ Clinical examination- It shall consist of 100 marks according to the scheme of respective departments.

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6.1.4 The Second Internal examination: shall be conducted in the mid of the second term of the academic year in the following manner-

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- Theory examination- It shall consist of 100 marks having 50 MCQ for 2 Marks each.
- Practical/ Clinical examination- It shall consist of 100 marks. For subjects of I, II and III BDS the marks obtained by the candidate in the practical examination conducted in the II term at the level of the respective Department shall be considered for the second internal examination. For IV BDS the marks obtained by the candidate in the practical examination at the end of four clinical postings by the respective department shall be considered for the second internal examination.

6.1.5 The Third Internal examination: called as the Preliminary examination shall be completed atleast 21 days prior to the University examination and shall be conducted in the following manner-

- Theory examination- It shall consist of 100 marks with two sections-I & II. Section I and II shall have Two long questions of 15 marks each two short notes to attempted out of three for 5 marks each and five multiple choice questions of 2 marks each.
- Practical/ Clinical examination- It shall consist of 100 marks according to the scheme of respective departments.

6.1.6 ***The following amendments in Internal Assessment and Continous Cumulative Evaluation System is as under: (Board of Studies Letter No. KMSDCH/ BOS/1398 A and 1399/2015 dated 20/11/2015 and Board of Management resolution Ref: No. SV/R/2016/10440-2 dated 23/06/2016).***

*The changes in Internal Assessment marks pattern shall be as following:*

- The Internal examination marks and CCES should be considered out of ten marks each then added and averaged in both theory and practicals.
- The internal assessment marks in the subject of Pre-clinical Prosthodontics and Pre-clinical Conservative Dentistry shall be calculated out of 20 marks.

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**The following amendments in Internal Assessment and Continuous Cumulative Evaluation System is as under: (Board of Studies Letter No. KMSDCH/Dean /1105a/2018 dated 12/11/2018 and Board of Management resolution Ref: No. SVDU/R/2019/5209 dated 2/01/2019).**

**The changes in Internal Assessment marks pattern shall be as following:**

- 6.1.7 The marks obtained by the candidate in all the three internal examination shall be considered for calculating 60% of the total internal assessment marks.
- 6.1.8 The remaining 40 % of the internal assessment marks shall be calculated from the Continuous cumulative evaluation system (CCES) earned by the student in Theory and Practicals/clinical individually.
- 6.1.9 The internal assessment marks for the subject of Evidence Based Dentistry shall comprise of twenty (20) marks which will be the total of the two assignments of ten (10) marks each.
- 6.1.10 The Internal Marks shall be known to students before they appear for University theory examination. The transcript of Internal Marks prepared by the Student Section, KMSDCH shall be signed by each student against his/her name.
- 6.1.11 The Internal Assessment marks shall be submitted to the Dean, KMSDCH by the HOD of each department in the time period prescribed by the office. The Dean, KMSDCH shall submit these marks to the Controller of Examination, SV.

## 6.2 UNIVERSITY EXAMINATION:

### 6.2.1 Eligibility Criteria

#### 6.2.1.1 Attendance:

- Every candidate shall fulfill at least 75 % of the attendance during the each academic year of the BDS course; separately for both- Theory and Practical/ Clinical in the exam going subjects.
- In case of a subject in which there is no examination at the end of the academic year/semester, the percentage of attendance shall not be less than 70%.
- The candidate shall be detained only in that subject/s in which the attendance is below 75% and/or work quota is not complete.

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- On extreme compassionate grounds, the Dean refers the matter to the Student Reform's Committee for authorization to grace Five percent of the attendance, for both- Theory and Practical/ Clinical.
- Student should obtain NOC for successfully attending EBD module. Student fails to do so shall not be allowed to appear for the university examination for all subjects of that year.

#### 6.2.1.2 Progress and Conduct:

- Every candidate shall maintain a Workdone record book/journal containing the details of workdone during the training program.
- Every candidate shall complete the Work quota as designed by the department. The satisfactory work completion certificate shall be certified by the subject in-charge and the Head of the department.
- Every candidate shall satisfactorily complete the assignments related to EVIDENCE BASED DENTISTRY allotted by the respective departments.
- The candidate appearing for the university examination shall fulfill the prescribed requirements of all subject appearing departments and submit the following certificates/ copies of certificates along with the Examination Form to the Controller of Examination:
  - A copy of mark sheet of Last university examination.
  - An NOC from the Student section and EBD co-ordinator, KMSDCH, Account Section, Hostel, Mess, Transport section, Dept. of sports, Learning Resource Centre, SV, which then will be countersigned by Dean, KMSDCH.

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## 6.2.2. SCHEME OF UNIVERSITY EXAMINATION:

6.2.2.1. The Undergraduate Course shall have TWO University Examinations in each Academic year:

- The Regular Annual examinations shall be conducted at the end of One full academic year as follow:
  - I B.D.S. Examination at the end of first academic year.
  - II B.D.S. Examination at the end of second academic year.
  - III B.D.S. Examination at the end of third academic year.
  - IV B.D.S. Examination at the end of fourth academic year.
- Supplementary Examination:

The supplementary examination for Unsuccessful candidate of First, Second, Third, and Fourth BDS shall be conducted not before FOUR months and not after SIX months from the date of declaration of results.

6.2.2.2. The University Examination shall consist of:

- Written/Theory examination
- Clinical and /or Practical examination
- Viva-Voce examination

6.2.2.2.1. Written/Theory Examination:

A. Following shall be the Subjects & Titles of papers for University examinations:

- First B.D.S. Examination:
  - General Anatomy including Embryology and Histology
  - General Human Physiology and Biochemistry, Nutrition and Dietetics
  - Dental Anatomy, Embryology and Oral Histology.
  - Evidence Based Dentistry

• Second B.D.S. Examination:

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- General and Dental Pharmacology and Therapeutics
- General Pathology and Microbiology
- Dental Materials
- Evidence Based Dentistry
- Third B.D.S. Examination:
  - General Medicine
  - General Surgery
  - Oral Pathology and Microbiology
  - Evidence Based Dentistry
- Fourth B.D.S. Examination:
  - Oral Medicine and Radiology
  - Paediatric and Preventive Dentistry
  - Orthodontics and Dentofacial Orthopedics
  - Periodontology
  - Oral & Maxillofacial Surgery
  - Prosthodontics including Crown & Bridge
  - Conservative Dentistry and Endodontics
  - Public Health Dentistry
  - Evidence Based Dentistry

B. Format of University Theory Question Paper:

***The following amendments in University theory exam for all subjects is as under:  
(Board of Studies Letter No. KMSDCH/BOS/06/AY2016-17 dated 20/02/2017 and  
Board of Management resolution Ref: No. SVDU/R/2017-18/1565 dated 21.09.2017)***

*The change in university theory examination for all subjects shall be as following:*

*The university examination shall comprise of 10 MCQs for 10 marks*

*This enables the student to well prepared for the NEET examination*

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- The Theory paper for all the subjects shall be of total 70 Marks and of Three hours duration.

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- The Theory paper shall consist of Two sections viz. Section I & Section II. Each Section shall consist of total 35 marks.
- Each Section shall comprise of Compulsory Two Long questions of 10 marks each (with one option in the second long question), 02 out of 03 Short Notes of 05 marks each and 05 MCQs of 01 mark each.
- The FIRST long answer question shall be from the “MUST to KNOW” syllabus, the SECOND long answer questions shall be from “GOOD to KNOW” and/or “DESIRABLE to KNOW” syllabus. The short notes and the MCQs shall be a mix of “MUST to KNOW”, “GOOD to KNOW” and/or “DESIRABLE to KNOW”
- There shall be NO theory examination for Pre-clinical Prosthodontics and Pre-clinical Conservative & Endodontics.
- **The following amendments in Evidence Based dentistry university exam is as under: (Board of Studies Letter No. KMSDCH/BOS/02/AY2016-17 dated 08/11/2016 and Board of Management resolution Ref: No. SVDU/EXAM/4958/06/2017 dated 23.06.2017)**

*The change in Evidence based dentistry university exam shall be as following:*

- Theory examination for Evidence Based Dentistry will be of 30 marks at the end of each year comprising Two short notes out of three of five 05 marks each, one problem solving type of 05 marks, five out of six short answer for 02 marks each and 05 MCQs of 01 mark each.

#### 6.2.2.2.2. Clinical and /or Practical Examination:

- There shall be practical/clinical examinations in all the subjects except for evidence Based Dentistry (EBD). The Clinical or Practical examination shall aim at examining clinical skills and competence of candidates.
- The Practical examinations for all the subjects shall consist of total 90 marks.
- The Practical examinations for Preclinical Prosthodontic and Preclinical Conservative & Endodontics shall be of 80 marks (including 20 marks for Viva Voce).

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#### 6.2.2.2.3. Viva voce examination:

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- The Viva-voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and verbal communication skills.
- There shall be Viva-voce examination of 20 marks for all the subjects except for Evidence Based Dentistry. Marks obtained in the viva-voce examination shall be added to the marks obtained in the theory examination.

## 7. ELIGIBILITY CRITERIA FOR DECLARING PASS:

7.1. A candidate shall secure an aggregate of 50% of total marks allotted in both- theory and in practical / clinical examination independently, so as to be declared as Pass in the university examination.

- For passing in Theory examination, a candidate shall secure 50% marks in aggregate i.e. marks obtained in university Written examination, Vivavoce examination and Internal assessment (theory) combined together i.e. fifty out of One hundred marks.
- For passing in the university Practical/clinical examination, a candidate shall secure 50% marks in aggregate i.e. Practical / Clinical and Internal Assessment combined together i.e. fifty out of One hundred marks.
- In case of Pre-clinical Prosthodontics and Pre-clinical Conservative Dentistry in II BDS, where there is no written examination, for passing, the candidate shall secure 50% of marks in University Practical examination, Viva voce and Internal Assessment combined together i.e. fifty out of One hundred marks.
- For Evidence Based Dentistry only grades shall be awarded.

7.2. A candidate, securing less than 50% marks shall be declared as Failed in the said examination.

7.3. A candidate, who has passed all the subjects, shall be allowed to appear for the next higher BDS Class University Examination.

## 8. ELIGIBILITY CRITERIA TO APPEAR IN SUPPLEMENTARY EXAMINATION:

8.1. The candidate failing in any subject/subjects of the university examination shall appear for the supplementary examinations.

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- 8.2. The failed candidate shall compulsorily appear in both- Theory as well as Practical / Clinical examination irrespective of failing in either of them.
- 8.3. The unsuccessful candidate can appear for multiple number of times / attempts to clear the BDS University examination provided he/she should be able to complete the course including 1 year of internship within 9 years from the date of joining the course.
- 8.4. The failed candidate shall pay the required fees for the failed period.

The Internal assessment marks for the unsuccessful candidate shall be counted from the examinations conducted between the last University examination and forthcoming examination. The internal assessment marks shall be considered as best out of the two (between previous and present internal assessment marks).

#### 9. ALLOWED TO KEEP THE TERM (ATKT):

- 9.1. ATKT will be granted in 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year of BDS only if the candidate fails in one subject.
- 9.2. The ATKT candidate shall undergo all the examinations as scheduled for them from time to time during the period between the last examination and forthcoming examination.
- 9.3. The ATKT candidate shall pay the required fees for the ATKT period as prescribed by the university.
- 9.4. The Internal assessment marks for the subject in which ATKT is granted shall be counted from the examinations conducted between the last University examination and forthcoming examination. The internal assessment marks shall be considered as best out of the two (between previous and present internal assessment marks).
- 9.5. The candidate shall have to pass the ATKT subject before he/she is permitted to appear for the next higher examination.

#### 10. AWARD /DISTINCTION/ UNIVERSITY RANKS:

- 10.1. A candidate, who has successfully passed in all the academic years of BDS course and successfully completed the compulsory rotating one year Internship program, shall be granted a degree of Bachelor of Dental Surgery.

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10.2.The successful candidate will be awarded Class/ Distinctions as prescribed by the University guidelines.

10.3.The successful candidate/s who have secured highest marks either subject wise or on aggregate in first attempt shall be declared as Topper in aggregate or in the concerned subject/s.

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## SECTION-IV

### BDS COURSE CURRICULUM

#### FIRST YEAR BDS

#### GENERAL HUMAN ANATOMY

(Including Embryology, Osteology and Histology)

#### INTRODUCTION

What is Human Anatomy?

It is a branch of Science which deals with the structure of Human Body.

Aim:

The students should know structural, functional, histological and developmental anatomy of head and neck as relevant to first year BDS course

Objectives:

At the end of the First year BDS course in Anatomical Science the Undergraduate student is expected to:

1. Know and demonstrate the normal disposition of structures in head and neck region.
2. Know and demonstrate the inter-relationship of various structures.
3. Know and demonstrate the clinical correlation of various structures
4. Know and demonstrate the microscopic structures of various tissues related to head and neck
5. Know and demonstrate the basic components of nervous system with clinical correlates
6. Know and demonstrate the basis of abnormal development
7. Know and demonstrate the sectional anatomy of head and neck and its correlation to modern imaging techniques.
8. Know and identify the microscopic anatomy

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## COURSE OUTCOMES ASSESSED:

Were the students able to: Describe the normal disposition of the structures in the body while clinically examining a patient and while conducting clinical procedures. Describe the anatomical basis of disease and injury. Know the microscopic structure of the various tissues, a pre-requisite for understanding of the disease processes. Know the nervous system to locate the site of lesions according to the sensory and or motor deficits encountered. Explain the basis of abnormal development, critical stages of development, effects of teratogens, genetic mutations and environmental hazards. Know the sectional anatomy of head neck and brain to read the features in radiographs and pictures taken by modern imaging techniques. Know the anatomy of cardio-pulmonary resuscitation. To locate various structures of the body and to mark the topography of the living anatomy. To identify various tissues under microscope. To identify the features in radiographs and modern imaging techniques. To detect various congenital abnormalities.

## A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. General Anatomy	
1.1 Introduction, subdivisions of Anatomy	Must to Know
1.2 Anatomical terms and planes	Must to Know
1.3 Connective tissue- Superficial and deep fascia, modifications of deep fascia	Must to Know
1.4 Bone- Classification, Ossification and growing ends of bone, Structure and Blood supply	Must to Know
1.5 Muscles- Classification and mode of action	Must to Know
1.6 Joints- Classification with examples, Typical synovial joint Axis of movement	Must to Know
1.7 Circulatory system including Anastomosis and collateral circulation , Portal system of veins	Must to Know
1.8 Nervous system- Central and peripheral nervous system, Autonomic Nervous System, Reflex arc, Spinal nerve	Must to Know
2. Neuroanatomy	
2.1 Meninges, Dural Venous sinuses	Must to Know
2.2 Subdivisions of nervous system and Ventricles of brain	Must to Know
2.3 Attachment of Cranial Nerves on the base of brain	Good to Know
2.4 Medulla, Pons and Mid brain – localization of cranial nerve nuclei	Must to Know
2.5 3 <sup>rd</sup> , 4 <sup>th</sup> , 5 <sup>th</sup> , 6 <sup>th</sup> , 7 <sup>th</sup> , 9 <sup>th</sup> and 12 <sup>th</sup> Cranial nerves	Desirable to Know
2.6 8 <sup>th</sup> , 2 <sup>nd</sup> , 10 <sup>th</sup> and 11 <sup>th</sup> Cranial nerves	Must to Know

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2.7 Pituitary gland	Good to Know
2.8 Blood supply of brain	Desirable to Know
2.9 Functional areas of brain	Desirable to Know
<b>3. Gross Anatomy of Head &amp; Neck</b>	
3.1 Scalp	Must to Know
3.2 Face including facial nerve and lacrimal apparatus	Must to Know
3.3 Cervical fascia- General investing layer, Pre tracheal and Pre vertebral fascia, Carotid sheath and contents	Must to Know
3.4 Anterior and posterior Triangles of neck including and spinal accessory nerve	Must to Know
3.5 Carotid system of arteries, Internal Jugular Vein, Subclavian artery	Must to Know
3.6 Cranial cavity including muscles of eye ball, vessels and nerves of orbit	Must to Know
3.7 Parotid gland and facial nerve	Must to Know
3.8 Temporal and infra temporal fossa including maxillary artery, mandibular nerve and muscles of mastication, Pterygopalatine fossa and maxillary nerve	Must to Know
3.9 Temporo-mandibular joint	Must to Know
3.10 Sub mandibular region including sub mandibular and gland sub lingual salivary glands	Must to Know
3.11 Thyroid and parathyroid gland	Must to Know
3.12 Oral cavity, tongue, Hypoglossal nerve, Hard and soft palate	Must to Know
3.13 Pharynx, Palatine tonsil, pharyngotympanic tube and glossopharyngeal nerve	Must to Know
3.14 Larynx ,Nasal cavity and paranasal air sinuses	Must to Know
3.15 Cervical plexus and sympathetic ganglia	Good to Know
3.16 Joints of neck	Must to Know
3.17 Cervical part trachea, esophagus	Must to Know
<b>4. Embryology</b>	
4.1 General embryology complete- Oogenesis, Spermatogenesis, Fertilisation, Placenta, Primitive streak, Neural crest, Bilaminar and Trilaminar Disc, Intra-embryonic mesoderm	Must to Know
4.2 Formation and fate of Notochord	Must to Know
4.3 Branchial apparatus- formation and fate	Must to Know
4.4 Congenital abnormalities of branchial apparatus	Good to Know
4.5 Development of face, hard palate, nasal cavity and paranasal sinuses,	Must to Know
4.6 Congenital Abnormalities, face, palate	Must to Know
4.7 Development of Tongue, thyroid gland and pituitary	Must to Know
4.8Temporo-mandibular joint.	Must to Know
<b>5. Histology</b>	
5.1 General histology Epithelium, Glands, Cartilage, Bone,	Must to Know

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Lymphoid tissue , Skeletal, Cardiac and Smooth muscle, Blood Vessels, Nervous Tissue	
5.2 Intra membranous and endochondral ossification	Must to Know
5.3 Skin, tongue and lip	Must to Know
5.4 Salivary glands	Must to Know
5.5 Endocrine glands (Thyroid, Para thyroid, Pituitary)	Must to Know
5.6 Trachea and esophagus	Must to Know
5.7 Fundus of stomach	Desirable to Know
5.8 Spinal cord	Desirable to Know
6. Structures important to clinical procedures	Must to Know
6.1 Muscles- Deltoid and Axillary nerve, Gluteus maximus and Sciatic nerve, Vastus lateralis, Triceps and Radial nerve	Must to Know
6.2 Veins- Cephalic, Basilar, Median cubital and Long Sephanous	Must to Know
6.3 Arterial pulsations- Axillary, Brachial, Radial, Carotid, Facial, Superficial temporal, Femoral, Popliteal and Dorsalis Pedis	Must to Know
6.4 Anatomy of Lumbar puncture	Must to Know

## B. PRACTICAL:

1. The student will dissect and demonstrate the following:

- Scalp
- Face including facial nerve and lacrimal apparatus
- Cervical fascia- General investing layer, Pre tracheal and Prevertebral fascia, Carotid sheath and contents
- Anterior and posterior Triangles of neck including and spinal accessory nerve
- Carotid system of arteries, Internal Jugular Vein, Subclavian artery
- Cranial cavity including muscles of eye ball, vessels and nerves of orbit
- Parotid gland and facial nerve
- Temporal and infra temporal fossa including maxillary artery, mandibular nerve and muscles of mastication, Pterygopalatine fossa and maxillary nerve.
- Temporo-mandibular joint
- Sub mandibular region including sub mandibular and gland sub lingual salivary glands
- Thyroid and parathyroid gland
- Oral cavity, tongue, Hypoglossal nerve, Hard and soft palate and Pharynx, Palatine tonsil, pharyngotympanic tube and glossopharyngeal nerve
- Larynx
- Nasal cavity and paranasal air sinuses
- Cervical part of trachea and esophagus
- Cervical plexus and sympathetic ganglia
- Joints of neck

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- Thoracic and abdominal viscera

## 2. Osteology Demonstration:

- Skull
  - Norma verticalis
  - Norma frontalis
  - Norma lateralis
  - Norma Basalis
  - Interior of skull
  - Frontal, Parietal, Occipital and Temporal bones.
  - Maxillary and Sphenoid bones

- Mandible

## 3. Histology Practical:

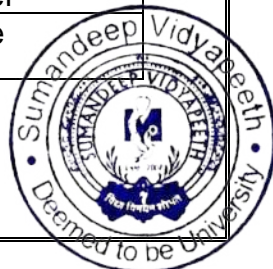
- Epithelium
- Glands
- Cartilage
- Bone
- Lymphoid tissue
- Skeletal, Cardiac and smooth muscle.
- Blood vessels
- Nervous tissue
- Skin, Tongue and Lip
- Salivary glands
- Endocrine glands
- Trachea and Oesophagus.

## C. RECOMMENDED BOOKS

S.No.	Title	Author	Publisher
1	Anatomy of Head, Neck and Brain	Vishram Singh	Elsevier
2	T.B. General Anatomy	Shobha Rawlani Shivlal Rawlani	Jaypee
3	T.B. Clinical Embryology	Vishram Singh	Elsevier
4	Practical Manual of Histology	Neelkanth B Kote	Jaypee

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5	Grant's Dissector	Patrick W Tank	Wolters Kluwer
6	Exam Oriented Anatomy for Dental Students	Dr. S.N.Qazi	CBS
7	T.B. Human Osteology	I.B.Singh	Jaypee

## REFERENCE BOOKS

S.No.	Title	Author	Publisher
1	Clinical Anatomy for Medical Students	Richard S. Snell	Wolters Kluwer
2	Gray's Anatomy	Williams	Churchill Livingstone

## A. UNIVERSITY EXAMINATION

As per University rules.

**Attested CTC**

*Sharaney*  
15/2/2021

**Vice-Chancellor**

**Sumandeep Vidyapeeth**

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Dist. Vadodara-391 760. (Gujarat)



# PHYSIOLOGY

## DEFINITION:

Human physiology is the study of living organs of the body.

## INTRODUCTION:

1. Aim :

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

2. Objectives:

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

- Explain the normal functioning of all the organ systems and their interactions for well coordinated total body function:
- Assess the relative contribution of each organ system to the maintenance of milieu interieur.
- Elucidate the physiological aspects of normal growth and development.
- Describe the physiological response and adaptations to environmental stresses.
- List the physiological principles underlying pathogenesis and treatment of disease.

3. Scope:

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

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

## COURSE OUTCOMES ASSESSED:

Were the students able to: Explain the normal functioning of all the organ systems and their interactions for well co-ordinated total body function. Assess the relative contribution of each organ system towards the maintenance of the milieu interior. List the physiological principles underlying the pathogenesis and treatment of disease. Conduct experiments designed for the study of physiological phenomena. Interpret experimental and investigative data. Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

Attested CTC

*Sharan*  
15/2/2021

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## A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. Introduction	
1.1 Cell	Must to Know
1.2 Tissue	Must to Know
1.3 Organ	Must to Know
2. Structure of Cell	
2.1 Cell Membrane (C.M.)	Must to Know
2.2 Composition of C.M.	Good To Know
2.3 Structured Model of C.M.	Desirable To Know
2.4 Cytoplasm	Must to Know
2.5 Organelle & Their functions	Must to Know
2.6 Nucleus	Must to Know
3. Gene	
3.1 Chromosome	Must to Know
3.2 Chromatin	Must to Know
3.3 Gene expression	Good To Know
3.4 Genetic disorder	Desirable To Know
4. Cell Death	Must to Know
5. Cell Adaptation	Must to Know
6. Cell Degeneration	Must to Know
7. Cell Aging	Must to Know
8. Cell Junction - Definition & Classification	Must to Know
9. Tight junction	Must to Know
10. Gap Junction	Must to Know
11. Chemical Synapse	Must to Know
12. Anchoring Junction	Good to know
13. Cell Adhesion Molecule	Desirable to Know
14. Transport Through Cell Membrane – Introduction	Must to Know
15. Basic Mechanism	Must to Know
16. Passive Transport	Must to Know
17. Diffusion	
17.1 Simple	Must to Know
17.2 Facilitated	Must to Know
18. Osmosis	Must to Know
19. Bulk Flow	Good To Know
20. Filtration	Good To Know
21. Factor affecting diffusion	Must to Know
22. Active Transport – Primary , Secondary	Must to Know
23. Endocytosis – Pinocytosis, Phagocytosis	Must to Know
24. Exocytosis	Must to Know

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25. Receptor mediated endocytosis	Good To Know
26. Transcytosis	Good To Know
27. Molecular motors, Ion channel disease	Desirable To Know
28. Homeostasis	
28.1 Introduction	Must to Know
28.2 Mileu Interior	Must to Know
28.3 Claude Bernard Theory	Good to Know
28.4 Mileu Exterior	Desirable to Know
29. Role of Various system	Must to Know
30. Feedback mechanism	Must to Know
31. Regulation of feedback system	Good to Know
32. Altered feedback system	Desirable to Know
33. Acid – Base Balance – Introduction	Must to Know
34. H <sup>+</sup> ion and pH	Must to Know
35. Regulation of Acid –Base balance	Must to Know
36. Determination of Acid	Good to Know
37. Disturbance of Acid – Acidosis, Alkalosis	Good to Know
38. Clinical Evaluation	Must to Know
39. Body Fluids	
39.1 Introduction	Must to Know
39.2 Significance	Must to Know
39.3 Composition	Must to Know
39.4 Measurement	Good to Know
39.5 Concentration	Good to Know
39.6 Maintenance	Good to Know
39.7 Applied Physiology (Dehydration & Over hydration)	Desirable to Know
40. Blood	
40.1 Introduction	Must to Know
40.2 Properties of blood	Must to Know
40.3 Composition of blood	Must to Know
40.4 Function	Must to Know
40.5 Serum	Good to Know
41. Plasma Protein	
41.1 Introduction	Must to Know
41.2 Normal Values	Must to Know
41.3 Properties	Must to Know
41.4 Origin	Must to Know
41.5 Function	Must to Know
41.6 Seperation	Good to Know
41.7 Plasmapheresis	Desirable to Know
42. RBC	
42.1 Introduction	Must to Know
42.2 Normal Values	Must to Know
42.3 Properties	Must to Know
42.4 Life span & Fate	Must to Know

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42.5 Function	Must to Know
42.6 Physiological Variation in number	Must to Know
42.7 Pathological Variation in number	Good to Know
42.8 Variation in Size	Good to Know
42.9 Variation in structure	Desirable to Know
43. Erythropoiesis	
43.1 Definition	Must to Know
43.2 Site of Erythropoiesis	Must to Know
43.3 Process of Erythropoiesis	Good to Know
43.4 Factors necessary for Erythropoiesis	Desirable to Know
44. Haemoglobin and Iron metabolism	
44.1 Introduction	Must to Know
44.2 Normal Value	Must to Know
44.3 Function	Must to Know
44.4 Structure	Must to Know
44.5 Normal Haemoglobin	Must to Know
44.6 Iron metabolism	Must to Know
44.7 Abnormal Haemoglobin	Good to Know
44.8 Synthesis and destruction	Good to Know
44.9 Abnormal Haemoglobin Derivatives	Desirable to Know
45. Erythrocyte Sedimentation Rate	
45.1 Introduction	Must to Know
45.2 Normal Values	Must to Know
45.3 Significance	Must to Know
45.4 Determination	Good to Know
45.5 Variation	Good to Know
45.6 Factors affecting	Desirable to Know
46. Packed Cell Volume	
46.1 Definition	Must to Know
46.2 Significance	Must to Know
46.3 Normal Value	Must to Know
46.4 Blood Indices	Must to Know
46.5 Determination	Good to Know
46.6 Variation	Good to Know
46.7 Calculation of blood indices	Good to Know
47. Anaemia	
47.1 Introduction	Must to Know
47.2 Classification	Must to Know
47.3 Sign and Symptoms	Must to Know
47.4 Investigation	Good to Know
47.5 Treatment	Good to Know
48. Haemolysis and Fragility of RBCs	
48.1 Definition	Must to Know
48.2 Process of haemolysis	Must to Know
48.3 Fragility test	Good to Know

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48.4 Condition when haemolysis occur	Good to Know
48.5 Haemolysin	Desirable to Know
49. White Blood Cells	
49.1 Introduction	Must to Know
49.2 Classification	Must to Know
49.3 Morphology	Must to Know
49.4 Normal Count	Must to Know
49.5 Physiological Variation	Must to Know
49.6 Function	Must to Know
49.7 Properties	Good to Know
49.8 Lifespan & Fate	Good to Know
49.9 Pathological Variation	Good to Know
49.10 Leucopoiesis	Desirable to Know
50. Immunity	
50.1 Definition and Types	Must to Know
50.2 Development & Processing of lymphocyte	Must to Know
50.3 Antigen & Antibody	Must to Know
50.4 Cell mediated immunity	Must to Know
50.5 Antibody mediated immunity	Must to Know
50.6 Natural Killer cell	Good to Know
50.7 Cytokines	Good to Know
50.8 Immunization	Good to Know
50.9 Allergy	Good to Know
50.10 Hypersensitivity	Desirable to Know
50.11 Immune deficiency disease	Desirable to Know
50.12 Autoimmune Disease	Desirable to Know
51. Platelets	
51.1 Introduction	Must to Know
51.2 Structure & composition	Must to Know
51.3 Normal Count	Must to Know
51.4 Physiological Variation	Must to Know
51.5 Function	Must to Know
51.6 Life span & Fate	Must to Know
51.7 Pathological variation	Good to Know
51.8 Activators & Inhibitors	Good to Know
51.9 Development	Good to Know
51.10 Platelet disorder & management	Desirable to Know
51.11 Purpura	Desirable to Know
52. Hemostasis & Coagulation of Blood	
52.1 Definition	Must to Know
52.2 Stages of hemostasis	Must to Know
52.3 Factors involved in clotting	Must to Know
52.4 Sequence of clotting mechanism	Must to Know
52.5 Blood clot	Must to Know
53. Blood Groups & Blood transfusion	

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53.1 Introduction	Must to Know
53.2 ABO blood group system	Must to Know
53.3 Rh Factor	Must to Know
53.4 Importance of knowing blood group	Must to Know
53.5 Inheritance of blood group	Good to Know
53.6 Transfusion reaction	Good to Know
53.7 Autologous transfusion	Good to Know
53.8 Haemolytic disease of newborn	Desirable to Know
53.9 Other blood group system	Desirable to Know
53.10 Blood substitute	Desirable to Know
<b>54. Miscellaneous</b>	
54.1 Blood volume	Must to Know
54.2 Reticuloendothelial system	Must to Know
54.3 Spleen	Must to Know
54.4 Lymphatic system & Lymph	Must to Know
54.5 Tissue fluid & Oedema	Must to Know
<b>55. Nerve &amp; Muscle Physiology</b>	
55.1 Classification of muscles	Must to Know
55.2 Muscle Mass	Must to Know
55.3 Muscle fiber	Must to Know
55.4 Myofibril	Must to Know
55.5 Sarcomere	Must to Know
55.6 Contractile protein	Must to Know
55.7 Sarcotubular system	Must to Know
55.8 Other proteins of the muscle	Good to Know
55.9 Composition	Desirable to Know
<b>56. Properties of Skeletal Muscle</b>	
56.1 Excitability	Must to Know
56.2 Contractibility	Must to Know
56.3 Refractory period	Must to Know
56.4 Muscle Tone	Good to Know
56.5 Length-Tension relationship	Good to Know
56.6 Hypertonia	Desirable to Know
56.7 Hypotonia	Desirable to Know
<b>57. Changes during muscular contraction</b>	
57.1 Introduction	Must to Know
57.2 Electrical Changes	Must to Know
57.3 Physical Changes	Must to Know
57.4 Compound action potential	Good to Know
57.5 Graded potential	Good to Know
57.6 Molecular basis of contraction	Good to Know
57.7 Chemical changes	Good to Know
57.8 Thermal Changes	Good to Know
57.9 Patch clamp technique	Desirable to Know
<b>58. Neuromuscular Junction</b>	

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58.1 Definition & Structure	Must to Know
58.2 NM transmission	Must to Know
58.3 Motor unit	Must to Know
58.4 NM Blocker	Good to Know
58.5 NM Stimulator	Good to Know
58.6 NM Disease	Desirable to Know
59. Smooth Muscle	
59.1 Distribution	Must to Know
59.2 Function	Must to Know
59.3 Types	Must to Know
59.4 Contractile process	Must to Know
59.5 Control	Must to Know
59.6 Structure	Good to Know
59.7 Electrical activity in single & multiple unit	Desirable to Know
60. Electromyogram and Disorder of SK Muscle & Endurance of Muscle	
60.1 Definition	Must to Know
60.2 Electromyogram	Must to Know
60.3 Endurance of Muscle	Good to Know
60.4 Electromyographic technique	Good to Know
60.5 Myopathy	Desirable to Know
61. Digestive System	
61.1 Introduction	Must to Know
61.2 General structure	Must to Know
61.3 Innervation	Must to Know
61.3 Salivary gland	Must to Know
61.4 Stomach	Must to Know
61.5 Exocrine function & regulation of pancreas	Must to Know
61.6 Liver	Must to Know
61.7 Function & Regulation Gall Bladder	Must to Know
61.8 Motor Movement of GIT – Peristalsis, Segmentation, Deglutition, Defaecation, Gastric Emptying	Must to Know
61.9 Composition of saliva	Good to Know
61.10 Composition of gastric juice	Good to Know
61.11 Composition of Pancreatic juice	Good to Know
61.12 Succus entericus	Good to Know
61.13 Mastication	Good to Know
61.14 Gastric filling	Good to Know
61.15 Haustration	Good to Know
61.16 Structure of salivary gland	Desirable to Know
61.17 Peptic ulcer	Desirable to Know
61.18 Pancreatitis	Desirable to Know
61.19 Cholecystitis	Desirable to Know
61.20 Structure of pancreas & gallbladder	Desirable to Know
61.21 Liver structure	Desirable to Know
61.22 Choleric	Desirable to Know

Attested ETC

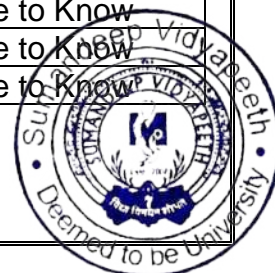
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61.23 Cholegogue	Desirable to Know
61.24 Paralytic ileus	Desirable to Know
<b>62. Excretory System</b>	
62.1 Structure & function of kidney	Must to Know
62.2 Functional unit : Nephron (Function of different part)	Must to Know
62.3 Juxta Glomerular Apparatus	Must to Know
62.3 Glomerular Filtration Rate – Definition, Normal Value, Factor affecting	Must to Know
62.4 Tubular Reabsorption (Na,K, Glu, Water)	Must to Know
62.5 Tubular secretion	Must to Know
62.6 Counter current mechanism	Must to Know
62.7 Counter current multiplier system	Must to Know
62.8 Role of kidney in regulation of pH	Must to Know
62.9 Micturition	Must to Know
62.10 Renal blood flow	Good to Know
62.11 Determination of GFR	Good to Know
62.12 Acidosis	Good to Know
62.13 Alkalosis	Good to Know
62.14 Mechanism of concentration & dilution of urine	Good to Know
62.15 Anatomy & Innervation of bladder	Good to Know
62.16 Renal failure	Desirable to Know
<b>63. Body Temperature &amp; Skin</b>	
63.1 Blood flow: AV Shunting	Must to Know
63.2 Homeostasis of Temperature	Must to Know
63.3 Anatomy	Good to Know
63.4 Hypothalamic regulation (Set point)	Good to Know
63.5 Thermogenesis	Good to Know
63.6 Pyrexia	Desirable to Know
63.7 Pyrogens	Desirable to Know
<b>64. Endocrinology</b>	
64.1 General endocrinology	Must to Know
64.2 Enumeration	Must to Know
64.3 Hormone	Must to Know
64.4 General function	Must to Know
64.5 Properties	Must to Know
66.6 Mechanism of secretion	Must to Know
66.7 Transport	Must to Know
66.8 Regulation	Must to Know
66.9 Anterior Pituitary Hormone	Must to Know
66.10 Posterior Pituitary Hormone	Must to Know
66.11 Thyroid – Synthesis, Secretion, Transport, Action	Must to Know
66.12 Adrenal Cortex & Medulla Hormone – Synthesis, Secretion, Action	Must to Know
66.13 Regulation of Blood calcium level	Must to Know
66.14 Chemistry	Good to Know

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66.15 Metabolism	Good to Know
66.16 Disorders of Anterior Pituitary Hormone	Desirable to Know
66.17 Disorders of Posterior Pituitary Hormone	Desirable to Know
66.18 Thyroid disorder	Desirable to Know
66.19 Adrenal Disorder	Desirable to Know
<b>67. Reproductive System</b>	
67.1 Menstrual cycle	Must to Know
67.2 Function of oestrogen & progesterone	Must to Know
67.3 Pregnancy	Must to Know
67.4 Parturition	Must to Know
67.5 Lactation	Must to Know
67.6 Spermatogenesis	Must to Know
67.7 Family planning in Male & Female	Must to Know
67.8 Function of placenta	Must to Know
67.9 Anatomy of male & female sex organ	Good to Know
67.10 Test of ovulation	Good to Know
67.11 Function of ovary	Good to Know
67.12 Fertilization	Good to Know
67.13 Implantation	Good to Know
67.14 Pregnancy test	Good to Know
67.15 Composition of milk	Good to Know
67.16 Milk ejection	Good to Know
67.17 Semen	Good to Know
67.18 Contraceptive pills	Good to Know
67.19 Sex differentiation	Desirable to Know
67.20 Factor controlling lactation	Desirable to Know
67.21 Development of secondary sexual characters	Desirable to Know
<b>68. Cardiovascular System</b>	
68.1 Functional anatomy & innervations of heart	Must to Know
68.2 Cardiac impulse	Must to Know
68.3 Electrocardiogram (ECG)	Must to Know
68.4 Heart Rate – Normal, Regulation	Must to Know
68.5 Cardiac Output – Definition, Normal Values, Determinants, Regulation	Must to Know
68.6 Arterial blood pressure – Definition, Normal Value, Determination, Regulation, Measurement	Must to Know
68.7 Cardiac Cycle	Must to Know
68.8 Volume changes in ventricle	Good to Know
68.9 Jugular venous pulse (JVP)	Good to Know
68.10 Arterial Pulse	Good to Know
68.11 Heart block	Good to Know
68.12 Murmurs	Good to Know
68.13 Coronary circulation	Good to Know
68.14 Two changes in ECG in Myocardial infarction	Good to Know
68.15 Variation in HR	Good to Know

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68.16 Variation in CO	Good to Know
68.17 Measurement of CO	Good to Know
68.18 Abnormal JVP	Desirable to Know
68.19 Angina Pectoris	Desirable to Know
68.20 Myocardial infarction	Desirable to Know
68.21 Factors changing preload and afterload in heart	Desirable to Know
<b>69. Respiratory System</b>	
69.1 Physiology of respiration – External, Internal	Must to Know
69.2 Respiratory movement	Must to Know
69.3 Muscle of respiration (Diaphragm)	Must to Know
69.4 Mechanics of Respiration	Must to Know
69.5 Surfactant	Must to Know
69.6 Compliance	Must to Know
69.7 Spirometry – Volume, Capacity, Definition, Normal Value	Must to Know
69.8 Exchanges of gases – Diffusion Capacity, Factor affecting	Must to Know
69.9 Transport of Oxygen & CO <sub>2</sub> in blood	Must to Know
69.9.1 O <sub>2</sub> – Co <sub>2</sub> dissociation curve	Must to Know
69.9.2 Bohr's effect	Must to Know
69.9.3 Haldane Effect	Must to Know
69.9.4 Double bohr's effect	Must to Know
69.10 Regulation of respiration	Must to Know
69.10.1 Neural (Medullary Pontine Centre)	Must to Know
69.10.2 Chemical (Chemoreceptor)	Must to Know
69.11 Functional anatomy & passage	Good to Know
69.12 Accessory Muscle of respiration	Good to Know
69.13 Intrapleural & Pulmonary pressure(changes in respiration)	Good to Know
69.14 Work of breathing	Good to Know
69.15 Factor affecting FEV & its variation	Good to Know
69.16 Obstructive disease	Good to Know
69.17 Restrictive disease	Good to Know
69.18 Dyspnoea	Good to Know
69.19 Pulmonary ventilation	Good to Know
69.20 Alveolar ventilation	Good to Know
69.21 Dead space ventilation	Good to Know
69.22 Ventilation-Perfusion ratio	Good to Know
69.23 Composition of inspired air, alveolar air, Expired air	Good to Know
69.24 Ondine's Curse	Good to Know
69.25 Prebotzinger's complex	Good to Know
69.26 Hypoxia	Good to Know
69.27 Dyspnoea	Good to Know
69.28 Cyanosis	Good to Know
69.29 Artificial Respiration	Good to Know
69.30 Sleep apnoea	Desirable to Know
69.31 Periodic breathing	Desirable to Know
69.32 Pulmonary function test	Desirable to Know

Attested CFC

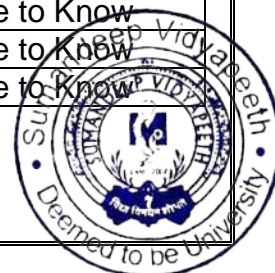
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70. Central Nervous System	
70.1 Organization of CNS	Must to Know
70.2 Neuronal organization at spinal cord level	Must to Know
70.3 Ascending Tracts	Must to Know
70.4 Descending Tracts	Must to Know
70.5 Synapse	Must to Know
70.6 Receptors	Must to Know
70.7 Reflexes	Must to Know
70.8 Sensation & Tracts	Must to Know
70.9 Physiology of Pain	Must to Know
70.10 Function of - Cerebral cortex, Cerebellum, CSF	Must to Know
70.11 Autonomic nervous system – Fight & Flight response, Rest & Digest response	Must to Know
70.12 Function of Hypothalamus	Good to Know
70.13 Regulation of Autonomic function	Good to Know
70.14 Higher function of brain – Memory, Learning, Motivation	Good to Know
70.15 Function of limbic system	Good to Know
70.16 Sleep (REM-NREM)	Good to Know
70.17 Parkinson sign	Good to Know
70.18 Function of Thalamus	Desirable to Know
70.19 Applied physiology – Cerebellum, Basal Ganglia, Hypothalamus, Brainstem	Desirable to Know
70.20 Autonomic function test	Desirable to Know
70.21 Autonomic disturbance	Desirable to Know
70.22 EEG	Desirable to Know
71. Special Sense	
71.1 Vision	Must to Know
71.2 Hearing	Must to Know
71.3 Physiology of hearing	Must to Know
71.4 Function of cochlea, organ of corti	Must to Know
71.5 Function of outer. middle, inner ear	Must to Know
71.6 Taste & its types	Must to Know
71.7 Taste buds	Must to Know
71.8 Primary taste sensation	Must to Know
71.9 Smell	Must to Know
71.10 Receptors	Must to Know
71.11 Anatomy of eyeball	Good to Know
71.12 Function of iris	Good to Know
71.13 Aqueous humor	Good to Know
71.14 Visual pathway	Good to Know
71.15 Anatomic consideration	Good to Know
71.16 Auditory pathway & area	Good to Know
71.17 Lesion of visual pathway	Desirable to Know
71.18 Blindness	Desirable to Know
71.19 Deafness	Desirable to Know

Attested CTE

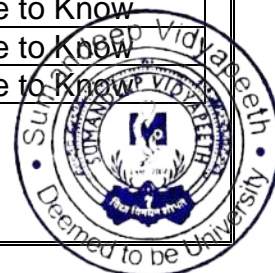
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71.20 Auditory function test	Desirable to Know
71.21 Altered taste sensation	Desirable to Know
71.22 Anosmia	Desirable to Know
71.23 Parosmia	Desirable to Know

## B. Practical work quota

### 1. Practical exercise

To be done by Students		Hours
1.	Study of Microscope and its uses	02
2.	Collection of blood and study of haemocytometer	02
3.	Haemoglobinometry	02
4.	Determination of RBC count	08
5.	Determination of WBC count	04
6.	Determination of blood groups	02
7.	Leishman's staining and differential leucocyte count	10
8.	Calculation of blood indices	02
9.	Determination of bleeding time	01
10.	Determination of clotting time	01
11.	Blood pressure recording	04
12.	Auscultation of Heart sounds	-

### 1. Demonstrations (only)

1.	Determination of ESR	02
2.	Determination of PCV	02
3.	Determination of specific gravity	02
4.	Fragility test for RBC	02
5.	Clinical examination of chest	02
6.	Determination of vital capacity	02
7.	Artificial respiration	02
8.	Demonstration of reflexes	02

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*[Signature]*

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9.	Activity of frogs heart and effects of drugs	02
	Total	60

### C. Books Recommended

Sr no.	Author	Name of Book	Edition	Publisher
1.	Guyton	Textbook of Physiology	12 <sup>th</sup> Edition	Elsevier
2.	Ganong	Review of Medical Physiology	24 <sup>rd</sup> Edition	Lange Basic Science
3.	A.K.Jain	Human Physiology for BDS students	1 <sup>st</sup> Edition	Arya
4.	Chaudhary	Concise Medical Physiology	2 <sup>nd</sup> Edition	NCBA
5.	Indu Khurana	Textbook of Medical Physiology	1 <sup>st</sup> Edition	Elsevier
6.	K Sembulingam	Essential of Medical Physiology	5 <sup>th</sup> Edition	Jaypee
7.	Chaterjee	Human Physiology	10 <sup>th</sup> Edition	Current distribution
8.	Vander	Human Physiology	12 <sup>th</sup> Edition	McGraw-Hill

### REFERENCE BOOKS

Sr. no.	Title	Author	Latest Edition	Publisher
1	Physiolgy	Berne & Levy	6 <sup>th</sup> Edition	Mosby/Elsevier
2	Physiological basis of medical practice	Best & Taylor	10 <sup>th</sup> Edition	Williams & Wilkins Co

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3	Medical physiology	Boron & Boulpaep	2 <sup>nd</sup> Edition	Saunders Elsevier
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### PRACTICAL BOOKS FOR EXPERIMENTAL PHYSIOLOGY

Author	Title	Edition	Publisher
Ranade	Practical Physiology	4 <sup>th</sup> Edition	
CL Ghai	A Textbook of Practical Physiology	7 <sup>th</sup> edition	Jaypee
AK Jain	Manual Practical for BDS	1 <sup>st</sup> edition	Arya
GK Pal	Textbook of Practical Physiology	3 <sup>rd</sup> edition	Orient
Hutchison's	Clinical Method	20 <sup>th</sup> edition	Saunders Elsevier

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## BIOCHEMISTRY

### Aim:

The broad goal of the teaching of undergraduate students in Biochemistry is to provide a sound knowledge and make them understand the scientific basis of the life processes at the molecular level so that they can apply this acquired knowledge in solving clinical problems.

### Objectives:

The objective are dealt under three headings,

- (a) Knowledge and Understanding,
- (b) Skills and
- (c) Attitudes which will be dealt during the course

### Course outcomes assessed:

Were the students able to: Explain the normal functioning of all the organ systems and their interactions for well co-ordinated total body function. Assess the relative contribution of each organ system towards the maintenance of the milieu interior. List the physiological principles underlying the pathogenesis and treatment of disease. Conduct experiments designed for the study of physiological phenomena. Interpret experimental and investigative data. Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

## A. COURSE CONTENT AND APPROACH TO THE SUBJECT:

### 1. Chemistry of Bioorganic Molecules

#### 1.1 Carbohydrates Chemistry

- 1.1.1. Definition
- 1.1.2. Biological importance
- 1.1.3. Classification.
- 1.1.4. Monosaccharides
- 1.1.5. Isomerism
- 1.1.6. Glycosaminoglycans
- 1.1.7. Anomerism
- 1.1.8. Sugar derivatives
- 1.1.9. Disaccharides
- 1.1.10. Polysaccharides
- 1.1.11. Structures of starch and glycogen.

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### 2. Lipids Chemistry

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- 2.1. Definition biological
  - 2.2. Importance and Classification
  - 2.3. Fatty Acids.
  - 2.4. Compound lipids.
  - 2.5. Phospholipids
  - 2.6. Lipoproteins
    - 2.6.1. Formation
    - 2.6.2. Function
  - 2.7. Cholesterol
  - 2.8. Micelle
  - 2.9. Prostaglandins
  - 2.10 Bimolecular leaflet.
3. Proteins Chemistry
    - 3.1. Biological importance
    - 3.2. Aminoacids
      - 3.2.1. Classification.
      - 3.2.2. Introduction to peptides
    - 3.3. Proteins
      - 3.3.1. Simple and conjugated
      - 3.3.2. Globular and fibrous
      - 3.3.3. Classification of aminoacids
    - 3.4. Plasma proteins
      - 3.4.1. Classification and separation.
      - 3.4.2. Functions of Albumin.
      - 3.4.3. A brief account of immunoglobulins.
      - 3.4.4. Denaturation.
  4. Nucleic acids Chemistry
    - 4.1. Building units
    - 4.2. Nucleotides
    - 4.3. Outline structure of DNA and RNA.
  5. Nutrition
    - 5.1. Energy needs
      - 5.1.1. Basal metabolic rate
      - 5.1.2. Dietary carbohydrates
      - 5.1.3. Fibers
      - 5.1.4. Dietary lipids
      - 5.1.5. Essential fatty acids
      - 5.1.6. Essential amino acids
      - 5.1.7. Nitrogen balance

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5.2.3.1. Kwashiorkor

5.2.3.2. Marasmus.

6. Vitamins

6.1. Definition

6.2. Classification of vitamins.

6.3. Daily requirement, source and deficiency symptoms of fat & water soluble vitamins (brief account of water soluble vitamin is required with biochemical function)

6.4. Introduction to antivitamins and hypervitaminosis.

7. Energy metabolism

7.1. Carbohydrates Metabolism

7.1.1. Digestion and absorption

7.1.2. Glucose Transporters

7.1.3. Outlines of Glycolysis

7.1.4. Pyruvate Oxidation

7.1.5. Citric acid cycle.

7.1.6. Importance of pentose phosphate pathway

7.1.7. Formation of glucuronic acid.

7.1.8. Gluconeogenesis.

7.1.9. Rapoport Lubering cycle

7.1.10. Glycogenesis

7.1.11. Glycogenolysis

7.1.12. Regulation of Blood Glucose.

7.1.13. Diabetes mellitus and related disorders.

7.1.14. Evaluation of glycemic status

7.1.15. Glycogen storage disorders

7.1.16. Glucose 6-phosphate dehydrogenase deficiency

8. Lipid Metabolism

8.1 Digestion and absorption

8.2 Adipose tissue metabolism

8.3. Beta oxidation of fatty acids

8.4. Ketone body formation and utilization

8.5 Lipogenesis

8.6. Lipolysis.

8.7. Biochemical evaluation.

8.8. Hyperlipoproteinemias

8.9. Atherosclerosis

8.10. Fatty liver.

9. Protein Metabolism

9.1. Digestion & absorption

9.2. Nitrogen balance formation

9.3. Fates of ammonia

9.4. Ammonia metabolism

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- 9.4.1. Deamination
- 9.4.2. Transamination
- 9.4.3. Transdeamination
- 9.4.4. Decarboxylation
- 9.4.5. Transmethylation
- 9.5. Urea formation
  - 9.5.1. Brief introduction about metabolism of phenyl alanine, tyrosine, methionine, glycine. Phenylketonuria, Albinism, Alkaptonuria.
- 10. Metabolic interrelationship of carbohydrates, lipids and proteins metabolism.
- 11. Special Aspects of Metabolism
  - 11.1 Detoxication mechanisms : Brief outline in the detoxification.
- 12. Biochemical Genetics and Protein Synthesis
  - 12.1. Introduction to nucleotides
    - 12.1.1. Formation and Degradation.
  - 12.2. DNA as genetic material.
    - 12.2.1. Introduction to replication and transcription.
    - 12.2.2. Forms and functions of RNA.
  - 12.3. Genetic code and mutation.
  - 12.4. Outline of translation process.
  - 12.5. Antimetabolites and antibiotics interfering in replication
  - 12.6. Transcription
  - 12.7. Translation.
- 13. Enzyme and Metabolic Regulation
  - 13.1 Enzymes
    - 13.1.1. Definition
    - 13.1.2. Classification
    - 13.1.3. Specificity
    - 13.1.4. Active site
    - 13.1.5. Cofactors.
    - 13.1.6. Effect of pH
    - 13.1.7. Temperature
    - 13.1.8. Substrate concentration
    - 13.1.9. Introduction to enzyme inhibitors
    - 13.1.10. Proenzymes
    - 13.1.11. Isoenzymes
    - 13.1.12. Clinical enzymology
    - 13.1.13. Introduction to allosteric regulation
    - 13.1.14. Covalent modification and regulation by induction/repression.

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14. Structural Components and Blood Proteins

14.1. Connective tissue

14.1.1. Brief outline of structure

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- 14.1.2. Synthesis
- 14.1.3. Function of collagen and elastin.

15. Kidney Function Test, Liver Function Test, Gastric Function Test

- 15.1. Brief introduction to kidney function tests
  - 15.1.1. Brief outline of Urea clearance test
  - 15.1.2. Creatinine Clearance test
- 15.2. Liver function test
  - 15.2.1. Brief outline of tests for liver function
  - 15.2.2. Galactose tolerance test
  - 15.2.3. Van den Bergh reaction
  - 15.2.4. Albumin / Globulin Ratio
  - 15.2.5. Bromsulphathalein Excretion test
  - 15.2.6. Serum enzyme markers
  - 15.2.7. Jaundice
- 15.3. Gastric function tests
  - 15.3.1. Gastric function
  - 15.3.2. Hydrochloric acid secretion
  - 15.3.3. Assessment of free and total acidity
  - 15.3.4. Brief outline of pancreatic function test

16. Acid Base Balance

- 16.1. Acid base regulation (role of the buffer, kidney, lungs)
- 16.2. Acid base imbalance.

17. Water and Electrolyte Balance

- 17.1. A brief introduction to the following topics body water compartments
- 17.2. Osmolality
- 17.3. Electrolyte concentration of body fluid compartments
- 17.4. Regulation of Sodium and water balance
- 17.5. Renin Angiotensin system
- 17.6. Clinical application of sodium, potassium, chloride.

18. Haemoglobin Chemistry and Metabolism

- 18.1. Structure and functions.
- 18.2. Types of normal and Haemoglobin derivatives.
- 18.3. Brief introduction to heme synthesis and degradation.
- 18.4. Hemoglobinopathies

19. Mineral

- 19.1. Sources
- 19.2. Absorption
- 19.3. Transport
- 19.4. Requirement
- 19.5. Daily requirement
- 19.6. Metabolism

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- 19.7. Hormonal regulation of metabolism
- 19.8. Disorders
- 19.9. Toxicity associated with Calcium, Phosphorus, Iron, Iodine, fluoride.

20. Biological Oxidation

- 20.1. General concept of oxidation and reduction.
- 20.2. Role of mitochondria
- 20.3. High energy compounds
- 20.4. Electron transport chain.
- 20.5. Substrate level
- 20.6. Oxidative phosphorylation
- 20.7. Role of uncouplers and inhibitors.

21. Cancer

- 21.1. Introduction to cancer
- 21.2. Etiology
- 21.3. Chemical carcinogens
- 21.4. Outline mechanism of carcinogenesis.
- 21.5. Introduction to the following terms and their importance
  - 21.5.1. Tumor markers
  - 21.5.2. Oncogenes
  - 21.5.3. Viruses.

22. Hormone:

- 22.1 Introduction to secondary messenger (cAMP, calcium ion, inositol triphosphate).
- 22.2. Brief outline of mechanism of hormone action

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## APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. Introduction to biochemistry and its scope in dentistry	Desirable to Know
2. Carbohydrates	
2.1 Definition	Must to Know
2.2 Classification	Must to Know
2.3 Isomerism of Sugars	Must to Know
2.4 Physiologically important mono, di and polysaccharides	Must to Know
2.5 Glycogen, starch, cellulose	Must to Know
2.6 Mucopolysaccharides - hyaluronic acid, chondroitin sulphate, heparin.	Must to Know
3. Amino Acids	
3.1 Classification based on structure and nutritional importance	Must to Know
3.2 Optical activity	Must to Know
3.3 Isoelectric pH	Must to Know
3.4 Physiologically active peptides	Must to Know
4. Proteins	
4.1 Definition	Must to Know
4.2 Functions	Must to Know
4.3 Classification	Must to Know
4.4 Structure	Must to Know
4.5 Denaturation	Must to Know
4.6 Plasma Proteins and their separation by electrophoresis	Must to Know
4.7 Immunoglobulins	Must to Know
4.8 Haemoglobin and its abnormal forms	Must to Know
4.9 Special features and organisation of Proteins, collagen, structure and composition, muscle	Desirable to Know
5. Lipids	
5.1 Definition	Must to Know
5.2 Functions	Must to Know
5.3 Classification	Must to Know
5.4 Fatty Acids	Must to Know
5.5 Neutral Fats	Must to Know
5.6 Phospholipids	Must to Know
5.7 Cholesterol	Must to Know
5.8 Lipoproteins	Must to Know
6. Nucleic Acids	
6.1 Composition	Must to Know
6.2 Structure & Types of Deoxy ribonucleic acid (DNA) & Ribonucleic acid (RNA)	Must to Know
6.3 Nucleosides and Nucleotides and their importance	Must to Know
7. Vitamins	
7.1 Definition	Must to Know

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7.2 Classification, Chemistry, Sources, Requirement, Function, Metabolic role and Deficiency signs of vitamins: A, D, E, K, C, Thiamin, Riboflavin, Niacin, Pyridoxine, Folic Acid, Cyanocobalamine.	Must to Know
8. Genetic Code	Desirable to know
9. Enzymes	
9.1 Definition	Must to Know
9.2 Classification	Must to Know
9.3 Chemical nature	Must to Know
9.4 Enzyme specificity, mechanism of action	Must to Know
9.5 Properties of enzymes	Must to Know
9.6 Coenzymes and cofactors	Must to Know
9.7 Holoenzyme	Must to Know
9.8 Proenzyme	Must to Know
9.9 Isoenzyme	Must to Know
9.10 Factors influencing enzyme activity	Must to Know
9.11 Enzyme inhibition-types and examples	Must to Know
10. Diagnostic enzymes	Desirable to Know
11. Carbohydrate Metabolism	
11.1 Digestion and absorption of carbohydrates	Must to Know
11.2 Glycolysis	Must to Know
11.3 Cori's cycle	Must to Know
11.4 Citric acid cycle	Must to Know
11.5 Energetics of glucose oxidation	Must to Know
11.6 Glycogenolysis	Must to Know
11.7 Glycogenesis	Must to Know
11.8 Hexose monophosphate shunt	Must to Know
11.9 Regulation of blood glucose	Must to Know
12. Fermentation, biochemical changes during muscular contraction, electron transport chain, oxidative phosphorylation, respiratory poisons, oxygen toxicity, gluconeogenesis, glycogen storage disorders.	Desirable to know
13. Lipid Metabolism	
13.1 Digestion and absorption of lipid	Must to Know
13.2 Beta oxidation of fatty acids and its energetic	Must to Know
13.3 Ketone body formation	Must to Know
13.4 Utilization	Must to Know
13.5 Ketoacidosis	Must to Know
14. Synthesis of palmitic acid and triglycerides, fatty liver, and lipotropic action, metabolism during starvation	Desirable to know
15. Protein Metabolism	
15.1 Digestion and absorption of Amino acids	Must to Know
15.2 Synthesis of Proteins	Must to Know
15.3 Deamination of amino acids	Must to Know
15.4 Transamination	Must to Know

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15.5 Decarboxylation	Must to Know
15.6 Production and fate of ammonia	Must to Know
15.7 Urea cycle pathway	Must to Know
15.8 Methionine metabolism	Must to Know
15.9 Phenylalanine metabolism	Must to Know
15.10 Phenylketonuria, albinism, Alkaptonuria	Must to Know
16. Glycine metabolism, Synthesis of important products like creatine, noradrenaline, adrenaline, thyroxin, serotonin, heme from amino acids.	Desirable to know
<b>17. Nutrition and Dietetics</b>	
17.1 Dietary factors	Must to Know
17.2 Basal metabolic rate	Must to Know
17.3 Biological value of protein	Must to Know
17.4 Glucose sparing action	Must to Know
17.5 Essential amino acids	Must to Know
17.6 Dietary fibre	Must to Know
17.7 Essential fatty acids	Must to Know
17.8 Balanced diet	Must to Know
18. Principles of calorimetry, Respiratory quotient, Specific Dynamic Action of foods, protein-calorie malnutrition (kwashiorkor and marasmus), nitrogen balance, milk-composition and functions, determination of Basal Metabolic Rate (BMR)	Desirable to know
<b>19. Mineral metabolism</b> Distribution, sources, functions, requirements, absorption, metabolism, effect of deficiencies of -	
19.1 Calcium and phosphorus	Must to Know
19.2 Iron	Must to Know
19.3 Iodine	Must to Know
19.4 Fluorine	Must to Know
<b>20. Liver Function Tests</b>	
20.1 Liver function tests	Must to Know
20.2 Importance of alkaline phosphatase	Must to Know
20.3 Galactose tolerance test	Must to Know
21. Van den Bergh reaction Albumin /Globulin Ratio, Bromsulphathalein, Excretion test Serum Glutamate, Pyruvate Transaminase (SGPT) and other enzymes	Desirable to know
<b>22. pH and its biological importance</b>	
22.1 Acids and bases	Must to Know
22.2 Buffers	Must to Know
22.3 Acid base balance	Must to Know
22.4 Acidosis and alkalosis	Must to Know
23. Henderson-Hasselbatch equation, role of the kidney in acid base balance.	Desirable to know
<b>24. Renal Function Test</b>	
24. Urea clearance test	Must to Know

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24.2 Creatinine Clearance	Must to Know
25. Blood Constituents	
25.1 Calcium and phosphorous	Must to Know
25.2 Creatinine	Must to Know
25.3 Alkaline and acid phosphatase	Must to Know
26. Normal and abnormal variations of Urea, cholesterol, bilirubin, uric acid, transaminases.	Desirable to know

## B. PRACTICALS:

1. Reactions of monosaccharides - glucose & fructose
2. Reactions of disaccharides - lactose, maltose and sucrose
3. Preparation of osazones from glucose, fructose, lactose & maltose
4. Reactions of polysaccharides - starch
5. Identification of unknown carbohydrate
6. Colour reactions of proteins - albumin
7. Colour reactions of proteins - gelatin & peptone
8. Colour reactions of proteins - casein
9. Precipitation reactions of albumin
10. Precipitation reactions of gelatin and peptone
11. Precipitation reactions of - casein
12. Identification of unknown protein
13. Reactions of urea, uric acid and creatinine
14. Identification of physiologically important constituents
15. Composition of saliva and starch digestion by salivary amylase
16. Qualitative analysis of gastric juice - normal and abnormal contents
17. Urine analysis - normal constituents
18. Urine analysis - abnormal or pathological constituents
19. Determination of titrable acidity and ammonia content in urine
20. Determination of creatinine content in urine, calculation of creatinine clearance
21. Estimation of Blood glucose

## DEMONSTRATION SESSIONS

1. Colorimeter
2. Electrophoresis & Chromatography
3. Estimation of Serum calcium and phosphorus
4. Estimation of Bilirubin
5. Estimation of Urea in blood
6. Estimation of total protein in blood serum
7. Preparation of haemin crystals
8. Discussion of clinical charts - Glucose Tolerance Test (GTT)
9. Spotting of specimens -  
Haemin, Osazone - Microscopy, Ryle's tube, Folin -wu tube, Urinometer, Tests - Biuret reaction,

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Millon's reaction, Jaffe's reaction, Barfoed's reaction.

### C. RECOMMENDED BOOKS

Name of book & Title	Author	Publisher
A Text book of Biochemistry for Dental Students	Harbanslal	CBS Pub.
Concise Clinical Medical biochemistry	Pattabhiraman	Prithvi Pub..
Fundamentals of Biochemistry	A. C. Deb	New Central Book Agency
Text Book of Biochemistry	AVS Rama Rao	UBSPD with LKS pub.
Textbook of Medical Biochemistry	S. Rama Krishnan K.G.Prasannan R. Rajan	Orient Longman

### REFERENCE BOOKS

Name of book & Title	Author	Publisher
Review of Biochemistry	Harpers	USA Appleton and Lange Pub.
Basic and Applied Dental Biochemistry	William R.D	Singapore Langman Pub
Elliot J.C. Principles of Biochemistry	Albert Lehninger	CBS pub.

### D. SCHEME OF EXAMINATION

**Attested CTC**

Theory as per university rules

Viva Voce: General Human Physiology and Biochemistry

20 Mark

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- |                                      |          |
|--------------------------------------|----------|
| i) Viva on human physiology Syllabus | 12 Marks |
| ii) Viva on Biochemistry syllabus    | 08 Marks |

Internal Marks Distribution - Theory: 05 marks each physiology and biochemistry

Practicals: 05 marks each physiology and biochemistry

Practicals :

Human physiology:45 Marks

Major Experiments-	30 Marks
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Minor Experiments-	15 Marks
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Biochemistry: 45 Marks

One procedure for quantitative estimation	20 marks
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One procedure for qualitative analysis	15 marks
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Interpretation of Laboratory results in a given chart	10 marks
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# DENTAL ANATOMY, EMBRYOLOGY, ORAL HISTOLOGY AND ORAL PHYSIOLOGY

## INTRODUCTION:

The Course Includes Instructions In The Subject Of Dental Morphology, Oral Embryology, Oral Histology And Oral Physiology, a Composite of Basic Dental Sciences & Their Clinical Applications.

AIM: The broad goal of the teaching of undergraduate students in dental morphology, oral embryology, oral histology and oral physiology is to provide a sound knowledge and make them understand the scientific basis of the oral anatomy, oral physiology and oral histology at the molecular level so that they can apply this acquired knowledge in solving clinical problems.

## OBJECTIVES:

The Subject Of Dental Anatomy, Histology Including Embryology And Physiology Aims At Imparting Knowledge In Understanding The Structure, Function, Genesis, Morphology, Physiology And Histology Of Normal Tissues Associated With Oral Cavity.

### a) KNOWLEDGE:

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

- 1) The Student Is Expected To Know Morphology, Histology, Physiology And Embryology With Clinical Applications So As To Impart This Understanding For Diagnosing Oral Diseases In Future.
- 2) The Student Should Understand The Histological Basis And Physiologic Aging Process In The Dental Tissues So As To Apply This Knowledge In Various Dental Treatment Procedures.
- 3) The Students Must Acquire The Basic Knowledge Of Microscope And Various Methods Of Preservation Of Tissues (Hard And Soft Tissues), Different Staining Techniques And Their Visualization Under Microscope.

### b) SKILLS:

The Student Should Acquire Basic Skills In: -

- 1) Identification Of Deciduous & Permanent Teeth.
- 2) Age Estimation By Patterns Of Teeth Eruption From Plaster Cast Of Different Age Groups.
- 3) Microscopic Study Of Oral Tissues.
- 4) Carving Of Crown And Root Of Permanent Teeth In Wax.

## COURSE OUTCOMES ASSESSED:

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Were the students able to: Describe the normal development, morphology, structure & functions of oral tissues & variations in different pathological/non-pathological states. Understand the histological basis of various dental treatment procedures and physiologic ageing process in the dental tissues. Describe various research methodologies. Carve crowns of permanent teeth in wax. Identify & Draw Microscopic appearances of Oral tissues. Identify Deciduous & Permanent teeth. Estimate age by patterns of teeth eruption from plaster casts of different age groups.

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT:

TOPIC	DISTRIBUTION
1. Introduction To Dental Anatomy	
1.1. Definitions, Meaning Of Different Terms	Good to know
1.2. Aims & Scope Of Dental Anatomy	Must know
1.3. Classification & Types	Desirable to know
2. Maxillary incisors	
2.1. Nomenclature Morphological Features	Good to know
2.2. Set Traits Arch Traits Class Traits Type Traits	Must know
2.3. Morphological Variation Clinical Considerations	Desirable to know
3. Mandibular central incisor	
3.1. Nomenclature Morphological Features	Good to know
4. Set traits arch traits class traits type traits	Must know
4.1. Morphological Variation Clinical Considerations	Desirable to know
5. Maxillary canine	
5.1. Nomenclature Morphological Features	Good to know
5.2. Set Traits Arch Traits Class Traits Type Traits	Must to know
5.3. Morphological Variation Clinical Considerations	Desirable to know
6. Mandibular canine	
6.1. Nomenclature Morphological Features	Good to know
6.2. Set Traits Arch Traits Class Traits Type Traits	Must know
6.3. Morphological Variation Clinical Considerations	Desirable to know

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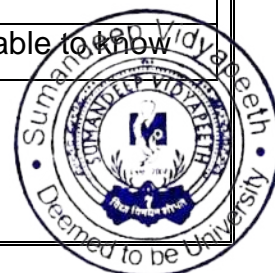
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7. Development Of Head And Neck	
7.1. Pharyngeal Arch Development,	Good to know
7.2. Pituitary Gland Development,	Must know
7.3. Thyroid gland, Ear Development	Desirable to know
8. Development Of Facial Structures	
8.1. Palate Development	Good to know
8.2. Development Of Maxilla	Good to know
8.3. Development Of Mandible	Good to know
8.3.1. Development Of Structural Component Of The Head And Neck ( Vasculature, Skeletal Elements, Facial Muscles, Innervation)	Good to know
8.4. Developmental Anomalies (Cervical Cysts And Fistulas, Thyroglossal Cysts And Fistulas, Mandibulofacial Dysostosis, Cleft Lip & Palate)	Must to know
9. Development Of Tooth	
9.1. Development Of Dental Lamina	Good to know
9.2. Stages Of Teeth Development (Bud , Cap, Bell, Advanced Bell Stages)	Good to know
9.3. Hertwig's epithelial root sheath and root formation.	Good to know
9.4. Clinical Considerations For Tooth Development With Histophysiologic Stages Of Teeth Development	Must to know
10. Enamel	
10.1. Physical Properties Of Enamel.	Good to know
10.2. Histologic Structure Of Enamel	Good to know
10.3. Development of Enamel	Good to know
10.4. Crystalline (Inorganic) Component	Good to know
10.5. Organic Matrix	Good to know
10.6. Enamel Rods	Good to know
10.7. Transverse Striations	Good to know

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10.8.	Direction Of Rods	Good to know
10.9.	Hunter-Schreger Bands	Good to know
10.10.	Incremental Lines Of Retzius	Good to know
10.11.	Perikymata	Good to know
10.12.	Rod Ends	Good to know
10.13.	Imbrication Lines	Good to know
10.14.	Enamel Cracks	Good to know
10.15.	Enamel Cuticle	Good to know
10.16.	Enamel Lamellae	Good to know
10.17.	Enamel tufts	Good to know
10.18.	Dentinoenamel junction	Good to know
10.19.	Enamel Spindles	Good to know
10.20.	Age Changes in Enamel	Good to know
10.21.	Clinical Considerations	Desirable to know
10.22.	Life Cycle Of Ameloblasts	Must to know
10.23.	Amelogenesis (Matrix Formation And Minerlization)	Must to know
10.24.	Clinical Considerations	Desirable to know
10.25.	Ultra Structural Features Of Structure Of Enamel	Good to know
11. Dentin		
11.1.	Formation	Must know
11.2.	Structure	Must know
11.3.	Classification	Desirable to know
11.4.	Clinical Consideration	Good to know
11.5.	Dentinogenesis	Good to know
11.6.	Dentinal Tubules & Odontoblasts	Good to know
11.7.	Types Of Dentin	Good to know
11.8.	Age Changes Associated	Good to know
11.9.	Epithelial- Mesenchymal Interactions In Odontogenesis	Must to know
11.10.	Types & Need For Such Classifications	Must to know

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11.11. Structural Changes	Must to know
11.12 Anomalies Associated With Dentinogenesis	Desirable to know
11.13. Location & Clinical Importance	Desirable to know
11.14. Implications In Clinical Practice	Desirable to know
12. Cementum.	
12.1. Physical Characteristics Chemical Composition Structure Difference Between Cementocyte& Osteocyte Cemento enamel junction	Good to know
12.2. Difference Between Acellular Extrinsic Fiber Cementum &Cellular Intrinsic Fiber Cementum, Cement dentinal junction, Function Hypercementosis	Must to know
12.3. Clinical Consideration	Desirable to know
13. Periodontal Ligament	
13.1. Development	Good to know
13.2. Cell Biology Of Normal Periodontium	Good to know
13.3. Periodontal Ligament Homeostasis	Must to know
13.4. Relationship Between Cells	Must to know
13.5. Clinical Consideration	Desirable to know
14. Oral Mucosa	
14.1. Introduction	Good to know
14.2. Oral Epithelium	Must to know
14.3. Lamina Propria	Must to know
14.4. Classification	Must to know
14.5. Junctions Of The Oral Epithelium	Must to know
14.6. Age Changes And Development	Must to know
14.7. Definition Of Omm And General Considerations boundaries of oral cavity subdivisons of oral mucosa layers of oral	Good to know

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mucosa function: protection, sensory, secretory, thermal	
14.8. Types Of Epithelium Components Of Epithelium Keratinization Pattern Proliferation And Maturation	Good to know
14.9. Keratinocytes And Non Keratinocytes And Associated Function And Location	Good to know
14.10 Structure and Two Zones Attachment Of Lamina Propria	Good to know
14.11. Masticatory Mucosa	Good to know
14.12. Lining Mucosa	Good to know
14.13. Specialized Mucosa	Good to know
14.14. Muco Gingival Junction, Muco-Cutaneous Junction, Dento Gingival Junction	Good to know
14.15. Clinical Changes Changes Occuring In Epithelium And Connective Tissue	Good to know
14.16. Clinical Features- Colour, Texture, Consistency, Other Features Like Contour (Scalloped, Straight, Interputtrd), Size, Shape And Position	Must to know
14.17. Ultrastructural Features And Cellular Events Of Cell Maturation Cell Layers Shape Of The Cell In Each Layer Intermediate Filaments Attachment Between Cell To Cell And Cell To Basement Membrane	Must to know
14.18. Difference Between Keratinized And Non Keratinized Mucosa	Must to know
14.19. Interlocking Arrangement Basement Membrane And Basal Lamina	Must to know
14.20. How they differ/functions limitations and boundries types of keratinization with structure blood supply and nerve supply examples for the types of oral mucosa,	Must to know
14.21. Histological Features(Epithelium, Lamina Propria, Submucosa)	Must to know

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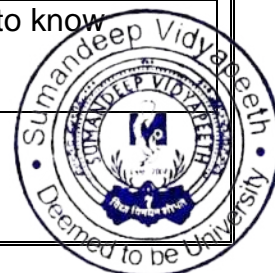
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14.22. Development Of The Junctions Shifting Of The Junction	Must to know
14.23. Symptoms Associated With Changes	Must to know
14.24. Clinical Correlation	Desirable to know
15. Maxillary sinus	Good to know
15.1 Definition Development Anatomy Structure & Variation Microscopic Features Function Importance	Good to know
15.2.Histology	Must to know
15.3.Clinical Consideration	Desirable to know
16. Eruption And Shedding	
16.1. Eruption	Must to know
17. Pattern	Good to know
17.1. Mechanism	Must to know
17.2. Clinical Consideration	Desirable to know
17.3. Histology	Good to know
17.4. Shedding	Good to know
17.5. Chronology	Good to know
18. Occlusion	
18.1. Basics Of Occlusion	Good to know
18.2. Compensatory Curves, Centric Jaw Relations And Occlusion	Good to know
18.3. Overjet, Overbite	Must to know
18.4. Malocclusion	Desirable to know
19. Histochemistry	
19.1. Tissue Fixation	Good to know
19.2. Tissue Processing, Microtomy& Staining And Mounting	Good to know
19.3. Materials Used In Fixation And Their Specific Use	Good to know
19.4. Materials Used Their Specific Use	Good to know
19.5. Mechanism Of Fixation	Must to know
19.6. Mechanism Of Processing And Staining, Microtome Types And Mechanism	Must to know

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19.7. Different Fixative Used In Various Histochemical Technique	Desirable to know
19.8. Technical Details Of All Procedures	Desirable to know

## B. SYLLABUS FOR PRACTICALS:

### Demonstration:

- Crown morphology: Students are demonstrated on teeth carving of permanent natural teeth, following which the students carve the teeth and get it approved by respective mentors.
- Students are supposed to bring natural tooth with normal anatomy for the carving practicals.
- Students are shown variation in normal teeth pattern with the help of models, charts and extracted teeth.
- Normal oral histology slides are shown to the students which they are able to apply later in the preclinical and clinical settings.
- Assignments are given students in relation to variations in normal anatomy of individual teeth as well as their implications in forensic odontology and asked to search databases and find current and relevant literature evidences and make a report on the same.
- Students are given assignment in groups or in single to search for atleast two relevant evidences related to variation in crown morphology of individual tooth
- Practical aspects of Histochemistry, tissue Fixation, tissue processing, microtomy, staining and mounting will be discussed in small groups and students will get hands on for histopathology processing so that they can understand it well.

## C. RECOMMENDED TEXT BOOKS:

SR.NO.	AUTHOR	TITLE	EDITION
1	Antonio Nanci	Ten Cate's Oral Histology Development, Structure, and Function	7th
2	Prabhu S.R	Textbook of Oral & Maxillofacial Anatomy, Histology & Embryology	--
3	Avery James K	Oral Development and Histology	6th
4	Chandra Satish	Textbook of Dental and Oral Histology with	--

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		Embryology	
5	Nanci Antonio	Oral histology	7th
6	Kumar, G S	Orban's Oral Histology and Embryology	Twelfth
7	Ash Major M	Wheeler-s atlas of tooth form	5th
8	Berkovitz B.K.B	Oral anatomy, histology and embryology	4th
9	Woelfel Julian B	Dental anatomy its relevance to dentistry	N.A.
10	Manjunatha BS	Textbook of Dental Anatomy and Oral Physiology	--
11	P.R. Garant	Oral cell & tissues	--

## D. SCHEME OF EXAMINATION

### a. INTERNAL EXAMINATION:

#### 1. FIRST INTERNAL / TERMINAL EXAMINATION:

**The following amendments in I BDS Dental Anatomy and Oral Histology practical syllabus is as under: (Board of Studies Letter No. KMSDCH/BOS/1403/2016 dated 04/07/2016 and Board of Management resolution Ref: No. SV/R/2016/2754 dated 24/10/2016.**

*The change in I BDS Dental Anatomy and Oral Histology practical syllabus shall be as following:*

**1. To OSPE/OSCE pattern in practical internal examination in place of spotters.**

*These will enable students to develop analytical thinking.*

S. No	Particulars	Marks
1	Slides	25
2	Spotters	25
3	Carving	30
4	Viva	20
Total		100

#### 2. SECOND INTERNAL –

S. No	Particulars	Marks
1	OSPE	80
2	Viva	20
Total		100

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### 3. THIRD INTERNAL / PRELIMS-

S. No	Particulars	Marks
1	Slides	25
2	Spotters	25
3	Carving	30
4	Viva	20
Total		100

#### b. UNIVERSITY EXAMINATION:

As per the university rules

Viva Voce (distribution of marks)

SL NO	TOPIC	MARKS
1	Dental Anatomy And Oral Physiology	10
2	Dental Histology And Embryology	10
TOTAL		20

PRACTICAL EXAMINATION: (distribution of marks)

Practicals: 90 Marks

1. Carving 30 marks 1 hour 15 min
2. Spotters 50 marks (14 spotter) 1 hour 15 min
  - 08--histology and ground section slides---4 marks each
  - 06-tooth and casts for identifications of teeth, numbering system and age assessment-3 marks each
3. Journal: 10 MARKS

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## DENTAL MATERIALS

Dental material science refers to the art and science that deals with the physical nature, chemical basis, manipulation and biological behavior of dental materials used as or in the fabrication of a restoration or prosthesis.

### AIMS:

1. To present basic chemical and physical properties of dental materials as they are related to its manipulation.
2. To teach the student the criteria of selection of dental material thus enabling him/her to discriminate between facts and propaganda with regards to claims of manufacturer.

### OBJECTIVES:

1. To understand the evolution and development of science of dental materials.
2. To explain purpose of course in dental materials to personnel concerned with the profession of dentistry, knowledge of the physical and chemical properties and biomechanical behavior.
3. To make the student aware of laying down of standards or specifications of various materials.
4. To keep abreast with recent advances in materials.
5. To understand and evaluate claims made by manufacturers of dental materials.

### SCOPE OF THE SUBJECT:

The science of dental materials is imperative for the clinical and laboratory procedures involved in restorative dentistry such as Prosthodontics, Conservative dentistry, Periodontics, Orthodontics and Pedodontics.

### COURSE OUTCOMES ASSESSED:

Were the students able to: Understand the evolution and development of science of dental material. Explain purpose of course in dental materials to personnels concerned with the profession of the dentistry. Acquire knowledge of physical and chemical properties. Acquire knowledge of biomechanical requirements of particular restorative procedure. Search for newer and better materials which may answer our requirements with greater satisfaction. Evaluate the claims made by manufactures of dental materials

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. Structure of Matter and Principles of Adhesion	
1.1 Change of state	Must to Know

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1.2 Interatomic primary bond, secondary bond	Must to Know
1.3 Inter atomic bond distance and bond energy, thermal energy	Desirable to Know
1.4 Crystalline structure & Non crystalline structure	Good to Know
1.5 Diffusion	Good to Know
1.6 Adhesion & Bonding – General	Must to Know
1.7 Adhesion and bonding to tooth structure	Must to Know
<b>2. Important Physical Properties - Applicable to Dental Materials</b>	
2.1 Physical properties are based on laws of mechanics, acoustics, optics, thermodynamics, electricity, magnetism, radiation, atomic structure or nuclear phenomenon, hue, value, chroma and translucency	Must to Know
2.2 Thermal conductivity and coefficient of thermal expansion	Must to Know
2.3 Stress, strain, proportional limit, elastic limit, yield strength, modulus of elasticity,	Must to Know
2.4 Flexibility, Resilience,	Must to Know
2.5 Strength: Impact strength, permanent deformation, flexure strength, static fatigue,	Must to Know
2.6 Toughness, brittleness, hardness,	Must to Know
2.7 Ductility and malleability,	Must to Know
2.8 Abrasion resistance,	Must to Know
2.9 Rheology, thixotrophy, static creep, dynamic creep, flow,	Must to Know
2.10 Color: three dimensional color- hue, chroma, value, munsell system, metamerism, fluorescence,	Must to Know
2.11 Physical property of tooth,	Must to Know
2.12 Stress during mastication	Must to Know
<b>3. Biological Considerations in Use of Dental Materials</b>	
3.1 Materials used are with the knowledge of certain biological considerations for use in oral cavity.	Must to Know
3.2 Requirement of materials from prospective of biological compatibility. Classification of material from prospective of biological compatibility E.g. contact with soft tissue, affecting vitality of pulp, used for root canal filling, affecting hard tissue of teeth, laboratory material that could be ingested or inhaled during handling	Must to Know
3.3 Hazards associated with materials: PH effecting pulp, polymer causing chemical irritation, mercury toxicity etc. micro leakage, thermal changes, galvanism and toxic effect of materials. Biological evaluation for systemic toxicity, skin irritation, mutagenicity and cariogenicity. Disinfection of impression materials for infection control.	Must to Know
<b>4. Gypsum and Gypsum Products</b>	

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4.1 Gypsum- its origin, chemical formula, and products manufactured from gypsum	Must to Know
4.2 Dental plaster, dental stone, die stone, high strength, high expansion stone	Must to Know
4.3 Application and manufacturing procedure for each	Good to Know
4.4 Macroscopic and microscopic structure of each	Must to Know
4.5 Supplied as and commercial name	Must to Know
4.6 Chemical setting, setting reaction, theories of setting, gauging water, microscopic structure of set material	Must to Know
4.7 Setting time, working time, measurement of setting time and factors controlling setting time	Must to Know
4.8 Setting expansion, hygroscopic setting expansion- factors affecting each	Must to Know
4.9 Strength : wet strength, dry strength, factors affecting strength, tensile strength	Must to Know
4.10 Slurry- need and use	Good to Know
4.11 Care of cast	Must to Know
4.12 ADA classification	Must to Know
4.13 Description of impression plaster and dental investment	Must to Know
4.14 Manipulation including recent methods and advanced methods	Must to Know
4.15 Disinfection: infection control, liquids, sprays, radiation	Must to Know
4.16 Methods of use of disinfectants	Good to Know
4.17 Storage of material- shelf life	Must to Know
5. Impression Materials used in Dentistry	
5.1 Impression plaster	Must to Know
5.2 Impression compound(FLIPPED CLASSROOM)	Must to Know
5.3 Zinc oxide eugenol impression paste	Must to Know
5.4 Bite registration paste	Good to Know
5.5 Non eugenol paste	Must know
5.6 Hydrocolloids- Reversible and irreversible	Must to Know
5.7 Elastomeric impression materials	
5.7.1 Polysulfide	Must to Know
5.7.2 Condensation silicones	Must to Know
5.7.3 Addition silicones	Must to Know
5.7.4 Polyether	Must to Know
5.7.5 Visible light cure polyethyl urethane dimethacrylate	Good to Know
5.8 Historical background and development of each impression material	Must to Know

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5.9 Definition of impressions, purpose of making impressions, application and uses, market and commercial names, composition, chemistry of setting, impression trays, adhesion to trays, manipulation and equipments required for manipulation, techniques of impressions, storage of impressions, compatibility with cast and die materials, recent advancement in materials and mixing devices,	Must to Know
5.10 Study of individual and comparative properties	Must to Know
<b>6. Synthetic Resin used in Dentistry</b>	
6.1 Historical background and development of material, denture base materials and their classification and requirement	Must to Know
6.2 Classification of resins	Must to Know
6.3 Dental resins- requirements of dental resin, application, polymerization, polymerization mechanism, stages in addition polymerization, inhibition of polymerization, copolymerization, molecular weight, cross linking, plasticizers, physical properties of polymers, polymer structures type of resins	Must to Know
6.4 Acrylic resin: mode of polymerization: heat activated, chemically activated, light activated, mode of supply, application, composition, polymerization reaction of each.	Must to Know
6.5 Technical considerations	Must to Know
6.6 Methods of manipulation of each type of resin (FLIPPED CLASSROOM)	Must to Know
6.7 Physical properties of each type of resin	Must to Know
6.8 Miscellaneous resins and 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.	Good to Know
<b>7. Dental Waxes</b>	
7.1 Introduction and importance of waxes	Must to Know
7.2 Sources of natural waxes and their chemical nature	Must to Know
7.3 Classification of waxes	Must to Know
7.4 Properties: melting range, thermal expansion, mechanical properties, flow, residual stresses, ductility	Must to Know
7.5 Dental waxes: mode of supply, classification, composition, properties of following waxes	
7.5.1 Bite registration wax	Must to Know
7.5.2 Impression waxes for corrective impression	Must to Know
7.5.3 Base plate wax	Must to Know
7.5.4 Processing wax	Must to Know

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7.5.5 Boxing wax	Must to Know
7.5.6.Utility wax	Must to Know
7.5.7 Sticky wax	Must to Know
7.5.8 Casting wax	Must to Know

## B. SYLLABUS FOR PRACTICALS:

1. Gypsum Products:
  - a. Dental plaster: Manipulation, Properties and Preparation of one cube 2" x 2"
  - b. Dental Stone: Manipulation, Properties and Preparation of one cuboid 3" x 2"
  - c. Die Stone: Vacuum mixing and properties
2. Impression Compound: Manipulation, Properties and making primary impression of finger
3. Shellac Baseplate: Manipulation, Properties and Preparation of one special tray
4. Zinc Oxide Eugenol Impression Paste: : Manipulation, Properties and making final impression of finger
5. Alginate-Irreversible Hydrocolloid: Manipulation, Properties and making impression of jaw typodont.
6. Agar Agar-Reversible Hydrocolloid: Demonstration of manipulation of agar for duplication
7. Polysulfide Elastomer, Polyether Elastomer, Condensation Silicone Elastomer, Addition Silicone Elastomer: composition, properties and Demonstration of manipulation
8. Auto Polymerizing Resin: Manipulation, Properties and stages of polymerisation
9. Heat Cure Acrylic Resin: Manipulation, Properties and stages of polymerisation
10. Dental Waxes: Modelling Wax, Beading & Boxing, Wax Blue Inlay Wax, Yellow Sticky Wax: Composition, Manipulation, Properties and uses.
11. EBES in Dental materials is practiced as generation of PICO on properties of Dental materials and superiority of manipulation techniques, literature search and reflective group discussions facilitated by teaching staff.

## C. RECOMMENDED BOOKS:

Title	Author	Publisher
Science of Dental Material	Kenneth J Annusavice	W.B. Saunder's
Restorative Dental Materials	Robert G Craig	Mosby, USA
Dental Materials	Craig, Power and Wataha	
Notes on Dental Material	E C Combe	Churchill Livingstone, UK
Basic Dental Material	Mannapalli	

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## D. EXAMINATIONS:

### a. INTERNAL ASSESSMENT

- No internal assessment for both theory and practical shall not be conducted for I BDS Dental Materials subject.

### b. UNIVERSITY EXAM

- University Exam (theory & practical) shall be conducted at the end of II BDS

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## PROSTHODONTICS AND CROWN & BRIDGE

Prosthodontics is the dental specialty pertaining to the diagnosis, treatment planning, rehabilitation and maintenance of the oral function, comfort, appearance and health of patients with clinical conditions associated with missing or deficient teeth and/or maxillofacial tissues using biocompatible substitutes.

### AIM:

To train the dental student with adequate knowledge, necessary skills and reasonable attitudes which are required for carrying out procedures related to prosthodontic practice involving prevention, diagnosis and treatment of missing and associated structures in the oral and extra-oral region.

### OBJECTIVES:

1. To have an adequate knowledge of the science of prosthodontics
2. To understand the principles of biologic functioning and prosthodontic methods
3. To diagnose and treat the prosthodontic patient as a whole.
4. To evaluate and analyze scientifically and evidence based established facts and data.

### COURSE OUTCOMES ASSESSED:

Were the students able to: Mark anatomical landmarks in edentulous casts, classify partially edentulous arches and correlate to clinical picture. Identify instruments and equipment used for clinical and laboratory prosthodontic procedures. Perform all lab procedures to make a conventional complete denture, removable interim partial denture. Perform tooth preparation and wax patterns for crowns on typhodont teeth

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT:

TOPIC	DISTRIBUTION
1. Terminology	Must to Know
2. Anatomical Landmarks	Must to Know
3. Pouring The Cast	Must to Know
4. Special Tray	Must to Know
5. Beading Boxing	Must to Know
6. Record Base	Must to Know
7. Occlusal Rim	Must to Know
8. Articulators	Must to Know
9. Impression Procedure In CD	Must to Know

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10. Teeth Selection	Must to Know
11. Teeth Arrangement	Must to Know
12. Lab Procedures In CD	Must to Know
13. Characterization(FLIPPED CLASSROOM)	Must to Know

## B. SYLLABUS FOR PRACTICALS:

### EXERCISES TO BE CONDUCTED

#### Part-I Complete Denture

1. Overview to prosthodontics
2. Introduction to complete dentures
3. Anatomical landmarks: maxillary arch
4. Anatomical landmarks: mandibular arch
5. Clinical and laboratory steps in fabrication of complete dentures.
6. Making of primary impression with medium fusing impression compound: maxilla
7. Making of primary impression with medium fusing impression compound: mandible
8. Demonstration for making primary impression with alginate

Making of primary impression with alginate for both maxillary and mandibular completely edentulous arches dies

*The following amendments in I BDS Dental Material Pre-clinical practical syllabus is as under: (Board of Studies Letter No. KMSDCH/BOS/12/2019 dated 26/08/2019 and Board of Management resolution Ref: No. SVDU/NOTFN/06/2019-20 dated 25/11/2019).*

*The change in I BDS Dental Material PreClinical syllabus shall be as following:*

1. *Making of primary impression using irreversible hydrocolloid for completely edentulous arches*

*These will enable students to develop practice and habit of using alginate.*

9. Demonstration for making primary impression with addition silicone
10. Demonstration for making primary impression with agar agar
11. Pouring of primary cast: maxilla (inversion method)
12. Pouring of primary cast: mandible (inversion method)
13. Fabrication special trays with different spacer designs. (FLIPPED CLASSROOM)
14. Pouring of master cast
15. Fabrication denture bases with occlusion wax rims.
16. Transfer of jaw relations to mean value articulator (mounting of casts)
17. Selection of artificial teeth.

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18. Arrangement of teeth in class I relation:
  - 15.1 Arrangement of upper anterior teeth
  - 15.2 Arrangement of lower anterior teeth
  - 15.3 Arrangement of upper posterior teeth
  - 15.4 Arrangement of lower posterior teeth

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19. Wax up, carving and polishing

20. EBES in Pre-clinical Prosthodontics is practiced as generation of PICO on methods and techniques, literature search and group discussions facilitated by teaching staff.

### C. RECOMMENDED BOOKS

TITLE	AUTHOR	PUBLISHER
Dental lab Procedures Part I: Complete dentures	Rudd & Murrow	-
Dental lab Procedures Part II: Removable Partial dentures	Rudd & Murrow	-
Dental lab Procedures Part I: Fixed Partial dentures	Rudd & Murrow	-
Manual for Pre-clinical Prosthodontics	S Lakshmi	Elsevier
Essential Manual of PreClinical Prosthodontics	Dr. ParanjayPrajapati Dr. Sneha Kulkarni	Jaypee

### D. EXAM SCHEME:

#### a. INTERNAL ASSESSMENT

- No internal assessment for both theory and practical shall not be conducted in I BDS.

#### b. UNIVERSITY EXAM

- University Exam (theory & practical) shall be conducted at the end of II BDS

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## BEHAVIOURAL SCIENCES (20 HOURS OF INSTRUCTION)

*The following amendments in syllabus of I BDS is as under: (Board of Studies Letter No. KMSDCH/BOS/12/2019 dated 26/08/2019 and Board of Management resolution Ref: No. SVDU/NOTFN/06/2019-20 dated 25/11/2019).*

*The changes in syllabus of I BDS shall be as following:*

### *1. Introduction of Behavioral science in I BDS*

*These will enable students to develop personality, communication skills and other qualities.*

## GOAL:

The aim of teaching behavioural sciences to undergraduate students is to impart such knowledge and skills that may enable him to apply principles of behaviour –

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

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

## OBJECTIVES:

### A) KNOWLEDGE AND UNDERSTANDING

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

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

### B) SKILLS

The student shall be able to :

- 1) Interview the patient and understand different methods of communication skills in dentist-patient relationship.
- 2) Improve patient compliance behaviour.
- 3) Develop better interpersonal, managerial and problem solving skills.

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- 4) Diagnose and manage minor psychological problems while treating dental patients.

### INTEGRATION:

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

Training should be integrated with all the departments of dentistry, medicines, pharmacology, psychology and biochemistry.

### PSYCHOLOGY:

- 1) Definition and need of behavioural science. Determinants of behaviour: Scope of behavioural science
- 2) Sensory process and perception perceptual process- clinical application.
- 3) Attention- Definition- Factors that determine attention. Clinical application.
- 4) Memory- Memory process- types of memory, forgetting.  
Methods to improve memory, clinical assessment of memory and clinical application.
- 5) Definition- Laws of Learning  
Type of Learning : Classical Conditioning, Operant Conditioning, Cognitive Learning, Insight Learning, Social Learning, Observational Learning, Principles of Learning- Clinical application.
- 6) Intelligence- Definition: Nature of Intelligence Stability of Intelligence  
Determinants of Intelligence, clinical application.
- 7) Thinking- Definition: Types of Thinking, delusions, problem solving
- 8) Motivation- Definition: Motive, Drive, needs classification of motives
- 9) Emotions-Definition differentiation from feelings- Role of Hypothalamus, cerebral cortex, adrenal glands, ANS. Theories of emotion, types of emotion.

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 – BasanthPuri and Peter J Tyrer

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## MANAGEMENT SCIENCE

1. To describe and discuss the elements of effective management.
2. To comprehend details about the basic Organizational Behavioural Science, Human resource Management, Accounting & Finance Management, Marketing Management and Hospital Administration processes in understanding entire concept of management science.
3. To identify environmental issues as they impact management and develop strategies to adapt to these environments.
4. To Identify and explain issues involved in managing a diverse workforce and conduct necessary research to address these issues.
5. To discuss and apply the planning, organizing and control processes.
6. To educate students of management with different concept of accounting.
7. To develop ability among management student to evaluate and use accounting information which assist in decision making for manager
8. To Understand Concepts of Marketing and Customer Value
9. To equip students with basic understanding finance and its utility
10. To enable students to take decisions related with financial feasibility and working capital management
11. To Identify, discuss and/or describe various theories related to the development of Work Teams in organizations.
12. Duration of each session is one hour.

## COURSE CONTENTS

### MODULE I: Managerial Functions & Organizational Behavior (10 sessions)

Concept and foundations of Management science, Evolution of Management thoughts; Managerial Functions – Planning, Organizing, Directing, Controlling, and Decision Making; Role of Managers, Managerial Skills; Social Responsibility and Managerial Ethics.

Concept of Organizational Behavior; Individual and organizational Behavior; Personality; Value and Attitude; Perception; Motivation; Learning and Reinforcement; Work stress and stress Management; Leadership process and styles; Conflict and Negotiation; Managing Cultural Diversity.

### MODULE II Accounting and Finance- Part I (6 Sessions)

Meaning & Role of Accounting & Finance in Hospital Management: Basic Concepts and Terminology of Accounting & Finance: Accounting Statements: Understanding & Importance.

### MODULE III: Marketing Management (9 sessions)

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Defining Marketing; Importance, Scope, Core Marketing, New Marketing; Developing & Implementing Marketing Strategies & Plans; Marketing and Customer Value, Corporate and Division Strategic Planning, Business Unit Strategic Planning, the Marketing Plan & Marketing Performance: Creating Customer Value, Satisfaction and Loyalty; Building Customer Value & Satisfaction, Cultivating Customer Relationships; Crafting Brand Positioning & Dealing with Competition; Developing & Communicating Positioning Strategy, differentiation Strategies, Competitive Forces, Analyzing Competitors, and Competitive Strategies; Designing and Managing Services; The nature of Services, marketing strategies, managing service quality, managing service brands, managing product services.

**MODULE IV; Accounting and Finance Part –II (5 sessions)**

Cost Accounting for Hospitals: Understanding of Corporate Finance for Hospital Managers: Source of Financing, Cost of Capital & Capital Budgeting: Purchase & Inventory Management: Budgeting & Budgetary Control; Investment, Financial Markets & Services;

**MODULE V Human Resource Management (5sessions)**

Human Resource Management: Introduction; HRM functions; HR planning; Job Analysis; Job Evaluation; Recruitment & Selection; Training and Development; Performance Management and Compensation: Industrial Relation and Labour laws; HRIS

**MODULE VI: Hospital Services Management/Administration (15 sessions)**

Introduction to Hospitals, Hospital Administration: A contemporary Overview, Building a hospital and challenges faced in setting up of hospital, Energy Conservation. Clinical Services: Out Patient Department, Emergency Service Department, Operation Theater and ICU, In Patients Department. Diagnostic Services: Radiology and Laboratory Services. Support and other utility services: Pharmacy services, Medical Record Department, Dietary and Housekeeping services. Material and Equipment Management, Quality and Safety management: Occupational Safety and Hospital Acquired Infections, Hospital Waste Management and Quality Management. Recent Advances in Hospital Administration

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## SECOND BDS GENERAL PATHOLOGY AND MICROBIOLOGY

### GENERAL PATHOLOGY:

#### DEFINITION:

“Pathology is the study (logos) of disease (pathos). More specifically, it is devoted to the study of the structural, biochemical and functional changes in cells, tissue and organ that underlie disease.”

#### AIM:

At the end of the course in General Pathology the student should be able to understand how the cells and the tissues of the body respond to various types of injury and how these structural and functional abnormalities bring about the various clinical manifestations with which the patient present to the healthcare professional.

#### OBJECTIVES:

Enabling the student

- I. To demonstrate and apply basic fact, concepts and theories in the field of pathology.
- II. To recognize and analyze pathological changes at macroscopically and microscopical levels and explain their observations in term of disease processes.
- III. To integrate knowledge from the basic science, clinical medicine and dentistry in the study of Pathology.
- IV. To demonstrate understanding of the capabilities and limitations of morphological Pathology in its contribution to medicine, dentistry and biological research.
- V. To demonstrate ability to consult resource materials outside lectures, laboratory and tutorial classes.

#### SCOPE:

By the use of molecular, microbiological, immunological and morphologic techniques, pathology attempts to explain the ways and wherefores of the sign and symptoms manifested by patients while providing a rational basis for clinical care and therapy. It thus serves as the bridge between the basic sciences and clinical medicine and is the scientific foundation for all of medicine.

#### COURSE OUTCOMES ASSESSED:

Were the students able 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. Demonstrate and apply basic facts, concepts and theories in the field of Pathology. Recognize and analyze pathological changes at macroscopically and microscopical levels and explain their observations in terms of disease processes. Integrate knowledge from the basic sciences, clinical medicine and dentistry in the study of Pathology. Demonstrate

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understanding of the capabilities and limitations of morphological Pathology in its contribution to medicine, dentistry and biological research. Demonstrate ability to consult resource materials outside lectures, laboratory and tutorial classes. Understand the basics of various branches of microbiology and able to apply the knowledge relevantly. Apply the knowledge gained in related medical subjects like General Medicine and General Surgery and Dental subjects like Oral Pathology, Community Dentistry, Periodontics, Oral Surgery, Pedodontics, Conservative Dentistry and Oral medicine in higher classes. Understand and practice various methods of Sterilisation and disinfection in dental clinics. Able to diagnose infectious diseases and lesions in the oral cavity. Should be able to select, collect and transport clinical specimens to the laboratory. Should be able to carry out proper aseptic procedures in the dental clinic.

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. Introduction to Pathology	
1.1 Terminologies	Must to Know
1.2 The cell in health	Must to Know
1.3 The normal cell structure	Must to Know
1.4 The cellular functions	Must to Know
2. Etiology and Pathogenesis of Disease	
2.1 Cell Injury	Must to Know
2.2 Types – congenital	Must to Know
2.3 Acquired	Must to Know
2.4 Mainly Acquired causes of disease	Must to Know
2.5 Hypoxic injury, chemical injury, physical injury, immunological injury	Must to Know
3. Degenerations	
3.1 Amyloidosis	Must to Know
3.2 Fatty change	Must to Know
3.3 Cloudy swelling	Must to Know
3.4 Hyaline change, mucoid degeneration	Must to Know
4. Cell death: Necrosis & Apoptosis	
4.1 Def, causes, features and types of necrosis	Must to Know
4.2 Gangrene - Dry, wet, gas	Must to Know
4.3 Pathological Calcifications	Must to Know
4.4 Dystrophic and metastatic	Must to Know
5. Inflammation	
5.1 Definition, causes types, and features	Must to Know
5.2 Acute inflammation	Must to Know

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5.2.1 The vascular response	Must to Know
5.2.2 The cellular response	Must to Know
5.2.3 Chemical mediators	Must to Know
5.2.4 The inflammatory cells	Must to Know
5.2.5 Fate	Must to Know
5.3 Chronic inflammation	Must to Know
5.4 Granulomatous inflammation	Must to Know
6. Healing	
6.1 Regeneration	Must to Know
6.2 Repair	Must to Know
6.2.1 Mechanisms	Must to Know
6.2.2 Healing by primary intention	Must to Know
6.2.3 Healing by secondary intention	Must to Know
6.2.4 Fracture healing	Must to Know
6.2.5 Factors influencing healing process	Must to Know
6.2.6 Complications	Must to Know
7. Tuberculosis	
7.1 Epidemiology	Must to Know
7.2 Pathogenesis (Formation of tubercle)	Must to Know
7.3 Pathological features of Primary and Secondary TB	Must to Know
7.4 Complications and Fate	Must to Know
8. Syphilis	
8.1 Epidemiology	Desirable to know
8.2 Types and stages of syphilis	Desirable to know
8.3 Pathological features	Desirable to know
8.4 Diagnostic criterias	Desirable to know
8.5 Oral lesions	Good to know
9. Typhoid	
9.1 Epidemiology	Desirable to know
9.2 Pathogenesis	Desirable to know
9.3 Pathological features	Desirable to know
9.4 Diagnostic criterias	Desirable to know
10. Thrombosis	
10.1 Definition, Pathophysiology	Must to Know
10.2 Formation, complications & Fate of a thrombus	Must to Know
11. Embolism	
11.1 Definition	Must to Know

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11.2 Types	Must to Know
11.3 Effects	Must to Know
12. Ischaemia and Infraction	
12.1 Definition, etiology, types	Must to Know
12.2 Infraction of various organs	Must to Know
13. Derangements of body fluids	
13.1 Oedema – pathogenesis	Good to know
13.2 Different types	Good to know
14. Disorders of circulation	
14.1 Hyperaemia	Good to know
14.2 Shock	Good to know
15. Nutritional Disorders	
15.1 Common Vitamin Deficiencies	Good to know
16. Immunological mechanisms in disease	
16.1 Humoral& Cellular immunity	Good to know
16.2 Hypersensitivity & autommunity	Good to know
17. AIDS and Hepatitis.	Must to Know
18. Hypertension	
18.1 Definition, classification	Must to Know
18.2 Pathophysiology	Must to Know
18.3 Effects in various organs	Must to Know
19. Diabetes Mellitus	
19.1 Def, Classification, Pathogenesis, Pathology in different organs	Must to Know
20. Adaptive disorders of growth	
20.1 Atrophy & Hypertrophy, Hyperplasia, Metaplasia and Dysplasia	Must to Know
21. General Aspects of Neoplasia	
21.1 Definition, terminology, classification	Must to Know
21.2 Differences between benign and malignant neoplasms	Must to Know
21.3 The neoplastic cell	Good to Know
21.4 Metastasis	Must to Know
21.5 Etiology and pathogenesis of neoplasia, Carcinogenesis	Good to Know
21.6 Tumour biology	Good to Know

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21.7 Oncogenes and anti-oncogenes	Good to Know
21.8 Diagnosis	Must to Know
21.9 Precancerous lesions	Must to Know
21.10 Common specific tumours, Sq papilloma &Ca, Basal cell Ca, Adenoma &Adenoca, Fibroma&Fibrosarcoma, Lipoma and liposarcoma	Must to Know
22 Anaemias	
22.1 Iron Deficiency anaemia, Megaloblastic anaemia	Must to Know
23. Leukaemias	
23.1 Acute and chronic leukaemias, Diagnosis and clinical features	Good to Know
24. Diseases of Lymph nodes	
24.1 Hodgkin's disease, Non Hodgkins lymphoma, Metastatic carcinoma	Good to know
25. Diseases of oral cavity	
25.1 Lichen planus, Stomatitis, Leukoplakia, Sq cell Ca, Ameloblastoma	Must to Know
26. Diseases of salivary glands	
26.1 Normal structure, Sialadenitis, Tumours	Must to Know
27. Common diseases of Bones	
27.1 Osteomyelitis, Metabolic bone diseases, Bone Tumours.	Desirable to know
28. Diseases of Cardiovascular system	
28.1 Atherosclerosis	Good to know
28.2 Ischaemic heart Disease	Good to know
29. Haemorrhagic Disorders	
29.1 Coagulation cascade	Must to Know
29.2 Coagulation disorders	Must to Know
29.3 Platelet function	Must to Know
29.4 Platelet disorders	Must to Know
30. Blood Transfusion	
30.1 Donor selection criteria	Good to know
30.2 Blood grouping and cross matching	Good to know
30.3 Blood transfusion reaction	Good to know

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*B. PRACTICALS*  
*1. Urine Abnormal constituents*

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- 1.1. Physical
- 1.2. Chemical
  - 1.2.1. Sugar
  - 1.2.2. Albumin
  - 1.2.3. bile salts
  - 1.2.4. Bile pigments
  - 1.2.5. Ketone bodies
- 1.3. Microscopy
2. Haemoglobin (Hb) estimation
3. Total WBC count
4. Differential WBC Count
5. Packed cell volume (PCV)
6. Erythrocyte sedimentation Rate (ESR)
7. Bleeding Time & clotting Time
8. Histopathology Tissue Processing Staining
9. Histopathology slides
  - 9.1. Acute appendicitis
  - 9.2. Granulation tissue
  - 9.3. Fatty liver
  - 9.4. CVC lung,
  - 9.5. CVC liver
  - 9.6. Kidney amyloidosis
  - 9.7. Tuberculosis
  - 9.8. Actinomycosis
  - 9.9. Rhinosporidiosis
  - 9.10. Papilloma,
  - 9.11. Basal cell Ca
  - 9.12. Squamous cell Ca
  - 9.13. Osteosarcoma
  - 9.14. Osteoclastoma
  - 9.15. Fibrosarcoma
  - 9.16. Malignant melanoma
  - 9.17. Ameloblastoma
  - 9.18. Adenoma
  - 9.19. Mixed parotid tumour
  - 9.20. Metastatic carcinoma in lymph node

Specimens:

1. Acute Appendicitis.
2. Tuberculosis Lymph node.
3. Fatty liver.
4. Infarction spleen.
5. Chronic Venous Congestion (C.V.C.) Liver
6. Squamous papilloma
7. Basal cell carcinoma
8. Lipoma
9. Squamous cell carcinoma

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10. Malignant Melanoma
11. Adenocarcinoma
12. Osteosarcoma
13. Osteoclastoma.
14. Gangrene

### C. RECOMMENDED BOOKS

Sr. No.	Title	Author	Publisher	Edition	Year
1	Robbins Basic Pathology	Vinay Kumar	-	8 <sup>th</sup>	2011
2	Textbook Of Pathology	Harsh Mohan	-	6 <sup>th</sup>	2010
3	Wheater's Basic Histopathology- A Color Atlas And Text	Alan Stevens	Churchill Livingstone	4 <sup>th</sup>	2002
4	Pathology Practical Book	Harsh Mohan	Jaypee Brother	2 <sup>nd</sup>	2007
5	Clinical Pathology	SabitriSanyal	Elsevier	3 <sup>rd</sup>	2012
6	Wintrobe's Clinical Hematology	-	Lippincott Williams & Wilkins	11 <sup>th</sup>	2004
7	Currans Atlas Of Histopathology	R. C. Curran	Oxford University Press	4 <sup>th</sup>	2005
8	Clinical Diagnosis And Management By Laboratory Methods	John Bernard Henry	Saunders	12 <sup>th</sup>	2001
10	Textbook Of Medical Laboratory Technology	P.B.Godkar	Bhalani Publishing House	2 <sup>nd</sup>	2003
11	Pathology Quick Review And Mcqs Based On Harsh Mohans Textbook Of Pathology	Harsh Mohan	Jaypee Brother	5 <sup>th</sup>	2005
12	Viva Voce In Pathology, Bacteriology And Haematology	K.N Sachdev	-	3 <sup>rd</sup>	
13	Pathology	Ivan Damjanov	-	1 <sup>st</sup>	

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14	Anderson's Pathology	Ivan Damjanov	-	10 <sup>th</sup>	1995
15	Practical Hematology For BDS	KomalMarwala	-	1 <sup>st</sup>	2002
16	Medical Laboratory Technology Methods And Interpretations	RamnikSood	-	6 <sup>th</sup>	
17	De Gruchys Clinical Haematology In Medical	Frank Firkin	Wiley India	5 <sup>TH</sup>	2008

#### D. SCHEME OF EXAMINATION:

Refer page no.

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# MICROBIOLOGY

## 1. DEFINITION:

“Microbiology is the science of living organisms that are only visible under the microscope. Medical Microbiology deals with the causative agents of infectious diseases of man, his reaction to such infections, the ways in which they produce disease and the methods for their diagnosis.”

## 2. AIM & OBJECTIVES:

The aim is to introduce the students to the exciting world of microbes and make them aware of various branches of Microbiology, importance, significance and contribution of each to mankind and other fields of medicine.

### A. Knowledge and understanding:

At the end of 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, pedodontics, conservative dentistry and oral medicine in higher classes.
3. Understand and practice various methods of sterilization and disinfection in dental clinics.
4. Have a sound understanding of various infectious diseases and lesions in the oral cavity.

### B. SKILLS:

1. Students 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.

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

- a. Lectures
  - b. Lecture Demonstrations
  - c. Practical Exercises
  - d. Audio Visual Aids
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## COURSE OUTCOMES ASSESSED:

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Were the students able 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. Demonstrate and apply basic facts, concepts and theories in the field of Pathology. Recognize and analyze pathological changes at macroscopically and microscopical levels and explain their observations in terms of disease processes. Integrate knowledge from the basic sciences, clinical medicine and dentistry in the study of Pathology. Demonstrate understanding of the capabilities and limitations of morphological Pathology in its contribution to medicine, dentistry and biological research. Demonstrate ability to consult resource materials outside lectures, laboratory and tutorial classes. Understand the basics of various branches of microbiology and able to apply the knowledge relevantly. Apply the knowledge gained in related medical subjects like General Medicine and General Surgery and Dental subjects like Oral Pathology, Community Dentistry, Periodontics, Oral Surgery, Pedodontics, Conservative Dentistry and Oral medicine in higher classes. Understand and practice various methods of Sterilisation and disinfection in dental clinics. Able to diagnose infectious diseases and lesions in the oral cavity. Should be able to select, collect and transport clinical specimens to the laboratory. Should be able to carry out proper aseptic procedures in the dental clinic.

## A. COURSE CONTENT AND APPROACH TO SUBJECT

TOPIC	DISTRIBUTION
1. Introduction	
<b>1.1</b> Definition of Microbiology	Must to Know
<b>1.2</b> Terminologies used in Microbiology	Must to Know
<b>1.3</b> Importance of subject	Must to Know
2. History	
2.1 Scientists & their contributions	Good to know
3. Morphology and Physiology of bacteria	
3.1 Definition	Must to Know
3.2 Difference between prokaryotes & eukaryotes	Must to Know
3.3 Structure of Bacterial Cell	Must to Know
3.4 Classification based on morphology	Must to Know
3.5 Growth requirements of bacteria	Must to Know
3.6 Bacterial Growth Curve	Must to Know
4. Sterilization and Disinfection	
4.1 Definitions	Must to Know
4.2 Methods	Must to Know
4.3 Applications/Uses	Must to Know
5. Culture Media and Culture Techniques	
5.1 Types	Good to Know
5.2 Methods	Good to Know
5.3 aerobic Culture Methods	Must to Know

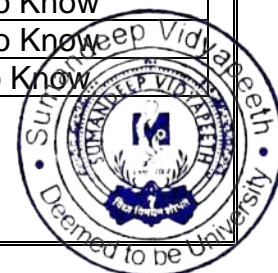
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6. Collection & Transport	
6.1. Basic knowledge of selection, collection & transport of specimens	Must to Know
6.2 Basic knowledge of processing of clinical specimens	Good to Know
6.3 Basic knowledge of identification of bacteria	Good to Know
7. Bacterial Genetics	
7.1 Structure of DNA	Desirable to know
7.2 Plasmid	Desirable to know
7.3 Drug Resistance in bacteria	Desirable to know
8. Infection	
8.1 Definition	Must to Know
8.2 Classification	Must to Know
8.3 Sources & Modes of Transmission	Must to Know
8.4 Types of Infectious Diseases	Must to Know
9. Immunity	
9.1 Definition	Must to Know
9.2 Types of Immunity	Must to Know
9.3 Vaccines	Must to Know
10. Immune System	
10.1 Structure of Immune System	Good to Know
10.2 Functions of Immune System	Good to Know
10.3 Briefly Immune Response	Good to Know
11. Antigen	
11.1 Definition	Good to Know
11.2 Types	Good to Know
11.3 Factors/Determinants of antigenicity	Good to Know
12. Immunoglobulins/Antibodies	
12.1 General structure	Must to Know
12.2 Types	Must to Know
12.3 Role played by each one in the defense mechanism of the body	Good to Know
13. Complement System	
13.1 Definition	Must to Know
13.2 Biological functions	Must to Know
13.3 Pathways	Good to Know
14. Antigen-Antibody Reactions	
14.1 Principles of various Ag-Ab. Reactions	Must to Know
14.2 Clinical applications of each one	Must to Know
15. Immunodeficiency Disorders	
15.1 Brief knowledge of immunodeficiency disorders	Good to Know
15.2 Sound knowledge of immunodeficiency disorders relevant to dentistry	Must to Know
16. Hypersensitivity	
16.1 Definition	Must to Know
16.2 Types of reactions	Must to Know

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17. Autoimmune Disorders	
17.1 Basic knowledge of various types	Good to Know
17.2 Sound knowledge of autoimmune disorders of oral cavity and related structures	Must to Know
18. Immunology of Transplantation & Malignancy	
19. Immunehaematology	
20. Pyogenic Cocci	
20.1 Staphylococcus	Must to Know
20.2 Streptococcus: Cariogenic Streptococci	Must to Know
20.3 Pneumococcus	Must to Know
20.4 Gonococcus	Must to Know
20.5 Meningococcus	Must to Know
20.6 Mode of spread	Must to Know
20.7 Laboratory diagnosis	Must to Know
20.8 Chemotherapy	Must to Know
20.9 Prevention	Must to Know
21. Corynebacterium diphtheria	
21.1 Mode of spread	Must to Know
21.2 Important clinical features	Must to Know
21.3 Laboratory diagnosis	Must to Know
21.4 Chemotheapy	Must to Know
21.5 Immunisation/Immunoprophylaxis	Must to Know
22. Mycobacteria	
22.1 Tuberculosis	Must to Know
22.2 Leprosy	Must to Know
22.3 Mode of spread	Must to Know
22.4 Important clinical features	Must to Know
22.5 Laboratory diagnosis	Must to Know
22.6 Prevention	Must to Know
23. Clostridium	
23.1 Gas gangrene	Must to Know
23.2 Tetanus	Must to Know
23.4 Morphology	Must to Know
23.5 Laboratory diagnosis	Must to Know
23.6 Immunoprophylaxis	Must to Know
24. Non-sporing Anaerobes	
24.1 Classification	Must to Know
24.2 Morphology	Must to Know
24.3 Dental Pathogens	Must to Know
24.4 Mechanism of disease production	Must to Know
24.5 Prevention	Must to Know
25. Gram Negative Bacilli	
25.1 E.coli	Good to Know
25.2 Kelbsiella	Good to Know
25.3 Salmonella	Good to Know

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25.4 Shigella	Good to Know
25.5 Vibrio	Good to Know
25.6 Infections caused by them	Good to Know
25.7 Mode of spread	Good to Know
25.8 Laboratory diagnosis	Good to Know
25.9 Prevention	Good to Know
26. Spirochetes	
26.1 Treponema pallidum	Must to Know
26.2 Oral lesions of Syphilis	Must to Know
26.3 Laboratory diagnosis	Must to Know
26.4 Borrelia vincentii	Must to Know
27. Actinomycetes	
27.1 Morphology	Good to Know
27.2 Clinical features	Good to Know
27.3 Laboratory diagnosis	Good to Know
28. Virology	
28.1 General properties	Good to Know
28.2 Cultivation	Good to Know
28.3 Host-virus interaction	Good to Know
28.4 Interferon	Good to Know
28.5 Laboratory diagnosis	Good to Know
28.6 Chemotherapy	Good to Know
28.7 Immunoprophylaxis	Good to Know
29. Bacteriophage	
29.1 Structure	Good to Know
29.2 Significance	Good to Know
30. Hepatitis viruses	
30.1 Hepatitis B	Must to Know
30.2 Morphology	Must to Know
30.3 Clinical features	Must to Know
30.4 Laboratory diagnosis	Must to Know
30.5 Immunoprophylaxis	Must to Know
30.6 Brief account of other Hepatitis viruses	Must to Know
31. Human Immunodeficiency virus (HIV)	
31.1 Morphology	Must to Know
31.2 Modes of transmission	Must to Know
31.3 Clinical features	Must to Know
31.4 Opportunistic infections (briefly)	Must to Know
31.5 Laboratory diagnosis	Must to Know
31.6 Prevention	Must to Know
32. Herpes virus	Good to Know
33. Mumps virus	Good to Know
34. Measles & Rubella viruses (briefly)	Good to Know
35. Rabies	
35.1 Morphology	Must to Know

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35.2 Pathogenesis	Must to Know
35.3 Prophylaxis	Must to Know
35.4 Prevention	Must to Know
36. Mycology	
36.1 Classification	Must to Know
36.2 Morphology	Must to Know
36.3 Infection	Must to Know
37. Candida	
37.1 Morphology	Must to Know
37.2 Clinical manifestations	Must to Know
37.3 Laboratory diagnosis	Must to Know
38. Fungi causing oral lesions of systemic mycoses	
39. Parasitology	
39.1 Classification	Good to Know
39.2 Modes of transmission	Good to Know
39.3 Prevention	Good to Know
39.4 Protozoans and Helminths commonly seen in the region	Good to Know
40. Entamoeba histolytica	
40.1 Mode of transmission	Must to Know
40.2 Morphological forms	Must to Know
40.3 Life cycle	Must to Know
40.4 Amoebiasis	Must to Know
40.5 Laboratory diagnosis	Must to Know
41. Malaria	
41.1 species	Must to Know
41.2 Morphological forms	Must to Know
41.3 Life cycle	Must to Know
41.4 Clinical features	Must to Know
41.4 Laboratory diagnosis	Must to Know
41.5 Prevention	Must to Know
42. Round worm (Ascaris lumbricoides)	
42.1 Morphological forms	Good to Know
42.2 Life cycle	Good to Know
42.3 Clinical features	Good to Know
42.4 Laboratory diagnosis	Good to Know
42.5 Prevention	Good to Know
43. Hook worm (Ancylostoma duodenale)	
43.1 Morphological forms	Good to Know
43.2 Life cycle	Good to Know
43.3 Clinical features	Good to Know
43.4 Laboratory diagnosis	Good to Know
43.5 Prevention	Good to Know
44. Hospital Acquired Infections (HAI)	
44.1 Definition	Must to Know
44.2 Various HA Infections	Must to Know

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<b>44.3 Methods of prevention &amp; control of HAI</b>	<b>Must to Know</b>
<b>45. Universal Work Precautions</b>	
45.1 Definition	Must to Know
45.2 Various precautions	Must to Know
<b>46. Biomedical Waste Management</b>	
46.1 Definition	Must to Know
46.2 Categories	Must to Know
46.3 Methods of disposal	Must to Know
46.4 Use of correct color coded bags	Must to Know

## B. Practical:

1. Microscope
  - 1.1 Parts & Functions of Compound Microscope
  - 1.2 Other Microscopes & their uses
  - 1.3 Demonstration of Microscope, its parts & slides
2. Morphology of Bacteria
  - 2.1 Classification
  - 2.2 Bacterial Cell
  - 2.3 Demonstration of slide of various micro-organisms
3. Staining:
  - 3.1 Types of staining
  - 3.2 Gram & Acid Fast (ZN) Staining
  - 3.3 Principles
  - 3.4 Methods & Reagents
  - 3.5 Observations
  - 3.6 Interpretations
  - 3.7 Demonstration of staining methods
  - 3.8 Demonstration of slides for both the types of staining methods
4. Sterilization & Disinfection
  - 4.1 Definitions
  - 4.2 Methods
  - 4.3 Demonstration of equipments & their working used for sterilization
5. Culture Media
  - 5.1 Types
  - 5.2 Uses
  - 5.3 Demonstration of media
6. Culture Methods/Isolation of bacteria
  - 6.1 Anaerobic culture methods in details
  - 6.2 Demonstration of methods of inoculation & culture plates

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7. Identification of bacteria/Biochemical Tests
  - 7.1 Different biochemical tests
  - 7.2 Utility of these tests
  - 7.3 Demonstration of various biochemical tests

#### Immunology

8. Serological Reactions
  - 8.1 Different serological tests
  - 8.2 Application of these tests for diagnosis
  - 8.3 Demonstration of various tests

#### Systemic Bacteriology

9. Staphylococci & Streptococci
  - 9.1 Morphology
  - 9.2 Infections they produce
  - 9.3 Briefly Lab. Diagnosis
  - 9.4 Demonstration of slides, culture plates & tests
10. Neisseriae
  - 10.1 Morphology
  - 10.2 Infections they produce
  - 10.3 Briefly Lab. Diagnosis
  - 10.4 Demonstration of slides, culture plates & tests
11. Gram Negative Bacilli
  - 11.1 E.coli
  - 11.2 Klebsiella
  - 11.3 Salmonella
  - 11.4 Shigella
  - 11.5 Vibrio cholerae
  - 11.6 Briefly account of:
  - 11.7 Infectious syndromes
  - 11.8 Laboratory diagnosis
  - 11.9 Demonstration of slides, culture plates & tests
12. Corynebacterium diphtheriae:
  - 12.1 Morphology
  - 12.2 Infections
  - 12.3 Laboratory diagnosis
  - 12.4 Immunoprophylaxis
  - 12.5 Demonstration of slides, culture plates & tests

13. Clostridium welchii & Clostridium tetani

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- 13.1 Morphology
- 13.2 Infections
- 13.3 Laboratory diagnosis
- 13.4 Immunoprophylaxis
- 13.5 Demonstration of slides

- 14. Spirochetes
  - 14.1 Syphilis
  - 14.2 Laboratory diagnosis
  - 14.3 Demonstration of tests used in diagnosis

- 15. Mycology
  - 15.1 Classification
  - 15.2 Candida: Morphology & laboratory diagnosis
  - 15.3 Demonstration of slides, culture plates & tests

Parasitology

- 16. Protozoa
  - 16.1 Entamoeba histolytica
  - 16.2 Malaria
  - 16.3 Morphology
  - 16.4 Life cycle
  - 16.5 Laboratory diagnosis
  - 16.6 Demonstration of slides of various morphological forms
  - 16.7 Charts displaying life cycle

- 17. Helminths
  - 17.1 Ascaris lumbricoides
  - 17.2 Ancylostoma duodenale
  - 17.3 Morphology
  - 17.4 Life cycle
  - 17.5 Laboratory diagnosis
  - 17.6 Demonstration of slides of various morphological forms
  - 17.7 Charts displaying life cycle

C. RECOMMENDED BOOKS:

Title	Author	Publisher
Textbook of Microbiology	R. Ananthanaryan & C.K. Jayaram Paniker	Orient Longman Private Ltd. Chennai
Textbook of Microbiology for Dental Students	--	C. P

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Medical Microbiology Volume I	Cruickshank	Medical Division Orient Longman group Edinburg
Text Book of Bacteriology	Fair Brothers	--

Bacteriology for Dental Students	T.H. Merville and G.L. Slack	Medical Book Ltd. London
Bacteriology for students of Dental Surgery	R.B. Lucas and Ivor R.H.Kramer	--
Oral Microbiology and Infectious Diseases	Burnett and Scherp	Oxford Book Company
Immunology	Donald M Weir	Longman Singapore
Medical Parasitology	N. C. Dey and T.K.Dey	New Central Book Agency Pvt.Ltd. Calcutta
Notes on Medical Virology	Morag C.Timbury	--
Manual of Clinical Mycology	Conant and Smith	--

#### D. SCHEME OF EXAMINATION:

Theory as per University rules

Viva Voce: 10 Marks each for general pathology and microbiology

Practical: (marks distribution)

45 Marks Pathology + 45 Marks Microbiology

Clinical pathology	25 marks
Histopathology slides (2slides x 5 marks)	10 marks
Microbiology	25 marks
Spotting (10 spotters x 2marks)	20 marks
Journal (general pathology +Microbiology)	10 marks

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## GENERAL & DENTAL PHARMACOLOGY AND THERAPEUTICS

### Definition:

It is the science of drugs which deals with interaction of exogenously administered drugs with living systems.

### Aim:

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

### Objectives:

#### a. Knowledge

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

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

#### b. Skills:

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

- I. Prescribe drugs for common dental and related medical ailments.
- II. To appreciate adverse reactions and drug interactions of commonly used drugs.
- III. Observe experiments designed for study of effects of drugs.
- IV. Critically evaluate drug formulations and be able to interpret the clinical pharmacology of marketed preparations commonly used in dentistry.

#### c. Integration:

Acquire knowledge and skills on use of drugs in clinical practice through integrated teaching with clinical departments.

Note: All the above includes the scope for dental pharmacology.

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## Course outcomes assessed:

Were the students able to: Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs in general and in dentistry in particular. List the indications, contraindications; interactions, and adverse reactions of commonly used drugs with reason. Tailor the use of appropriate drugs in disease with consideration to its cost, efficacy, safety for individual and mass therapy needs. Indicate special care in prescribing common and essential drugs in special medical situations such as pregnancy, lactation, old age, renal, hepatic damage and immuno compromised patients. Integrate the rational drug therapy in clinical pharmacology. Indicate the principles underlying the concepts of "Essential drugs". Prescribe drugs for common dental and medical ailments. Appreciate adverse reactions and drug interactions of commonly used drugs. Infer from experiments designed for study of effects of drugs. Critically evaluate drug formulations and interpret the clinical pharmacology of marketed preparations commonly used in dentistry.

## A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. General Pharmacology	
1.1 Definitions: Pharmacology, drug, Pharmacy, sources of drug with examples.	Must to Know
1.2 Pharmacokinetics with clinical implications.	Must to Know
1.3 Routes of administration: oral, inhalation, intra-dermal, subcutaneous, intramuscular, intravenous, intra-theal, peri-neural & newer drug regimes. (Advantages and disadvantages with the examples of drug administered).	Must to Know
1.4 Pharmacodynamics: mechanism of action, factors, modifying drug actions with emphasis on factors like- age, sex, dose, frequency & route of administration, presence of other drugs, pharmacogenetics and pathological conditions.	Must to Know
1.5 Therapeutics: principles of drug therapy, adverse drug reactions and drug interactions.	Must to Know
<b>Anti-Hypertensive Drugs</b>	
2.1 Sympathomimetics	Must to Know
2.2 Sympatholytics- alpha blockers, Beta- blockers.	Must to Know
2.3 Cholinomimetics.	Must to Know

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2.4 Anti cholinergics.	Must to Know
1. Detailed Pharmacology of	
3.1 Clinically used opioid and non-opioid analgesics.	Must to Know
3.2 Local anaesthetics and preanaesthetic medication.	Must to Know
4. Detailed pharmacology & enumeration of clinically used agents, their brief pharmacology, clinical uses along with dental uses if any , and specific adverse effects of:	
4.1 Ethyl alcohol- actions, uses and drug interactions.	Good to Know
4.2 General anaesthetics	Good to Know
4.3 Antipsychotics	Desirable to Know
4.4 Antidepressants	Desirable to Know
4.5 Anxiolytics	Must to Know
4.6 Sedative hypnotics	Desirable to Know
4.7 Anti epileptics	Desirable to Know
5. CVS Drugs	
5.1 Cardiac glycosides	Desirable To Know
5.2 Anti anginal drugs	Good To Know
5.3 Anti hypertensives.	Must Know
5.4 Diuretics	Good To Know
5.5 Pharmacotherapy of shock-anaphylactic, cardiogenic, hypovolemic & septic.	Must to Know
6. Blood	
6.1 Coagulants, anticoagulants, fibrinolytics, antiplatelet drugs and styptics	Must to Know
6.2 Hematinics: Iron preparation Vit B12, Folic acid Vit.C	Must to Know
6.3 Vit.D& Calcium Preparations	Must to Know
4. Endocrine	
7.1 Drugs used in diabetes mellitus	Must to Know
7.2 Corticosteroids	Good to Know
8. Chemotherapy	
8.1 Sulfonamides	Must to Know
8.2 Beta-lactam antibiotics	Must to Know
8.3 Macrolides	Must to Know
8.4 Aminoglycosides	Desirable to Know
8.5 Broad spectrum antibiotics	Must to Know
8.6 Antifungal and antiviral (acyclovir) agents	Desirable to Know
8.7 Metronidazole and fluoroquinolones	Must to Know
8.8 Anti neoplastic drugs: Alkylating agents, Anti metabolites, Radioactive Isotopes, Vinka Alkaloids, Anticancer antibiotics.	Desirable to Know
8.9 Drug therapy of Tuberculosis, Leprosy & Malaria	Good to Know

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5. Other Drugs	
9.1 Antihistamines and antiemetics	Good To Know
9.2 Drugs used in bronchial asthma and cough	Good To Know
9.3 Drugs used in peptic ulcer	Good To Know
9.4 Chelating agents- BAL, EDTA & Penicillamine	Desirable To Know
9.5 Anti helminthics	Desirable To Know
10. Dental Pharmacology	
10.1 Fluoride pharmacology	Must to Know
10.2 Antiseptics, astringents & sialogogues	Must to Know
10.3 Obtundents, Mummifying and disclosing agents	Must to Know
10.4 Prevention and drug therapy of emergencies in dental practice	Must to Know
10.5 Seizures	Must to Know
10.6 Anaphylaxis	Must to Know
10.7 Severe bleeding	Must to Know
10.8 Shock	Must to Know
10.9 Tetany	Must to Know
10.10 Status asthmaticus	Must to Know
10.11 Acute Addisonian crisis	Must to Know
10.12 Diabetic Ketoacidosis	Must to Know

## B. Practical

1. Introduction
  - 1.1 Equipment used in dispensing pharmacy
  - 1.2 Prescription parts and model prescription
2. Demonstration of common dosage forms used in clinical practice
3. Mixtures
  - 3.1 Simple mixtures (salicylate mixture)
  - 3.2 Diffusible (Bismuth Kaolin/ Chalk) mixtures
6. Emulsion- Types and example (Liniment turpentine/ shark liver oil) of emulsion
7. Powders- toothpowder
8. Paints
  - 6.1 Mandle's paint/ Gum paint
  - 6.2 Percentage dilution- concept and calculations with suitable examples
7. Mouthwashes
  - 7.1 Alkaline mouthwash
  - 7.2 Antiseptic mouthwash

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### 7.3 Astringent mouthwash

### 8. Toothpastes

9. Prescription writing for 15 general conditions commonly encountered in clinical practice. e.g. Bronchial asthma, hypertension congestive heart failure, angina pectoris, peptic ulcer, bacillary dysentery, pseudomembranous colitis, diabetes mellitus, diabetic coma, osteoarthritis, anaphylaxis, status asthmaticus, status epilepticus, iron deficiency & pernicious anaemia

10. Dental prescriptions for about fifteen dental conditions commonly encountered in practice e.g. Acute necrotising ulcerative gingivitis, acute herpetic gingivitis/stomatitis, acute gingival abscess, pericoronal abscess (impacted teeth), dental caries, aphthous ulcers, hypersensitive dentine, dentoalveolar abscess, xerostomia, acute toothache, postoperative pain, post extraction pain with swelling, oral candidacies, scurvy etc.

### C. RECOMMENDED

### BOOKS

Sr. No.	Name of book and title	Author	Edition & year	Publisher
1	Essentials of pharmacology for dentistry	KD Tripathi	1 <sup>st</sup> , 2005 (reprint 2008)	Jaypee brothers medical publishers
2	Pharmacology for dental students	Tara V. Shanbhag, Smita Shenoy, Veena Nayak	1 <sup>st</sup> edition, 2010	Elsevier
3	Essentials of medical pharmacology	KD Tripathi	7 <sup>th</sup> edition, 2013	Jaypee brothers medical publishers
4	Principles of pharmacology	HL Sharma KK Sharma	2 <sup>nd</sup> edition, 2011	Paras medical publishers, New delhi
5	Pharmacology and pharmacotherapeutics	RS Satoskar, SD Bhandarkar, Nirmala N. Rege	22 <sup>nd</sup> edition, 2011	Popular prakashan, Mumbai
6	Pharmacology for dental and allied health sciences	Padmaja Udaykumar	3 <sup>rd</sup> edition	Jaypee brothers medical publishers

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Sr. No.	Name of book and title	Author	Edition & year	Publisher
1	The pharmacological basis of therapeutics	Goodman & Gillman	11 <sup>th</sup> edition	McGraw-Hill
2	Clinical Pharmacology	Laurance and Bennett.	10 <sup>th</sup> edition	Churchill Livingstone
3	Pharmacology	Rang and Dale	7 <sup>th</sup> edition	Elsevier Mosby
4	Basic and clinical pharmacology	BG Katzung	11 <sup>th</sup> edition	Mcgraw-Hill

## D.SCHEME OF EXAMINATION

As per the university rules

Practical: (distribution of marks)	90 marks
1) Spotters- 10 X 1=	10 marks
2) Prescription writing (one medical + one dental) -	20 marks
3) Correction and re-writing of wrong prescriptions-	20 marks
4) Drugs of choice and dose-	10 marks
5) Preparations (one dental)-	30 marks

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## DENTAL MATERIALS

### Course outcomes assessed:

Were the students able to: Understand the evolution and development of science of dental material. Explain purpose of course in dental materials to personnels concerned with the profession of the dentistry. Acquire knowledge of physical and chemical properties. Acquire knowledge of biomechanical requirements of particular restorative procedure. Search for newer and better materials which may answer our requirements with greater satisfaction. Evaluate the claims made by manufactures of dental materials

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT

- The following amendments in II BDS Dental Materials theory syllabus is as under: (Board of Studies Letter No. KMSDCH/BOS/1398A/2015 dated 20/11/2015 and Board of Management resolution Ref: No. SV/R/2016/10440-2 dated 23/06/2016).**

*The change in II BDS Dental Material theory syllabus shall be as following:*

- To introduce Reverse Engineering/CAD-CAM as desirable to know*

*These will enable students to stay up-to-date with advances in dentistry.*

- The following amendments in II BDS Dental Materials theory syllabus is as under: (Board of Studies Letter No. KMSDCH/BOS/06/AY2016-17 dated 24/01/2017 and Board of Management resolution Ref: No. SVDU/R/2017-18/1565 dated 21.09.2017).**

*The change in II BDS Dental Materials theory syllabus shall be as following:*

- Biomedical waste management of dental materials used in prosthodontics under desirable to know section*

*These will enable students to handle the material waste with caution.*

- The following amendments in II BDS Dental Material theory syllabus is as under: (Board of Studies Letter No. KMSDCH/BOS/12/2019 dated 26/08/2019 and Board of Management resolution Ref: No. SVDU/NOTFN/06/2019-20 dated 25/11/2019).**

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*The change in II BDS Dental Materials theory syllabus shall be as following:*

- To incorporate optical physics, recent advances in tooth colored restoration and endodontic related materials like edta, gutta percha, irrigants as desirable to know.*

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*These will enable students to stay up-to-date with advances in endodontics.*

TOPIC	DISTRIBUTION
<b>1. Metals and Alloys</b>	
1.1 Structure and behavior of metals	Must to Know
1.2 Solidification of metals	Must to Know
1.3 Mechanism of crystallization- amorphous & crystalline	Must to Know
1.4 Classification of alloys	Must to Know
1.5 Solid solution	Good to Know
1.6 Constitutes and equilibrium phase diagrams: electric alloys, physical properties, peritectic alloys, solid state reaction other binary system	Good to Know
1.7 Metallography and heat treatment	Good to Know
1.8 Tarnish and corrosion	Must to Know
1.9 Corrosion of dental restorations	Must to Know
1.10 Clinical significance of galvanic current	Must to Know
<b>2. Dental Casting Alloys</b>	
2.1 Historical background	Must to Know
2.2 Desirable properties of casting alloys	Must to Know
2.3 CAD-CAM technology	Good to Know
2.4 Classification of casting alloys: by function and description	Must to Know
2.5 Recent classification : high noble, noble and predominantly base metal	Must to Know
2.6 Alloys for crown and bridge, metal ceramic and removable partial denture	Must to Know
2.7 Composition, function, constituents and application, each alloy both noble and base metal	Must to Know
2.8 Properties of alloys: melting range, mechanical properties, hardness, elongation, modulus of elasticity	Must to Know
2.9 Casting shrinkage and compensation of casting shrinkage	Must to Know
2.10 Biocompatibility- handling hazards & precautions of base metal alloys	Must to Know
2.11 Casting investments used	Must to Know
2.12 Heat treatment- softening and hardening heat treatment	Must to Know
2.13 Recycling of metal	Good to Know
2.14 Titanium alloys and their application, properties and advantages	Good to Know
2.15 Technical considerations in casting- heat source and furnaces	Desirable to Know
<b>3. Dental Casting Investments</b>	
3.1 Definition, requirement, classification	Must to Know

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3.2 Gypsum bonded, phosphate bonded, silica bonded - Classification	
3.3 Mode of supply- composition, application, setting mechanism, setting time, and factors controlling it.	Must to Know
3.4 Expansions: setting expansion, hygroscopic setting expansion and thermal expansion	Must to Know
3.5 Factors affecting properties: strength, porosity and fineness and storage	Must to Know
3.6 Technical considerations for casting procedures,	Must to Know
3.7 Preparation of die, wax pattern, spruing, investing,(FLIPPED CLASSROOM) control of shrinkage compensation, wax burnout and heating the investing ring	Must to Know
3.8 Casting, casting machines, source of heat for melting the alloy	Must to Know
3.9 Casting defects	Must to Know
4.Dental Ceramic	
4.1 Historical background & general applications	Good to Know
4.2 Definition, classification, application, mode of supply, manufacturing procedures, methods of strengthening.	Must to Know
4.3 Properties of fused ceramic: Strength and factor affecting, Modulus of Elasticity, Surface Hardness, Wear Resistance, Thermal Properties, Specific Gravity, Chemical Stability, Esthetic Properties, Biocompatibility, Technical Considerations	Must to Know
4.4 Metal ceramics (PFM) alloys: Types and Composition.	Must to Know
4.5 Metal ceramic bond 4.5.1 Nature of bond 4.5.2 Bonding using electro deposition, foil coping, bonded platinum foil, swaged gold alloy foil coping. 4.5.3 Technical considerations for porcelain and porcelain used metal restorations. Recent advances- all porcelain restorations, manganese core, injection molded, castable ceramics, glass infiltrated alumina core, in Ceram, ceramic veneer, inlays and onlays and CAD-CAM ceramic. Chemical attack of ceramic by fluoride. Porcelain furnaces.	Must to Know
4.6 Recent Advances 4.6.1 All porcelain restorations 4.6.2 Manganese core 4.6.3 Injection moulded 4.6.4 Castable ceramics 4.6.5 Glass infiltrated alumina core 4.6.6 In Ceram 4.6.7 Ceramic veneer 4.6.8 Inlays and onlays and CAD-CAM ceramic 4.6.9 Chemical attack of ceramic by fluoride	Desirable to Know

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4.6.10 Porcelain furnaces	
4.6.11 Zirconia as an all ceramic restoration	
5. Die and Die Materials	
5.1 Types: Gypsum, Epoxy Resin, Cement and Amalgam	Must to Know
5.2 Electroforming and electro polishing	Must to Know
6. Abrasive and Polishing Agents	
6.1 Definition	Must to Know
6.2 Need	Must to Know
6.3 Finishing, polishing and cleaning	Must to Know
6.4 Types of abrasives:	
6.4.1 Diamond	Must to Know
6.4.2 Emery	Must to Know
6.4.3 Aluminum oxide	Must to Know
6.4.4 Garnet	Good to Know
6.4.5 Pumice	Must to Know
6.4.6 Kieselgurh	Good to Know
6.4.7 Tripoli	Good to Know
6.4.8 Rouge	Must to Know
6.4.9 Tin oxide	Good to Know
6.4.10 Chalk	Good to Know
6.4.11 Chromium oxide	Good to Know
6.4.12 Sand	Must to Know
6.4.13 Carbides	Good to Know
6.4.14 Zirconium silicates	Good to Know
6.4.15 Zinc oxide	Good to Know
7. Dental Implant	
7.1 Evolution, Types and Materials	Must to Know
8. Biomedical Waste Management of Dental materials used in Prosthodontics	Desirable to know
8.1. Gypsum Products	
8.2. Dental Silicone	
8.3. Acrylic Resin	
8.4. Miscellaneous	
9. Dental Cements: Definitions, classifications, setting-mechanism, properties, factors affecting setting, manipulations, mode of supply, mode of adhesion, modifications & recent advances, clinical implications of :	
9.1 Silicate Cement	Must to Know
9.2 Glass Ionomer	Must to Know

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9.3 Zinc Phosphate,	Must to Know
9.4 Zinc Oxide Eugenol,	Must to Know
9.5 Calcium Hydroxide,	Must to Know
9.6 Zinc Polycarboxylate,	Must to Know
9.7 Gutta-Percha & Varnish	Must to Know
10. Dental Amalgam	
10.1 History,	Good to Know
10.1 Definitions, classifications	Must to Know
10.1 Manufacturing	Good to Know
10.1 Compositions, setting reaction	Must to Know
10.1 Properties, microleakage, manipulations,	Must to Know
10.1 Effect of dimensional changes, finishing & polishing	Must to Know
10.1 Mercury toxicity & hygiene	Must to Know
10.1 Clinical implications	Must to Know
10.1 Biocompatibility	Must to Know
11. Direct Filling Gold	
11.1 Properties	Good to Know
11.2 Mode of adhesions	Good to Know
11.3 Classifications,	Good to Know
11.4 Manipulations	Good to Know
11.5 Removal of surface impurities	Good to Know
11.6 Mode of supply	Good to Know
11.7 Clinical performance	Good to Know
12. Abrasion and Polishing Agents	
12.1 Definition, Needs and Types	Must to Know
12.2 Desirable characteristics of an abrasive	Must to Know
12.3 Rate of abrasion,	Must to Know
12.4 Size of particle	Must to Know
12.5 Pressurized speed	Must to Know
12.6 Polishing materials,	Must to Know
12.7 electrolytic polishing and burnishing	Must to Know
13. Tarnish and Corrosion	
13.1 Definition,	Must to Know
13.2 Corrosion types	Must to Know
13.3 Methods to overcome	Must to Know
13.4 Corrosion	Must to Know

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14. Adhesion	
14.1 Need for bonding,	Must to Know
14.2 Types of bonding, clinical factors affecting bonding,	Must to Know
14.3 Advantage & disadvantages of bonding	Must to Know
14.4 Acid etch techniques	Must to Know
14.5 Enamel bonding	Must to Know
14.6 Dentin bonding agents	Must to Know
15. Optical physics	Desirable to Know
16. Recent advances in tooth colored restorations	Desirable to Know
17. Endodontic related materials like EDTA, Gutta percha, Irrigants	Desirable to Know

## B. SYLLABUS FOR PRACTICALS:

1. Investment Materials: Composition, Manipulation, Properties and demonstration of investing procedure.
2. Dental Casting Alloys, Wrought Metal Alloys: identification and composition and properties
3. Dental Porcelain: Manipulation, Properties and demonstration.
4. Dental Implants: types and properties
5. Materials For Maxillo-Facial Prosthesis:
6. Tissue Conditioner: Composition, and manipulation and use
7. Soft Liner: Composition, and manipulation and use
8. Separating Media: Composition, and manipulation and use
9. Finishing And Polishing Agents :identification, Types and use
10. Manipulation of Silver Amalgam.
  - 10.1. Demonstration of proportioning.
  - 10.2. Demonstration of trituration, mulling, condensation, carving, finishing and polishing of dental amalgam.
  - 10.3. Students are demonstrated to do restoration in Class I amalgam cavity.
11. Manipulation of Zinc Phosphate Cement.
  - 11.1. Demonstration of powder: liquid ratio, method of mixing, consistency, application as a base into the cavity.
12. Manipulation of Glass Ionomer Cement.
  - 12.1. Demonstration of powder: liquid ratio, method of mixing, consistency, application as a base into the Class IV cavity in restorative and luting consistency.

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- 13.1. Demonstration of powder: liquid ratio, method of mixing, consistency, application as a base into the cavity.
14. Manipulation of Zinc Oxide Eugenol Cement.
- 14.1. Demonstration of powder: liquid ratio, method of mixing, consistency, application as a base into the cavity in restorative and luting consistency.
15. Discussion and Demonstration of application of calcium hydroxide powder and/or Dycal as sub base and pulp capping agent.
16. Discussion and Demonstration and application of dental varnish.
17. Demonstration of composite resin- acid etching, bonding procedure, incremental build-up of Class IV/V composite resin. Light curing procedures and finishing and polishing.

### C. RECOMMENDED BOOKS:

Title	Author	Publisher
Science of Dental Material	Kenneth J Annusavice	W.B. Saunder's
Restorative Dental Materials	Robert G Craig	Mosby, USA
Dental Materials	Craig, Power and Wataha	
Notes on Dental Material	E C Combe	Churchill Livingstone, UK
Basic Dental Material	Mannapalli	

### D. SCHEME OF EXAMINATION

#### a. INTERNAL EXAM:

##### i. I internals

SR. NO	PARTICULARS	MARK
1	Spotters- 10 X 2.5	25
2	Exercise No-1:(Based on OSPE) Prosthodontic: Any one exercise from the following: Manipulation of: a. Impression Compound	30

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	<ul style="list-style-type: none"> <li>b. Alginate Impression Material</li> <li>c. Zinc Oxide Eugenol Impression Paste</li> <li>d. Dental Stone</li> <li>e. Dental Plaster</li> <li>f. Acrylic resin</li> </ul>	
3	<p>Exercise No:2(Based on OSPE)</p> <p>Conservative: Any one from following</p> <p>Manipulation of:</p> <ul style="list-style-type: none"> <li>a. Silver Amalgam</li> <li>b. Zinc Oxide Eugenol(Luting and Base consistency)</li> <li>c. Zinc Phosphate Cement (Luting and Base consistency)</li> <li>d. Glass Ionomer Cement Type I/II (Luting/Filling consistency)</li> <li>e. Polycarboxylate Cement (Luting consistency)</li> </ul>	30
4	VIVA VOCE	15

ii. II internals

SR. NO	PARTICULARS	MARK
1	Spotters- 10 X 2.5	25
2	<p>Exercise No-1 (Based on OSPE)</p> <p>Prosthodontic: Any one exercise from the following:</p> <p>Manipulation of:</p> <ul style="list-style-type: none"> <li>g. Impression Compound</li> <li>h. Alginate Impression Material</li> <li>i. Zinc Oxide Eugenol Impression Paste</li> <li>j. Dental Stone</li> <li>k. Dental Plaster</li> <li>l. Acrylic resin</li> </ul>	30

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3	Exercise No:2 (Based on OSPE) Conservative: Any one from following Manipulation of: f. Silver Amalgam g. Zinc Oxide Eugenol(Luting and Base consistency) h. Zinc Phosphate Cement (Luting and Base consistency) i. Glass Ionomer Cement Type I/II (Luting/Filling consistency) j. Polycarboxylate Cement (Luting consistency)	30
4	VIVA VOCE	15

iii. Prelims:

SR. NO	PARTICULARS	MARK
1	Spotters- 10 X 2.5	25
2	Exercise No-1 (Based on OSPE) Prosthodontic: Any one exercise from the following: Manipulation of: m. Impression Compound n. Alginate Impression Material o. Zinc Oxide Eugenol Impression Paste p. Dental Stone q. Dental Plaster r. Acrylic resin	30
3	Exercise No:2 (Based on OSPE) Conservative: Any one from following Manipulation of: k. Silver Amalgam l. Zinc Oxide Eugenol(Luting and Base consistency) m. Zinc Phosphate Cement (Luting and Base consistency) n. Glass Ionomer Cement Type I/II (Luting/Filling consistency)	30

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	o. Polycarboxylate Cement (Luting consistency)	
4	Journal	05
5	VIVA VOCE + Powerpoint presentation 05+05=10M	10

b. UNIVERSITY EXAM:

**The following amendments in II BDS Dental Materials university exam is as under: (Board of Studies Letter No. KMSDCH/BOS/1403/2016 dated 04/07/2016 and Board of Management resolution Ref: No. SV/R/2016/2754 dated 24/10/2016.**

*The change in II BDS Dental Material university exam shall be as following:*

*1. To restructure dental materials examination pattern by incorporating OSCE/ OSPE in place of spotters.*

*These will enable students to develop analytical thinking.*

**Practical Examination: (distribution of marks)**

SR. NO	PARTICULARS	MARK
1	Spotters- 10 X 2.5	25
2	Exercise No-1 (Based on OSPE) Prosthodontic: Any one exercise from the following: Manipulation of: s. Impression Compound t. Alginate Impression Material u. Zinc Oxide Eugenol Impression Paste v. Dental Stone w. Dental Plaster x. Acrylic resin	30

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3	Exercise No:2 (Based on OSPE) Conservative: Any one from following Manipulation of: p. Silver Amalgam q. Zinc Oxide Eugenol(Luting and Base consistency) r. Zinc Phosphate Cement (Luting and Base consistency) s. Glass Ionomer Cement Type I/II (Luting/Filling consistency) t. Polycarboxylate Cement (Luting consistency)	30
4	Journal	05
	Total (Practical)	90
5	VIVA VOCE + Powerpoint presentation 15+05=20M (counted as internal marks to be added in theory )	20

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# ORAL PATHOLOGY & MICROBIOLOGY

## DEFINITION:

Oral Pathology deals with the nature of oral diseases, their causes, processes and effects. It relates the clinical manifestation of oral diseases to physiologic and anatomic changes associated with these diseases. It deals with commonly occurring pre malignancies and malignancies and serves commonly with the scientifically based information. It also deals with application of dental science to the administration of law and the furtherance of justice.

## AIM:

To make undergraduate student training program effective so as to develop independent capabilities in a student, to learn and apply the knowledge of Oral Pathology in identifying the problems and diagnosis with sound scientific knowledge and skills.

## OBJECTIVES

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

- i. Comprehend the different types of pathological processes that involve the Orofacial tissues.
- ii. Comprehend the manifestations of common diseases, their diagnosis & correlation with clinical pathological processes.
- iii. Understand the oral manifestations of systemic diseases and correlate with the systemic physical signs & laboratory findings.
- iv. Understand the underlying biological principles governing treatment of oral diseases.
- v. Understand the principles of certain basic aspects of Forensic Odontology.

## SKILLS

The following skills are to be developed:

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

## SYLLABUS

II<sup>nd</sup> Year: students appreciate basic oral pathology in slides casts and specimen.

Students are assigned with formulating research, questions to the oral pathology and search for related evidences.

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- Identify pathology of oral region- hard & soft tissue.
- Assignment incorporating available literature evidences & searching relevant database for evidence.
- Application of evidence in diagnosing the pathology.

EBEs incorporation in other UG activities:

In addition to the above students are encouraged to discuss evidences of oral pathological conditions while examining histopathological slides.

Assignments are given related to oral pathological lesions and students are asked to search databases and find current and relevant literature evidences and make a report on the same

Course outcomes assessed:

Were the students able to: Describe the different types of pathological processes, that involve the oral cavity. Describe the manifestations of common diseases, their diagnosis & correlation with clinical pathological processes. Explain the oral manifestations of systemic diseases should help in correlating with the systemic physical signs & laboratory findings. Explain the underlying biological principles governing treatment of oral diseases. Explain the principles of basic aspects of Forensic Odontology. Describe the laboratory procedures in histo-pathology. Identify the pathologies on basis of histopathological observations and correlate them with clinical picture.

## A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. Developmental disturbances of oral and paraoral structures	
1.1. Developmental disturbances of Jaws	Good to Know
1.1.1. Agnathia	Good to Know
1.1.2. Micrognathia	Good to Know
1.1.3. Macrognathia	Good to Know
1.1.4. Facial Hemihypertrophy	Good to Know
1.1.5. Facial Hemiatropy	Good to Know
1.2. Developmental Disturbances of lips and palate	
1.2.1 Congenital Lip pits and Commissural pits and fistulas	Desirable to Know
1.2.2 Cheilitis Granulomatosa	Good to Know
1.2.3 Hereditary Intestinal Polyposis	Good to Know

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1.2.4 Hereditary Melanotic Macule	Good to Know
1.2.5 Double lip, Cleft lip, cleft Palate, Chelitis Glandularis, Chelitis	Desirable to Know
1.3 Developmental disturbances of Oral Mucosa	
1.3.1 Fordyce's Granules	Desirable to Know
1.3.2 Focal epithelial Hyperplasia	Good to Know
1.4 Developmental disturbances of gingiva	
1.4.1 Fibromatosis Gingiva	Good to Know
1.4.2 Retrocuspid Papilla	Good to Know
1.5 Developmental Disturbances Of Tongue	
1.5.1 Macroglossia	Must to Know
1.5.2 Microglossia	Must to Know
1.5.3 Ankyloglossia	Must to Know
1.5.4 Cleft Tongue	Must to Know
1.5.5 Fissured Tongue	Must to Know
1.5.6 Median Rhomboid Glossitis	Must to Know
1.5.7 Benign Migratory Glossitis	Must to Know
1.5.8 Hairy Tongue	Must to Know
1.6 Developmental disturbances of oral lymphoid tissue	
1.6.1 Reactively lymphoid aggregates	Good to Know
1.6.2 Lymphoid hamartoma	Good to Know
1.6.3 Angiolymphoid Hyperplasia	Good to Know
1.6.4 Lympho-epithelial cyst	Good to Know
1.7 Developmental disturbances of salivary glands	
1.7.1 Aplasia	Desirable to Know
1.7.2 Xerostomia	Desirable to Know
1.7.3 Hyperplasia of the palatal glands	Desirable to Know
1.7.4 Atresia	Desirable to Know
1.7.5 Aberrancy, Stafine's cyst	Desirable to Know
1.8 Developmental disturbances in size of teeth	
1.8.1 Microdontia	Must to Know
1.8.2 Macrodontia	Must to Know
1.9 Developmental disturbances in the shape of the teeth	
1.9.1 Fusion	Must to Know
1.9.2 Germination	Must to Know
1.9.3 Concrescence	Must to Know
1.9.4 Dilacerations	Must to Know
1.9.5 Talon's Cusp	Must to Know
1.9.6 Dens in Dente	Must to Know
1.9.7 Dens Evaginatus	Must to Know
1.9.8 Taurodontism	Must to Know
1.9.9 Supernumerary roots	Must to Know
1.9.10 Enameloma	Must to Know
1.10 Developmental Disturbances in number of teeth	
1.10.1 Anodontia	Must to Know
1.10.2 Supernumerary teeth	Must to Know

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1.10.3 Predeciduous Dentition	Must to Know
1.10.4 Post Permanent Dentition	Must to Know
1.11 Developmental Disturbances in Structure of Teeth	
1.11.1 Amelogenesis Imperfecta	Must to Know
1.11.2 Enamel Hypoplasia	Must to Know
1.11.3 Dentinogenesis Imperfecta	Must to Know
1.11.4 Dentinal dysplasia	Must to Know
1.11.5 Regional Odontodysplasia	Must to Know
1.11.6 Shell Teeth	Must to Know
1.12 Developmental Disturbances in eruption of teeth	
1.12.1 Premature Eruptions	Must to Know
1.12.2 Eruption Sequestrum	Must to Know
1.12.3 Delayed eruption	Must to Know
1.12.4 Impaction	Must to Know
2. Dental caries	
2.1 Theories	Must to Know
2.2 Clinical features	Must to Know
2.3 Classification	Must to Know
2.4 Histopathology	Must to Know
2.5 Microbiology of Dental caries	Desirable to Know
2.6 Immunology	Desirable to Know
2.7 Caries activity tests	Desirable to Know
2.8 Factors influencing caries	Must to Know
3. Diseases of Pulp & Periapical tissues	
3.1 Diseases of the Dental Pulp	Must to Know
3.1.1 Pulpitis	Must to Know
3.1.2 Focal Reversible Pulpitis	Must to Know
3.1.3 Chronic Pulpitis	Must to Know
3.1.3 Pulp Polyp	Must to Know
3.2 Diseases of the Periapical Tissues	
3.2.1 Periapical Granuloma	Must to Know
3.2.2 Periapical Abscess	Must to Know
3.2.3 Periapical Cyst	Must to Know
3.3 Osteomyelitis	
3.3.1 Acute Suppurative Osteomyelitis	Must to Know
3.3.2 Chronic Focal and Diffuse	Must to Know
3.3.3 Sclerosing Osteomyelitis	Must to Know
3.3.4 Garre's Osteomyelitis	Must to Know
3.4 Sequelae of periapical abscess	
3.4.1 Summary of space infections	Desirable to Know
3.4.2 Systemic complications & significance	Desirable to Know
3.5 Cellulitis	Desirable to Know
3.6 Ludwig's angina	Desirable to Know
3.7 Intracranial complication of dental infection	Desirable to Know
3.8 Maxillary sinusitis	Desirable to Know

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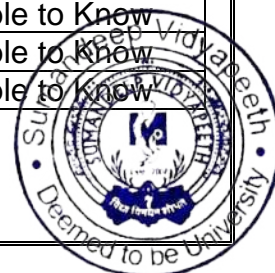
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3.9 Focalinfectionandfocioinfection	Desirable to Know
4. Spread of Oral Infection	Desirable to Know

## B. PRACTICALS:

II BDS ORAL PATHOLOGY		
LIST OF SLIDES FOR ORAL PATHOLOGY		
NO.		NAME OF SLIDE
1	SPECIAL STAINS	HEMATOXYLIN AND EOSIN STAIN
		PERIODIC ACID SCHIFF STAIN
		MALLORY'S STAIN
		VAN GIESON'S STAIN
		PAPANICOLAOU STAIN
2	DENTAL CARIES	SMOOTH SURFACE CARIES
		PIT AND FISSURE CARIES
		DENTINAL TUBULES(BEADED APPEARANCE)
		LIQUEFACTION FOCI OF MILLER'S
3	PULP AND PERIAPICAL LESIONS	PULP POLYP
		PULP STONES
		NECROSIS OF PULP
		PERIAPICAL GRANULOMA
		HYALINE DEGENERATION PULP
		RADICULAR CYST

## LIST OF MODELS

1	GEMINATION
2	FUSION
3	TAURODONTISM
4	DILACERATION
5	CONCRESCENCE
6	TALON CUSPS
7	BIFID ROOTS, SUPERNUMERARY ROOTS
8	MESIODENS
9	ENAMEL PEARLS
10	SUPERNUMERARY TEETH CAST

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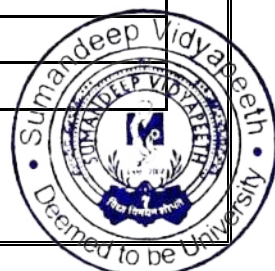
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11	PARA PREMOLARES OR PARAMOLARS CAST
12	CLEFT LIP AND CLEFT PALATE CAST
13	COMPLETE OR PARTIAL ANODONTIA CAST
14	PIT & FISSURE CARIES
15	PROXIMAL CARIES
16	CERVICAL CARIES
17	ATTRITION TOOTH SPECIMEN
18	ABRASION TOOTH SPECIMEN
19	EROSION TOOTH SPECIMEN
20	LOCALISED OR GENERALISED GINGIVAL ENLARGEMENT CAST

**C. RECOMMENDED BOOKS:**

Refer to page no.

**D. SCHEME OF EXAMS:**

The examination shall be conducted at the end of III BDS.

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## PRECLINICAL CONSERVATIVE

Course outcomes assessed:

Were the students able to: Identify hand and rotary cutting instruments. Prepare cavity designs to receive various restorative materials on typhodont teeth in skill laboratory

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. Introduction to operative dentistry	
1.1 Definition, factors	Must to Know
1.2 Radiologic indications	Must to Know
1.3 Dynamics of operative dentistry	Must to Know
1.4 Future demand	Must to Know
2. Scope of subject and nomenclature	
2.1 Terminologies	Must to Know
2.2 Nomenclature of cavities	Must to Know
2.3 Classification of cavities	Must to Know
2.4 Nomenclature, various surfaces of tooth	Must to Know
2.5 Systems with similar and different notations in each segment	Must to Know
3. Tooth Structures	
3.1 Enamel and Dentin.	Must to Know
3.2 Histological features	Must to Know
3.3 Clinical considerations	Must to Know
3.4 Applied anatomy.	Must to Know
4. Dental Caries	
4.1 Introduction	Must to Know
4.2 Classification	Must to Know
4.3 Histopathology	Must to Know
4.4 Etiology	Must to Know
4.5 Contributory factors in dental caries	Must to Know
4.6 Caries of enamel, dentin and Cementum	Must to Know
4.7 Morphological and chemical events in caries process	Must to Know
4.8 Epidemiology	Must to Know
4.9 Microbiology and histopathology	Must to Know
5. Caries Diagnosis	
5.1 Assessment tools	Must to Know
5.2 Procedures	Must to Know
5.3 Diagnosis of pits and fissures, smooth surface, root surface caries	Must to Know
5.4 Caries activity test	Must to Know
5.5 FOT	Good to Know

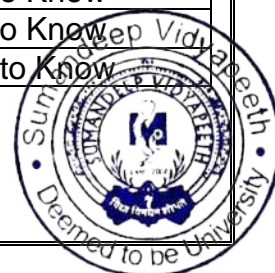
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5.6 UV illumination	Good to Know
5.7 Laser auto fluorescence	Desirable to Know
5.8 Endoscopy	Good to Know
5.9 Electrical resistance	Good to Know
5.10 Ultrasonic imaging and die penetration	Good to Know
6. Caries prevention and radiology	
6.1 Fluoride exposure	Must to Know
6.2 Immunization	Desirable to Know
6.3 Diet	Must to Know
6.4 Salivary flow	Must to Know
6.5 Oral hygiene	Must to Know
6.6 Anti microbial agent	Must to Know
6.7 Pit and fissure sealants	Must to Know
6.8 Restoration	Must to Know
6.9 Enameloplasty	Must to Know
7. Instruments in operative dentistry	
7.1 Classification of hand instruments, rotary instruments-detail features	Must to Know
7.2 Application, techniques	Must to Know
7.3 Sterilization of instruments	Must to Know
7.4 Speeds in operative dentistry	Must to Know
7.5 Powered cutting instruments	Must to Know
7.6 Hazards with cutting instruments	Must to Know
7.7 Cutting mechanism	Must to Know
7.8 Sharpening of hand instruments	Must to Know
7.9 Dental burs	Must to Know
7.10 Bladed and abrasive cutting	Must to Know
7.11 Eye and ear inhalation	Must to Know
7.12 Pulp and soft tissue protection	Must to Know
7.13 Aerosols	Must to Know
7.14 Design characteristics	Must to Know
7.15 Recent advances-lasers	Desirable to Know
8. Biological considerations in operative dentistry	
8.1 Risk and effect of infection	Must to Know
8.2 HIV	Must to Know
8.3 Hepatitis B	Must to Know
8.4 Medical history	Must to Know
8.5 Biomedical waste disposal	Must to Know
8.6 Operative asepsis	Must to Know
8.7 Sterilization- methods of sterilizing dental instruments	Must to Know
8.8 Dental unit waterline	Must to Know
8.9 Infection control for impressions	Must to Know
8.10 Epidemiology	Desirable to Know
9. Gnathological concepts of restorations	
9.1 Definition	Must to Know

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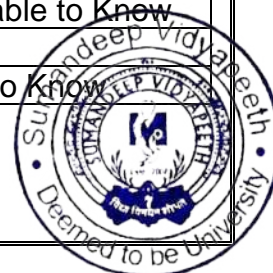
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9.2 Classification of human teeth form	Must to Know
9.3 Radiology	Must to Know
9.4 Structure of teeth	Must to Know
9.5 Physiology of tooth form	Must to Know
9.6 Occlusion- general description, articulator	Must to Know
9.7 Tooth contacts during MD movement	Must to Know
9.8 Mechanics	Must to Know
10. Contact and contours	
10.1 Definitions	Must to Know
10.2 Types of contacts between teeth,	Must to Know
10.3 Hazards of faulty contact and contours.	Must to Know
11. Choice of materials	
11.1 Amalgam	Must to Know
11.2 Composites	Must to Know
11.3 Cements	Must to Know
11.4 Bonded restoration	Must to Know
11.5 Cast restoration	Must to Know
12. Tooth separation, wedges, matrices	
12.1 Capacity of motion	Must to Know
12.2 Types of separation	Must to Know
12.3 Classification	Must to Know
12.4 Uses	Must to Know
12.5 Application of matrices and wedges	Must to Know
13. Principles of cavity preparation	
13.1 Definition of tooth preparation	Must to Know
13.2 Need for restoration	Must to Know
13.3 Nomenclature	Must to Know
13.4 Objectives of tooth preparation	Must to Know
13.5 Stages and steps	Must to Know
13.6 Factors affecting tooth preparation	Must to Know
13.7 Pulp protection	Must to Know
13.8 Forces exerted during occlusion or mastication	Must to Know
13.8 Mechanical function of marginal ridges	Must to Know
13.9 Application of stress and their distribution	Must to Know
14. Finishing and polishing of restoration	
14.1 Micro and macro abrasion-burnishing	Must to Know
14.2 Objectives of finishing and polishing,	Must to Know
14.3 Health hazards during finishing and polishing	Must to Know
14.4 Finishing and polishing instruments	Must to Know
14.5 Abrasive materials.	Must to Know
15. Isolation of operative field	
15.1 Moisture from soft tissues	Must to Know
15.2 Direct and indirect methods with examples	Must to Know
15.3 Gingival retraction cords	Must to Know
15.4 Mechanical, chemical, surgical, electrosurgical means	Must to Know

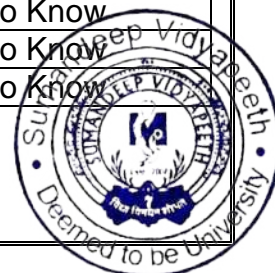
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## B. PRACTICAL PRE-CLINICAL WORK QUOTA:

Exercise	Work quota
Plaster model work	
Class I +extension	6
Class II	4
Class III	2
Class IV	1
Class V	2
ClassVI	1
Exercises on typhodont teeth	
Class I	5
Class I extension	2
Class II (FLIPPED CLASSROOM)	10
Class II mod	2
Class V-GIC	2
Class V amalgam	2
Class III GIC	2
Exercises on extracted teeth	
Class I	4
Class I extension	2

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Class II	4
Class V	2
Cast restorations	
Class II-inlay with wax pattern, spruing, investing, Finishing & cementation on extracted teeth	1
Root canal treatment	
Maxillary central incisor –RCT with accesses opening, WL, BMP, obturation & post-obturation	1
Demonstration of class III & V composite on extracted teeth	
Plaster work+typhodont+extracted	16+25+14=55
Peer to peer teaching and small group discussion	1

### C. Recommended books

Sr. No.	Title	Author	Publisher
1	Textbook of Dental Material Science	Phillip	Elsevier
2	Restorative Dental Materials	Craig	Elsevier Mosby
3	Arts and Science of Operative Dentistry	Sturdevant's	Mosby

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## Reference books

Sr. no.	Title	Author	Publisher
1	Dental Materials	Hattrik	Saunders Elsevier
2	Atlas of Glass Ionomer Cement	Graham	Dunitz
3	Textbook of Operative Dentistry	Marzouk	IshiyakuEuroAmerica, Inc Publishers
4	Pre-clinic Manual of Conservative Dentistry	V.Gopikrishna	Emmess

## D. SCHEME OF EXAMINATION:

**The following amendments in Internal Assessment and Continuous Cumulative Evaluation System is as under: (Board of Studies Letter No. KMSDCH/ BOS/1398 A and 1399/2015 dated 20/11/2015 and Board of Management resolution Ref: No. SV/R/2016/10440-2 dated 23/06/2016).**

*The changes in Internal Assessment marks pattern shall be as following:*

- The internal assessment marks in the subject of and Pre-clinical Conservative Dentistry and Endodontics shall be calculated out of 20 marks.

## INTERNAL EXAMINATION SCHEME:

First Internal	Second Internal	Prelims
Max marks - 100	Max marks – 100	Max Marks – 100
Class I cavity+ base+ restoration with OSPE FORMAT= 40 marks Table viva = 20 marks	Class I extension cavity preparation + base application with retainer and band(if applicable) + Amalgam restoration = total 40 marks table viva = 20 marks	Class 2 extension cavity + base application with retainer and band(if applicable) s+ Amalgam restoration = total 60 marks
Spotters= 20 marks Viva – 20 marks	Spotters= 20 marks Viva – 20 marks	Spotters - 20 Viva - 20

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## UNIVERSITY PRACTICAL EXAMINATION

Exam pattern for preclinical practical -----100 marks

Internal-20

Practical-80

Class II amalgam cavity preparation, Matrix with retainer & base and Restoration, carving & finishing - 35

Spotters - 20

Viva-voce - 20

Journal - 05

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## PROSTHODONTICS & CROWN AND BRIDGE

Course outcomes assessed:

Were the students able to: Mark anatomical landmarks in edentulous casts, classify partially edentulous arches and correlate to clinical picture. Identify instruments and equipment used for clinical and laboratory prosthodontic procedures. Perform all lab procedures to make a conventional complete denture, removable interim partial denture. Perform tooth preparation and wax patterns for crowns on typhodont teeth

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. Complete Denture	
1.1 Applied Anatomy & Physiology	
1.1.1 Introduction	Must to Know
1.1.2 Biomechanics of the edentulous state	Good to Know
1.1.3 Residual ridge resorption	Good to Know
1.2 Communicating with the patient	
1.2.1 Understanding the patients	Must to Know
1.2.2 Mental attitude	Good to Know
1.2.3 Instructing the patients	Must to Know
1.3 Diagnosis and treatment planning for the patients: - With some teeth remaining - With no teeth remaining	
1.3.1 Systemic status	Must to Know
1.3.2 Local factor	Must to Know
1.3.3 Geriatric patient	Must to Know
1.3.4 Diagnostic procedures	Must to Know
1.3.5 Articulators – discussion	Must to Know
1.4 Improving the patient's denture foundation and ridge relation – an overview	
1.4.1 Pre-operative examination	Must to Know
1.4.2 Initial hard tissue and soft tissue procedure	Must to Know
1.4.3 Secondary hard and soft tissue procedure	Good to Know
1.4.4 Implant procedure	Desirable to Know
1.4.5 Congenital deformities	Good to Know
1.4.6 Post-operative procedure	Must to Know
1.4.7 Principles of retention, support and stability	Must to Know
1.5 Impressions – detail	
1.5.1 Muscles of facial expression	Must to Know
1.5.2 Biologic considerations for maxillary and mandibular impressions including anatomical landmarks and their interpretation	Must to Know

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1.5.3 Impression objectives	Must to Know
1.5.4 Impression material	Must to Know
1.5.5 Impression techniques	Must to Know
1.5.6 Maxillary and mandibular impression procedures: 1.5.6.1 Preliminary Impression 1.5.6.2 Final Impression	Must to Know
1.5.7 Laboratory procedures involved with impression making (Beading & boxing, Cast preparation)	Must to Know
1.6 Record bases and Occlusal rims – in detail	
1.6.1 Materials and techniques	Must to Know
1.6.2 Useful guidelines and ideal parameters	Must to Know
1.6.3 Recording and transferring bases and occlusal rims	Must to Know
1.7 Biological consideration in jaw relation & jaw movements – craniomandibular Relations	
1.7.1 Maxillo-mandibular relation including vertical and horizontal jaw Relations	Must to Know
2. Removable Partial Dentures	
2.1 Introduction	Must to Know
2.2 Classification (FLIPPED CLASSROOM)	Must to Know
2.3 Components	Must to Know
3. Fixed Partial Dentures	
3.1 Introduction	Must to Know
3.2 Classification	Must to Know
3.3 Components	Must to Know

## B. SYLLABUS FOR PRACTICALS:

### EXERCISES TO BE CONDUCTED IN II BDS

#### Part-I Complete Denture

1. Arrangement of teeth in class I relation. ( Minimum 10 teeth arrangements)
2. Wax up, carving and polishing
3. Processing of waxed up denture (minimum 01)
4. Demonstration of arrangement of teeth for retrognathic ridge relation(class II) (01 teeth arrangement)
5. Demonstration of arrangement of teeth for prognathic ridge relation (class III) (01 teeth arrangement)
6. Repair of fractured complete denture (minimum 01 repair)
7. Demonstration for relining and rebasing complete dentures

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#### Part-II Removable Partial Denture

1. Introduction to removable partial dentures
2. Components of removable partial dentures

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3. Surveying of partially edentulous casts
4. Designing removable partial dentures
5. Clinical and laboratory steps in fabrication of cast partial denture.
6. Fabrication of anterior acrylic partial denture
7. Fabrication of posterior acrylic partial denture with clasps.

Part-III Fixed Partial Denture

1. Introduction to fixed partial denture
2. Steps in fabrication of fixed partial denture
3. Demonstration for preparation of anterior & posterior tooth to receive a porcelain jacket crown (FLIPPED CLASSROOM)
4. Preparation of maxillary central incisor typhodont tooth to receive porcelain jacket crown (mimimum 04 preparation)
5. Preparation of posterior typhodont tooth to receive complete metal crown. (mimimum 04 preparation)
6. Demonstration for preparation of anterior & posterior tooth to receive a partial veneer crown
7. Demonstration for fabrication of a dowel crown
8. Demonstration of casting
9. Fabrication of wax patterns (anterior and posterior) minimum 04 each.
10. EBES in Pre-clinical Prosthodontics is practiced as generation of PICO on manipulation techniques, literature search and reflective group discussions facilitated by teaching staff.

C. RECOMMENDED BOOKS:

TITLE	AUTHOR
Dental lab Procedures Part I: Complete dentures	Rudd & Murrow
Dental lab Procedures Part II: Removable Partial dentures	Rudd & Murrow
Dental lab Procedures Part I: Fixed Partial dentures	Rudd & Murrow
Manual for Pre-clinical Prosthodontics	S Lakshmi
Essential Manual of PreClinical Prosthodontics	Dr. ParanjayPrajapati Dr. Sneha Kulkarni

D. EXAM SCHEME:

**The following amendments in Internal Assessment and Continous Cumulative Evaluation System is as under: (Board of Studies Letter No. KMSDCH/ BOS/1398 A and 1399/2015/ dated 20/11/2015 and Board of Management resolution Ref: No. SV/R/2016/10440-2 dated 23/06/2016).**

**The changes in Internal Assessment marks pattern shall be as following:**

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- The internal assessment marks in the subject of Pre-clinical Prosthodontics and shall be calculated out of 20 marks.

a. INTERNAL ASSESSMENT: 20 MARKS

**E. The following amendments in II BDS Dental Materials internal exam is as under: (Board of Studies Letter No. KMSDCH/BOS/1398A/2015 dated 20/11/2015 and Board of Management resolution Ref: No. SV/R/AC/2016/10440-2 dated 23/06/2016.**

*The change in II BDS Dental Material theory syllabus shall be as following:*

1. To restructure preclinical prosthodontics terminal practical exam on OSCE/OSPE pattern.

*These will enable students to develop analytical thinking.*

- First internal: Arrangement of anterior teeth and OSPE
- Second internal: Arrangement of teeth (anterior and posterior) and viva
- Prelims: Arrangement of teeth and preparation of tooth to receive full ceramic crown with wax pattern

b. University Exam:

(University Practicals-80 Marks + Internal-20 Marks=100 Marks)

1. The University Practical Examination will be of Total 80 marks and will consist of:

SR. NO	PARTICULARS	MARKS
1	Exercises: Total Duration-3 Hours i. Teeth arrangement for complete denture: (40) ii. Tooth preparation and wax pattern (20) iii. Viva voce + project (15) iv. Journal (05)	80
2	Internal marks (40% - CCES + 60% - Average of all internal assessment)	20

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# PRE-CLINICAL ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

Students will be coming for practicals to the Department of Orthodontics once a week for 2 hours.

Theory lectures will begin from third year.

## A. PRACTICAL SYLLABUS:

- Basic wire bending exercises gauge 22 or 0.7 mm - One Each
  - Straightening of wires
  - Bending of an equilateral triangle
  - Bending of a rectangle
  - Bending of a square
  - Bending of a circle
  - Bending of U.V.
- Construction of Clasps (Both sides upper / lower) Gauge 22 or 0.7 mm
  - $\frac{3}{4}$  clasp (C-clasp)
  - Full clasp (Jackson's Crib)
  - Adams' clasp
  - Triangular clasp
- Construction of Springs (on upper both sides) Gauge 24 or 0.5mm – One Each
  - Finger Spring
  - Single Cantilever Spring
  - Double Cantilever Spring (Z-spring)
  - T-Springs on premolars
- Construction of Canine retractors Gauge 23 or 0.6mm – One Each
  - U-Loop Canine retractor (Both sides on upper & lower)
  - Helical canine retractor (Both sides on upper & lower)
  - Buccal canine retractor -self supported buccal canine retractor with
    - 1..1 Sleeve - 5mm wire or 24 gauge
    - 1..2 Sleeve - 19 gauge needle on any one side
  - Palatal canine retractor on upper both sides
    - 1..1 Gauge 23 or 0.6mm
- Labial bow
  - Gauge 22 or 0.7mm
  - One on both upper and lower

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### THIRD BDS

- *The following amendments in III BDS practicals for all dental subjects is as under: (Board of Studies Letter No. KMSDCH /DFBOS / OW / 07 / AY 2017 -18 dated 21/05/2018 and Board of Management resolution Ref: No. SV/R/2017-18/12638 dated 07-07-2018*

*The change in III BDS practicals for all dental subjects shall be as following:*

- *Training of II BDS students on*
  - 1. Functioning of dental chairs*
  - 2. Aseptic and infection control in clinics*

*This will enable students to manage their dental practice more efficiently.*

### GENERAL MEDICINE

Definition of the Subject:-

It is discipline of medical specialty which deals with diagnosis, treatment and prevention of adult disease. The specialty of General Medicine deals with management of patient who have undifferentiated or multi system disease process and is one of the core subjects in relation to medical education and research which has to be learnt by almost all discipline of medical specialty including dentistry.

Aims, Objective and scope of the subject:-

Aims: - The broad goal of the teaching undergraduate dental students, the subject of Gen. Medicine is to have the knowledge, skills and behavioral attributes such that it would lead to function effectively with patients who come to them with dental problem with or without medical disorders.

Objective and scope of the subject:-

(a) Knowledge : At the end of the course, the students shall be able to:

1. Know and understand common medical disorders with or without dental problem.

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2. Outline clinical symptoms, signs and complications of general and multisystem disorders like hypertension, diabetes, and other endocrinal disorders, genetic and

  
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environmental medical disorders, nutritional disorders, infectious diseases including sexually transmitted diseases, tropical and other systemic disorders pertaining to cardiovascular, respiratory, gastrointestinal, neurological, hematological and immune system.

3. Propose diagnostic as well as investigative procedures and ability to interpret them.
4. Familiarize themselves with treatment protocol and management strategies of medical disorder such that they are able to know dosage schedule. Interaction and side effects of various drugs with their beneficial effect.
5. Provide first level management of acute medical emergencies which is encountered in dental practice and able to decide timings and level of level of referral if required
6. Recognize and correlate dental disorders and practices with multisystem and medical disorders in holistic, comprehensive and through manner

#### Course outcomes assessed:

Were the students able to: Explain special precautions/ contraindication of anaesthesia and various dental procedures in different systemic diseases. Explain Oral manifestations of systemic diseases. Explain Medical emergencies in dental practice. Able to record the arterial pulse, blood pressure. Able to diagnose through case history and general examination of the body, the diseases of the heart, lungs, kidneys, blood etc. Handle medical emergencies encountered in dental practice

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## A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. Introduction	
1.1 Aims of medicine & Definitions of signs, Symptoms, Diagnosis, Differential diagnosis, treatment & prognosis/ Evidence based practice in medicine	Must to Know
2. Infections	
2.1 Enteric fever	Must to Know
2.2 AIDS/ Universal precaution consequences/management	Must to Know
2.3 Herpes simplex	Must to Know
2.4 Herpes Zoster	Must to Know
2.5 Malaria	Must to Know
2.6 Tetanus and lock jaw	Must to Know
2.7 Diphtheria	Good to Know
2.8 Infectious mononucleosis	Desirable to Know
2.9 Mumps	Desirable to Know
2.10 Measles	Desirable to Know
2.11 Rubella	Desirable to Know
2.12 Syphilis	Desirable to Know
2.13 Prevention of Infectious diseases: vaccines, mask and various strategies.	Desirable to Know
3. G.I.T	
3.1 Stomatitis and vitamin deficiency related oral lesions	Must to Know
3.2 Gingival hyperplasia	Must to Know
3.3 Acid peptic disease	Must to Know
3.4 Jaundice	Must to Know
3.5 Acute hepatitis	Must to Know
3.6 Cirrhosis of liver	Must to Know
3.7 Ascites	Must to Know
3.8 Dysentery	Good to Know
3.9 Amoebiasis	Good to Know
3.10 Dysphasia	Desirable to Know
3.11 Malabsorption	Desirable to Know
3.12 Health care associated infection and their prevention	Desirable to Know
4. CVS	
4.1 Acute rheumatic fever	Must to Know
4.2 Rheumatic valvular heart disease	Must to Know
4.3 Hypertension	Must to Know
4.4 Ischemic heart disease/chest pain	Must to Know
4.5 Infective endocarditic	Must to Know
4.6 Common arrhythmias	Good to Know
4.7 Congestive cardiac Failure	Good to Know

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4.8 Congenital heart disease	Desirable to Know
<b>5. Respiratory System</b>	
5.1 Pneumonia	Must to Know
5.2 COPD	Must to Know
5.3 Pulmonary TB	Must to Know
5.4 Bronchial asthma/Dyspnea and immunology	Must to Know
5.5 Pleural effusion	Good to Know
5.6 Lung Abscess	Desirable to Know
5.7 Pneumothorax	Desirable to Know
5.8 Bronchiectasis	Desirable to Know
5.9 Lung cancers	Desirable to Know
<b>6. Haematology</b>	
6.1 Iron deficiency anaemia	Must to Know
6.2 Megaloblastic anaemias	Must to Know
6.3 Hemolytic anaemia	Must to Know
6.4 Bleeding & clotting disorders	Must to Know
6.5 Oral manifestations of hematologic disorders	Must to Know
6.6 Leukemias	Good to Know
6.7 Lymphomas	Good to Know
6.8 Agranulocytosis	Good to Know
6.9 Splenomegaly	Good to Know
6.10 Generalised lymphadenopathy	Good to Know
6.11 Auto immune disorders including rheumatoid arthritis	Desirable to Know
<b>7. Renal System</b>	
7.1 Acute nephritis	Must to Know
7.2 Nephrotic syndrome	Must to Know
7.3 Renal Failure	Good to Know
<b>8. Nutrition</b>	
8.1 Avitaminosis	Must to Know
8.2 Balanced diet	Good to Know
8.3 PEM	Desirable to Know
<b>9. CNS</b>	
9.1 Facial palsy	Must to Know
9.2 Facial pain including trigeminal neuralgia	Must to Know
9.3 Epilepsy	Good to Know
9.4 Headache including migraine	Good to Know
9.5 Meningitis	Desirable to Know
9.6 Examination of comatose patient	Desirable to Know
9.7 Examination of cranial nerves	Desirable to Know
<b>10. Endocrine</b>	
10.1 Diabetes Mellitus	Must to Know
10.2 Hypothyroidism	Good to Know
10.3 Thyrotoxicosis	Good to Know
10.4 Calcium metabolism and parathyroid/flurosis	Good to Know
10.5 Addison's disease	Desirable to Know

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10.6 Cushing's syndrome	Desirable to Know
10.7 Acromegaly	Desirable to Know
11. Critical Care	
11.1 Syncope	Must to Know
11.2 Cardiac arrest	Must to Know
11.3 CPR	Must to Know
11.4 Shock	Must to Know
11.5 Medical emergencies in dental practice	Must to Know
11.6 Anaphylactic Shock	Must to Know
11.7 Acute LVF	Good to Know
11.8 ARDS	Good to Know
11.9 Alcohol abuse, overdose and substance abuse	Desirable to Know

**B. PRACTICALS:**

**C. RECOMMEND BOOKS:**

Suggested General Medicine text books for 3 <sup>rd</sup> BDS	
S.No	Name of book
1.	Davidson's Text book of Medicine
2.	API Text book of Medicine
3.	Harrison's principal of internal Medicine
Suggested General Medicine Clinical books for 3 <sup>rd</sup> BDS	
4.	Hutchinson's Medicine
5.	Golwala's General Medicine

**D. SCHEME OF EXAMINATION:**

As per the university rules

**Attested CTC**

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Practical & Clinical: (marks distribution)

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- The University Practical Examination will be of Total 90 Marks and will consist of :

Sr.no	Particulars	Marks
1.	Long Case	45
2.	Short Case	25
3.	X-ray & Drug Spotters	20

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## GENERAL SURGERY

### Aims & Objectives:

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

### Course outcomes assessed:

Were the students able to: Diagnose diseases, which may require surgical expertise. Analyze the history and be able to do a thorough physical examination of the patient. Explain features and differential diagnosis, investigations and treatments of diseased conditions, Differentiate benign and malignant diseases and be able to decide which patient requires further evaluation.

## A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. Principles of Surgery, Tissue care, Asepsis and anti sepsis, Theatre technique, Sterilization, Suture materials, diathermy, Laser.	Must to Know
2. Introduction – History of Surgery	Good to Know
3. Classification of Diseases, General Scheme of Studying a diseases- Etio-Pathology, Clinical features, Investigations, Diagnosis, Management, Complications, Prognosis.	Desirable to Know
4. Wounds- Classification, Clinical Assessment, Treatment, Complications, wound healing	Must to Know
5. Skin Grafting	Good to Know
6. Parathyroid - Hyperparathyroidism, Tetany, Calcium Metabolism	Desirable to Know
7. Inflammation and infection – Definition, Etiology, Pathology, Classification	Must to Know

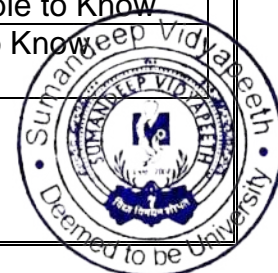
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8. Chronic Infections – Nonspecific, and Specific – Tuberculosis, Syphilis, Actinomycosis, Leprosy.	Good to Know
9. Pituitary Gland	Desirable to Know
10. Acute Infections- Non-specific, and Specific – Aerobic and Anaerobic abscess, Cellulitis. Carbuncle, Erysipelas, Anthrax, Gonorrhoea, Gas Gangrene, Tetanus, CancrumOris, Ludwig's Angina	Must to Know
11. AIDS	Good to Know
12. Diseases of Arteries and Veins in general - Varicose Veins, Atherosclerosis, Aneurysm, Carotid Body Tumours	Desirable to Know
13. Hemorrhage – Classification, emergency Management, Definitive Treatment, Assessment of Blood Loss.	Must to Know
14. Bacteraemia, Septicemia, Pyaemia, Toxaemia	Good to Know
15. Nervous System - Nerve Injury, Regeneration, Repair, Nerve Grafting. Facial Nerve Palsy, Trigeminal Neuralgia	Desirable to Know
16. Syncope, Shock ,Cardiac Arrest – Causes, Clinical Features, Haemodynamic Changes, emergency Care, Monitoring, Definitive Treatment, Septic Shock (warm shock), Anaphylaxis.	Must to Know
17. Bleeding Disorders – Coagulation Mechanism	Good to Know
18. Principles of Anesthesia	Desirable to Know
19. Tumours – Definition, Classification, Etiology of Cancer, Spread of Cancer, Early Diagnosis, Investigations, Modalities of Treatment and Prognosis, Recent Advances.	Must to Know
20. Blood Group – Blood Transfusion – Complications of Transfusion and Management, Massive Transfusion.	Good to Know
21. Brief Surgical Anatomy of Pharynx, Esophagus, Paranasal. Diseases related to Obstruction to Ones in Pharynx and Esophagus.	Desirable to Know
22. Blood Fractions and their uses.	Good to Know
23. Introduction to – Oncology, Radiotherapy, Surgery and Genetic Engineering.	Desirable to Know
24. Diseases of Mouth, Lip, Tongue, Palate & Tonsils	
24.1 Ulcers, Stomatitis, Leukoplakia, Carcinoma of Lip, Cheek, Tongue	Must to Know
24.2 Ranula	Must to Know
24.3 Tonsillitis, Quinsy	Must to Know
25. Ulcers – Definition, Classification, etiology, Nonseptic, Ulcers, Specific Ulcer – Tuberculous Ulcer, Syphilitic Ulcer, Malignant Ulcers – Squamous cell Carcinoma, Basal Cell Carcinoma, Malignant Melanoma, Marjolin's Ulcer, Diabetic Ulcer.	Good to Know
26. Sinus and Fistula	Good to Know
27. Salivary Glands	
27.1 Acute and Chronic Infection- Parotid Abscess, Salivary Calculus	Must to Know
27.2 Salivary Tumours – Classification, Mixed Parotid Tumours –	Must to Know

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Carcinoma, Adenolymphoma, Sjogren's Disease	
28. Gangrene – Gas Gangrene, Dry Gangrene, Moist Gangrene – Causes, Management.	Good to Know
29. Cyst-Definition, Classification, Clinical Features, Complications, Management.	Good to Know
30. Neck Swellings – Midline and Lateral Swellings, Cystic and Solid Swellings : Classification, Differential diagnosis, Treatment.	Must to Know
31. Common Cyst – Mucous Cyst, Sebaceous Cyst, Dermoid Cyst, Ranula, Cystic Hygroma, Branchial Cyst, Thyroglossal Cyst, Ganglion.	Good to Know
32. Facio – Maxillary Injuries	Must to Know
33. Common Benign and Malignant Tumors of head and Neck Region – Lipoma, Fibroma, Neurofibroma, Haemangioma, Lymphangioma Osteoma, Carcinoma, Sarcoma.	Good to Know
34. Fractures of Mandible	Must to Know
35. Biopsy – Indication and Methods	Good to Know
36. Jaw Swellings – Equilis, Odontomes, Bone Cysts and Tumours, Burkitt's Lymphoma	Must to Know
37. Diseases of Lymphatic and Lymph nodes	
37.1 Lymphangitis – Acute and Chronic, chronic Lymphoedema	Good to Know
37.2 Lymphadenopathy – Classification	Good to Know
37.3 Inflammatory – Acute and Chronic, Non – specific and specific – Tubercular Lymphadenitis, Cold abscess – Collar Stud Abscess	Good to Know
37.4 Malignant Tumours: Primary ; Hodgkin's Diseases, Non Hodgkin's Lymphoma	Good to Know
37.5 Secondary carcinoma	Good to Know
38. Osteomyelitis of Mandible	Must to Know
39. Head Injury Management	Good to Know
40. Management of Severely Injured Patient - Resuscitation	Good to Know
41. Fractures and Dislocations – Causes, General Principles of Management, Healing of Fractures and Complications	Good to Know
42. Thyroid Gland – Development, Congenital anomalies, Classification of goiters. Acute and Chronic Thyroiditis, Hashimoto's Disease, Reidel's Thyroiditis, Hyperparathyroidism, Hypothyroidism, Adenoma, Carcinoma.	Good to Know
43. Tracheostomy – Indications, Steps of Operation, Post Operative Care	Must to Know
44. Burns and Scalds	Good to Know
45. Development of Face – Cleft Lip and Palate repair	Good to Know

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B. PRACTICALS:

1. Clinical approach to the patient

2. History taking

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3. Clinical Examination of
  - 1) Swelling
  - 2) Ulcer
  - 3) Gangrene
  - 4) Neck Swelling
  - 5) Oral Cavity Examination
  - 6) Tracheostomy
4. Common X rays of Head & Neck, Chest
5. Common ward Procedure appliances
6. Common Instruments in Surgery Identification & uses.
7. Common minor Operative Procedures. & Ward Procedures.

### C. RECOMMENDED BOOKS:

Title	Author	Publisher
A Manual on Clinical Surgery	Somen Das	Dr.S.Das Calcutta
Bailey & Love's Short Practice of Surgery	Charles V. M. Ann	Oxford University Press
Hamilton Baileys Demonstrations of Physical signs in Clinical Surgery	Hamilton Bailey	Butterworth Heinemann U.K.

### Reference Books:

1. Oxford Text Book of Surgery
2. Text Book of Surgery by Devita
3. Surgery by Sebastin
4. Surgery by somalal
5. Text Book of Surgery by Chatterjee
6. Surgical Anatomy by Heereggor
7. Diseases of Eye by Parson
8. Text Book of Opnthalmology by Vasudev Anand Rao

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9. E.N.T. Diseases by Mohammed Muqbool

10. E.N.T. Diseases by N.C.Day

11. E.N.T. Diseases by K.K.Ramalingam

#### D. SCHEME OF EXAMINATION:

As per the university rules

Practical & Clinical : (distribution of marks)

Sr.no	Particulars	Marks
1.	Case History	10
2.	Clinical Examination	30
3.	Suggested Investigations	10
4.	Diasgnosis, DD	20
5.	Management	10

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## ORAL PATHOLOGY & MICROBIOLOGY

Lectures are taken on various topics pertaining to Oral Pathology. These lectures are incorporated by literature evidences form published data in various scientific databases, pertaining to the subject taught.

The students take up peer teaching exercises during lectures and a topic is priorly allocated to them for this.

Students are given assignments on completed topics wherein they are asked to incorporate best possible evidence.

Students are also encouraged to incorporate evidences in undergraduate seminar.

Lectures are taken on various topics pertaining to Oral Pathology. These lectures are incorporated by literature evidences form published data in various scientific databases, pertaining to the subject taught.

The students take up peer teaching exercises during lectures and a topic is priorly allocated to them for this.

Students are given assignments on completed topics wherein they are asked to incorporate best possible evidence.

Students are also encouraged to incorporate evidences in undergraduate seminar.

### Course outcomes assessed:

Were the students able to: Describe the different types of pathological processes, that involve the oral cavity. Describe the manifestations of common diseases, their diagnosis & correlation with clinical pathological processes. Explain the oral manifestations of systemic diseases should help in correlating with the systemic physical signs & laboratory findings. Explain the underlying biological principles governing treatment of oral diseases. Explain the principles of basic aspects of Forensic Odontology. Describe the laboratory procedures in histo-pathology. Identify the pathologies on basis of histopathological observations and correlate them with clinical picture.

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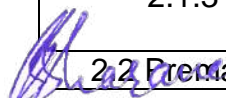
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## A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. Odontogenic tumours	
1.1 Benign tumors	
1.1.1 Odontogenic epithelium without odontogenic connective tissue	
1.1.1.1 Ameloblastoma	Must to Know
1.1.1.2 Calcifying Epithelial Odontogenic Tumour	Must to Know
1.1.1.3 Adenomatoid Odontogenic Tumour	Must to Know
1.1.1.4 Squamous Odontogenic tumour	Desirable to Know
1.1.2 Odontogenic epithelium with Odontogenic connective tissue	
1.1.2.1 Ameloblastic fibroma	Desirable to Know
1.1.2.2 Ameloblastic Fibro-odontoma, Odontoma	Desirable to Know
1.1.2.3 Ghost cell Tumour	Desirable to Know
1.1.3 Odontogenic connective tissue with or without included odontogenic epithelium	
1.1.3.1 Peripheral and Central odontogenic fibroma	Desirable to Know
1.1.3.2 Odontogenic Myxoma	Desirable to Know
1.1.3.3 Benign cementoblastoma	Must to Know
1.2 Malignant tumors	
1.2.1 Metastasizing ameloblastoma	Good to Know
1.2.2 Ameloblastic carcinoma	Good to Know
1.2.3 Odontogenic sarcoma	Good to Know
2. Non- Odontogenic Tumours	
2.1 Benign Tumours of Epithelial Origin	
2.1.1 Papilloma	Must to Know
2.1.2 Keratoacanthoma	Desirable to Know
2.1.3 Nevus	Desirable to Know
2.2 Premalignant Lesions & Conditions	

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2.2.1 Definition	Must to Know
2.2.2 Classification	Must to Know
2.2.3 Epithelial Dysplasia	Must to Know
2.2.4 Leukoplakia	Must to Know
2.2.5 Carcinoma in situ	Must to Know
2.2.5 Erythroplakia	Must to Know
2.2.6 Oral Submucous Fibrosis	Must to Know
<b>2.3 Malignant Tumours of Epithelial Origin</b>	
2.3.1 Basal Cell Carcinoma	Must to Know
2.3.2 Epidermoid Carcinoma	Must to Know
2.3.2.1 Epidemiology	Must to Know
2.3.2.2 Etiology	Must to Know
2.3.2.3 Clinical Features	Must to Know
2.3.2.4 Histology	Must to Know
2.3.2.5 Grading & TNM Staging	Must to Know
2.3.3 Verrucous Carcinoma	Must to Know
2.3.4 Malignant Melanoma	Must to Know
2.3.5 Recent advances in diagnosis	Must to Know
2.3.6 Management & Prevention of Oral Cancer	Desirable to Know
<b>2.4 Benign tumours of connective tissue origin</b>	
2.4.1 Fibroma	Must to Know
2.4.2 Giant Cell Fibroma	Must to Know
2.4.3 Peripheral & Central Ossifying Fibroma	Must to Know
2.4.4 Lipoma	Must to Know

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2.4.5 Hemangioma	Must to Know
2.4.6 Chondroma	Must to Know
2.4.7 Osteoma	Desirable to Know
2.4.8 Osteoid Osteoma	Must to Know
2.4.9 Benign Osteoblastoma	Must to Know
2.4.10 Tori & Multiple Exostoses	Must to Know
2.5 Tumour like lesions of connective tissue origin	
2.5.1 Peripheral Ossifying Fibroma	Desirable to Know
2.6 Malignant tumours of Connective tissue origin	
2.6.1 Fibrosarcoma	Desirable to Know
2.6.2 Chondrosarcoma	Must to Know
2.6.3 Kaposi's Sarcoma	Must to Know
2.6.4 Ewing's Sarcoma	Must to Know
2.6.5 Osteosarcoma	Must to Know
2.6.6 Lymphomas	Desirable to Know
2.6.6.1 Hodgkin's lymphoma	Desirable to Know
2.6.6.2 Non – Hodgkins's lymphoma	Desirable to Know
2.6.6.4 Burkitt's lymphoma	Desirable to Know
2.6.7 Myeloma	Desirable to Know
2.6.7.1 Multiple Myeloma	Desirable to Know
2.6.7.2 Solitary Plasmacytoma	Desirable to Know
2.7 Benign tumours of Muscle tissue origin	
2.7.1 Leiomyoma	Desirable to Know
2.7.2 Rhabdomyoma	Desirable to Know
2.7.3 Congenital Epulis of New born	Desirable to Know

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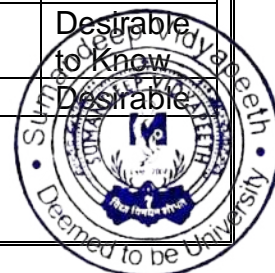
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	to Know
2.7.4 Granular cell tumour	Desirable to Know
2.8 Benign & Malignant tumours of nerve tissue origin	
2.8.1 Neurofibroma& Neurofibromatosis	Good to Know
2.8.2 Schwamoma	Good to Know
2.8.3 Melanoticneuroectodermaltumour of infancy	Good to Know
2.8.4 Malignant Schwamoma	Good to Know
2.9 Metastatic tumours of Jaws & Soft tissue of oral cavity	Good to Know
3. Salivary gland tumours	
3.1 Neoplastic salivary gland diseases	
3.1.1 Benign	
3.1.1.1 Pleomorphic adenoma	Must to Know
3.1.1.2 Warthinstumour	Must to Know
3.1.1.3 Myoepithelioma	Good to Know
3.1.1.4 Canalicular adenoma	Good to Know
3.1.1.5 Oncocytoma	Good to Know
3.1.2 Malignant	
3.1.2.1 Adenoid Cystic Carcinoma	Must to Know
3.1.2.2 Mucoepidermoid Carcinoma	Must to Know
3.1.2.3 Acinic Cell Carcinoma	Desirable to Know
3.1.2.4 Polymorphous Low Grade Adenocarcinoma	Desirable to Know
3.1.2. 5 Carcinoma ex Pleomorphic Adenoma	Desirable to Know
3.2 Nonneoplastic SalivaryGland Diseases	
3.2.1 Sialolithiasis	Must to Know
3.2.2 Sialosis, Sialadenitis	Must to Know
3.2.3 Xerostomia & Ptylism	Must to Know

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3.2.4 Sjogren's Syndrome	Must to Know
3.2.5 Benign Lymphoepithelial Lesion	Good to Know
3.2.6 Necrotising Sialometaplasia	Good to Know
4. Cysts of Oral & Paraoral Region Classification, etiopathogenesis, clinical features, histopathology, laboratory & radiological features	-
4.1 Odontogenic cysts	
4.1.1 Odontogenic Keratocyst	Must to Know
4.1.2 Dentigerous Cyst	Must to Know
4.1.3 Primordial Cyst	Must to Know
4.1.4 Dental Lamina Cyst of Newborn	Must to Know
4.1.5 Gingival cyst of adults	Must to Know
4.1.6 Lateral periodontal cyst	Must to Know
4.1.7 Calcifying odontogenic cyst	Must to Know
4.1.8 Radicular cyst	Must to Know
4.2 Non-Odontogenic cysts	
4.2.1 Pseudocyst of jaws	Desirable to Know
4.2.2 Aneurysmal bone cyst	Desirable to Know
4.2.3 Traumatic bone cyst	Desirable to Know
4.2.4 Soft tissue cysts of oral & paraoral region	Desirable to Know
5. Traumatic, reactive & regressive lesions of Oral Cavity	
5.1 Pyogenic granuloma	Must to Know
5.2 Peripheral & Central Giant cell granuloma	Must to Know
5.3 Exostoses	Desirable to Know
5.4 Fibrous Hyperplasia	Desirable to Know
5.5 Traumatic Ulcer	Desirable to Know

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5.6 Traumatic Neuroma	Desirable to Know
5.7 Attrition	Must to Know
5.8 Abrasion	Must to Know
5.9 Abfraction	Must to Know
5.10 Erosion	Desirable to Know
5.11 Bruxism	Desirable to Know
5.12 Hypercementosis	Desirable to Know
5.13 Dentinal changes	Desirable to Know
5.14 Pulp calcifications	Desirable to Know
5.15 Resorption of teeth	Good to Know
5.16 Radiation effects of oral cavity	Good to Know
5.17 Allergic reactions of the oral cavity	Good to Know
5.18 Angioedema	Good to Know
5.19 Stomatitis medicamentosa	Good to Know
5.20 Stomatitis venenata	Good to Know
6. Microbial infections of oral soft tissue- Microbiology, defence mechanisms including immunological aspects, oral manifestations, histopathology and laboratory diagnosis of bacterial, viral & fungal infections namely common	
6.1 Bacterial	
6.1.1 Scarlet fever	Desirable to Know
6.1.2 Diphtheria	Desirable to Know
6.1.3 Tuberculosis	Must to Know
6.1.4 Syphilis	Must to Know
6.1.5 Actinomycoses & its complications	Desirable to Know
6.1.6 Candidiasis	Desirable to Know

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	to Know
6.1.7 Tetanus	Desirable to Know
6.1.8 Noma	Desirable to Know
6.2 Viral	
6.2.1 Herpes Simplex	Must to Know
6.2.2 Varicella zoster	Desirable to Know
6.2.3 Measles	Desirable to Know
6.2.4 Mumps	Desirable to Know
6.2.5 HIV infection and Oral manifestation of AIDS	Must to Know
6.3 Fungal	
6.3.1 Candidiasis	Must to Know
6.3.2 Histoplasmosis	Good to Know
6.4 Immunological diseases	
6.4.1 Recurrent Aphthous stomatitis	Must to Know
6.4.2 Bechet's syndrome	Desirable to Know
6.4.3 Reiter's syndrome	Desirable to Know
6.4.4 Sarcoidosis	Good to Know
7. Common non – inflammatory disease involving jaws	
7.1 Fibrous dysplasia	Must to Know
7.2 Cherubism	Must to Know
7.3 Osteogenesis Imperfecta	Desirable to Know
7.4 Paget's bone disease	Must to Know
7.5 Cleidocranial dysplasia	Must to Know
7.6 Pickets	Desirable to Know
7.7 Achondroplasia	Good to Know

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7.8 Marfan's syndrome	Good to Know
7.9 Down's syndrome	Desirable to Know
7.10 Histiocytosis X disease	Good to Know
<b>8. Biopsy, Cytology &amp; Healing of Wounds</b>	
8.1 Factors affecting healing of wounds Healing of extraction wound	Must to Know
8.2 Dry socket	Desirable to Know
8.3 Biopsy techniques	Must to Know
8.4 Healing of biopsy wound	Must to Know
8.5 Exfoliative Cytology	Must to Know
8.5.1 Indications	Must to Know
8.5.2 Staining and Interpretation	Desirable to Know
<b>9. Systemic Diseases involving Oral Cavity</b>	
9.1 Brief review & oral manifestations, diagnosis & significance of common Blood, Nutritional, Hormonal & Metabolic diseases of Oral cavity	Must to Know
9.2 Blood dyscrasias - Clinico-pathological aspects and oral manifestations	Must to Know
9.2.1 Anemias	Must to Know
9.3.2 Polycythemia	Desirable to Know
9.3.3 Leukopenia	Must to Know
9.3.4 Neutropenia	Must to Know
9.3.5 Agranulocytosis	Must to Know
9.3.6 Chediak-Higashi syndrome	Desirable to Know
9.3.7 Leukocytosis	Must to Know
9.3.8 Infectious mononucleosis	Must to Know
9.3.9 Leukemias	Must to Know
9.3.10 Purpura haemophilia	Must to Know

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	Know
9.3 Oral aspects of Disturbances in Mineral Metabolism	Good to Know
9.4 Oral aspects of Avitaminosis and Hypervitaminoses	Good to Know
9.5 Oral Aspect of Endocrine Dysfunction	Must to Know
<b>10. Mucocutaneous Lesions</b>	
10.1 Lichen Planus	Must to Know
10.2 Lupus Erythematosus	Must to Know
10.3 Pemphigus & Pemphigoid lesions	Desirable to Know
10.4 Erythema Multiforme	Must to Know
10.5 Psoriasis, Scleroderma	Good to Know
10.6 Ectodermal Dysplasia	Good to Know
10.7 Epidermolysis bullosa	Good to Know
10.8 White sponge nevus	Good to Know
<b>11. Periodontal Diseases</b>	
11.1 Stains	Must to Know
11.2 Calculus	Must to Know
11.3 Gingivitis	Must to Know
11.4 Gingival enlargements	Desirable to Know
11.5 ANUG	Must to Know
11.6 Chronic Desquamative gingivitis	Desirable to Know
11.7 Periodontitis and Juvenile periodontitis	Desirable to Know
11.8 Basic immunological mechanisms of periodontal disease to be highlighted	Good to Know
<b>12. Diseases of Temporomandibular Joint</b>	
12.1 Ankylosis	Desirable to Know
12.2 Luxation and Subluxation	Desirable to Know

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12.3 Summary of different types of arthritis & other developmental malformations	Good to Know
12.4 Traumatic injuries	Desirable to Know
12.5 Myofascial pain dysfunction syndrome	Must to Know
13. Diseases of Nerves	
13.1 Facial neuralgias – Trigeminal, Sphenopalatine & Glossopharyngeal neuralgias, VII nerve paralysis, Causalgia	Must to Know
13.2 Psychogenic facial pain	Good to Know
13.3 Burning mouth syndrome	Desirable to Know
14. Pigmentations of Oral tissues	Desirable to Know
15. Diseases of Maxillary Sinus	Desirable to Know
16. Principles of Forensic Odontology	
16.1 Introduction, definition, aims & scope	Must to Know
16.2 Sex and ethnic (racial) differences in tooth morphology and histological age estimation	Must to Know
16.3 Determination of sex & blood groups from buccal mucosa/ 16.4 saliva	Desirable to Know
16.4 Dental DNA methods, Bite marks, rugae patterns & lip prints	Must to Know
16.5 Dental importance of poisons and corrosives	Good to Know
16.6 Overview of forensic medicine and toxicology	Good to Know

#### B. PRACTICALS:

Group discussions are taken to discuss the Oral Pathology slides. Students need to identify slides and also identify various pathologies of hard & soft tissue.

The students are detailed on various casts and specimens, pertaining to the practical topics.

They are also assigned topics for peer teaching.

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A clinical problem is presented to them, following which they are asked to search for related databases for evidences related to the problem, critically analyze the evidences and find answers.

Students are asked to do Critical appraisal of different types of research papers as per the hierarchy of evidence.

Students also are taught to make use of evidence in diagnosing the pathology.

A Clinical scenario in written format with history is presented to the students and a slide given for microscopic identification to the students. This is followed during revision of slides during practical and then can be implemented in the internal practical examination

III BDS ORAL PATHOLOGY		
1	Cysts	Dentigerous Cyst
		Keratocyst
		Calcified Odontogenic Cyst
		Aneurismal Bone Cyst
		Mucous Retention Cyst
2	Diseases Of Bone	Ossifying Fibroma
		Fibrous Dysplasia
		Cemento-Ossifying Fibroma
3	Benign And Malignant Tumors	Papilloma
		Lymphangioma
		Hyperkeratotic Lesion
		Carcinoma In Situ
		Oral Sub Mucous Fibrosis
		Squamous Cell Carcinoma
		Verrucous Carcinoma
		Malignant Melanoma
		Fibroma
		Peripheral Giant Cell Granuloma
		Central Giant Cell Granuloma
		Hemangioma
Neurofibroma		

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		Neurilemmoma
		Fibrosarcoma
4	Odontogenic Tumors	Follicular Ameloblastoma
		Plexiform Ameloblastoma
		Acanthomatous Ameloblastoma
		Granular Cell Ameloblastoma
		Unicystic Ameloblastoma
		Adenomatoid Odontogenic Tumor
		Pindborg's Tumor
		Ameloblastic Fibroma
		Odontoma
5	Salivary Gland Tumors	Pleomorphic Adenoma
		Cylindroma
		Warthin Tumor
6	Skin Lesions	Lichen Planus
		Pemphigus Vulgaris

### C. RECOMMENDED BOOKS:

S.N.	Author	Title
1	Neville, Brad W	Oral & Maxillofacial Pathology
2	Rajendran, R	Shafer's text book of oral pathology
3	Cawson, R A & Odell, W	Essentials of oral pathology & oral medicine
4	Ghom, Anil Govindrao	Textbook of oral pathology
5	Regezi, Joseph a. (et. Al.)	Oral Pathology: Clinical pathologic correlations
Reference books		
1	Shear, Mervyn & Speight Paul	Cysts of Oral & Maxillofacial regions
2	Jose, Maji	Manual of oral histology & oral pathology: colour atlas & text
3	Soames, J.V. & Southam, J.C.	Oral Pathology
4	Wood & Goaz	Differential diagnosis of oral & maxillofacial lesions
5	Bancroft, John & Gamble, Marilyn	Theory & practice of histological techniques
6	Barnes, Leon	Surgical Pathology of the Head & Neck. Vol.1

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## D. SCHEME OF EXAMINATION

### INTERNAL EXAMINATION SCHEME –

- The following amendments in III BDS Oral Pathology and Microbiology internal practical exam is as under: (Board of Studies Letter No. KMSDCH/BOS/02/AY/2016-17 dated 08/11/2016 and Board of Management resolution Ref: No. SV/R/2016/3750 dated 22/12/2016.**

*The change in III BDS exam shall be as following:*

- To restructure Oral Pathology and Microbiology internal examination pattern by incorporating OSCE/ OSPE inplace of spotters.*

*This will enable students to develop analytical thinking.*

- The following amendments in III BDS Oral Pathology and Microbiology internal practical exam is as under: (Board of Studies Letter No. (KMSDCH/BOS/06/AY2016-17 dated 24/1/2017 and Board of Management resolution Ref: No. SVDU/R/2017-18/1565 dated 21.09.2017.**

*The change in III BDS Oral Pathology and Microbiology internal practical exam shall be as following:*

- Clinical scenario with history description along with slide identification*

### 1. FIRST INTERNAL / TERMINAL EXAMINATION:

S. No	Particulars	Marks
1	Slides	35
2	Spotters	35
3	Journal	10
4	Viva	20
Total		100

### 2. SECOND INTERNAL –

S. No	Particulars	Marks
1	OSPE	80
2	Viva	20

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Total	100
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### 3. THIRD INTERNAL / PRELIMS-

S. No	Particulars	Marks
1	Slides	35
2	Spotters	35
3	Journal	10
4	Viva	20
Total		100

Theory as per the university rules

Practicals: (distribution of marks)

University Clinical Examination: 90 Marks

- Spotters (Specimen -identification & points in support-8x 5 Marks) 40 Marks
- Histopathology slides & one blood slide( Diagram, Labelling and salient features) 8x 5 Marks) 40Marks
- Record book / Journal & Seminar 10 Marks

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## PROSTHODONTICS AND CROWN & BRIDGE

### Course outcomes assessed:

Were the students able to: Describe prosthetic needs of patients according to the existing biomechanics of the edentulous state. Diagnose and treat patients who are partially and completely edentulous (including geriatric patients) with complete and partial dentures. Perform clinical steps in treating patients with prosthetic needs and fabricate prostheses for all conventional prosthodontic modes of treatment. Identify cases requiring specialist prosthodontic treatment needs and refer them for further follow up. Plan and communicate treatment plans with special mention on success and failure criteria, factors and motivate patients on the significance of preventive prosthodontic care. Motivate the patient for proper Prosthodontic treatment, maintenance of oral and prosthesis hygiene. Participate in the implementation of the community outreach activities. Exhibit a high standard of professional ethics and conduct and apply these in all aspects of professional life. Participate in CDE programme to update the knowledge and professional skill including evidence based Prosthodontics from time to time.

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT

1. Complete Denture:	
1.1 Biologic considerations in jaw relation & jaw movements craniomandibular relations	MUST TO KNOW
1.1.1 Mandibular movements	MUST TO KNOW
1.1.2 Concept of occlusion – discussion in brief	MUST TO KNOW
1.2 Relating the patient to the articulator	
1.2.1 Face bow types and uses – discuss in brief	MUST TO KNOW
1.2.2 Face bow transfer procedure - discuss in brief	DESIRABLE TO KNOW
1.3 Recording the maxillo-mandibular relation	
1.3.1 Vertical relation	MUST TO KNOW
1.3.1.1 Freeway space concept	MUST TO KNOW
1.3.1.2 Methods of recording Vertical relation	MUST TO KNOW
1.3.1.3 Errors in recording Vertical relations	MUST TO KNOW
1.3.2 Centric relation records	MUST TO KNOW
1.3.2.1 Definitions	MUST TO KNOW
1.3.2.2 Rationale of Centric relation	MUST TO KNOW
1.3.2.3 Methods to record Centric relation	MUST TO KNOW
1.3.2.4 Gothic arch tracings	MUST TO KNOW
1.3.2.5 Errors in recording centric relation	MUST TO KNOW
1.3.2.6 Long centric	DESIRABLE TO KNOW

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1.3.3	Eccentric relation records	GOOD TO KNOW
1.3.3.1	Lateral relation records	GOOD TO KNOW
1.3.3.2	Protrusive relation records	GOOD TO KNOW
1.4	Teeth selection and arrangement:	
1.4.1	Anterior teeth selection	
1.4.1.1	Size of anterior teeth	MUST TO KNOW
1.4.1.2	Shape of anterior teeth	MUST TO KNOW
1.4.1.3	Shade of anterior teeth	MUST TO KNOW
1.4.1.4	Dentogenic principles	MUST TO KNOW
1.4.1.5	Dynesthetic concept	MUST TO KNOW
1.4.2	Posterior teeth	
1.4.2.1	Size of posterior teeth	MUST TO KNOW
1.4.2.2	Form of posterior teeth	MUST TO KNOW
1.4.2.3	Shade of posterior teeth	MUST TO KNOW
1.4.3	Esthetic and functional harmony	MUST TO KNOW
1.5	Relating inclination of teeth to concept of occlusion	
1.5.1	Anterior guidance	GOOD TO KNOW
1.5.2	Condylar guidance	GOOD TO KNOW
1.5.3	Difference between natural dentition occlusion and complete denture occlusion	MUST TO KNOW
1.5.4	Curve of Spee and Curve of Wilson	MUST TO KNOW
1.5.5	Theories of Occlusion	MUST TO KNOW
1.6	Trial dentures	MUST TO KNOW
1.7	Laboratory procedures	
1.7.1	Rationale of remount procedure	MUST TO KNOW
1.7.2	Plaster cast for clinical denture remount procedure	MUST TO KNOW
1.8	Denture insertion	
1.8.1	Insertion procedures	MUST TO KNOW
1.8.2	Clinical errors	MUST TO KNOW
1.8.3	Correcting occlusal disharmony	MUST TO KNOW
1.8.4	Selective grinding procedures	MUST TO KNOW
1.8.5	Instructions on denture use and maintenance	MUST TO KNOW
1.9	Treating problems associated with denture use – in brief	MUST TO KNOW
2.	Removable Partial Denture:	
2.1	Examination, diagnosis & treatment planning & evaluation of diagnostic data	MUST TO KNOW
2.2	Components of RPD	
2.2.1	Major connectors	MUST TO KNOW
2.2.1.1	Definition	MUST TO KNOW
2.2.2	Requirements	MUST TO KNOW

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2.2.1.3	Types of maxillary major connectors	MUST TO KNOW
2.2.1.4	Types of mandibular major connectors	MUST TO KNOW
2.2.2	Minor connectors	MUST TO KNOW
2.2.2.1	Definition	MUST TO KNOW
2.2.2.2	Requirements	MUST TO KNOW
2.2.2.3	Types of minor connectors	MUST TO KNOW
2.2.3	Rest and rest seats	MUST TO KNOW
2.2.3.1	Definition	MUST TO KNOW
2.2.3.2	Requirements and design	MUST TO KNOW
2.2.3.3	Types of rests	MUST TO KNOW
2.2.4	Direct retainers	MUST TO KNOW
2.2.4.1	Definition	MUST TO KNOW
2.2.4.2	Requirements and design	MUST TO KNOW
2.2.4.3	Classification	MUST TO KNOW
2.2.4.4	Circumferential clasps	MUST TO KNOW
2.2.4.4.1	Design	MUST TO KNOW
2.2.4.4.2	Simple circler clasp	MUST TO KNOW
2.2.4.4.3	Reverse circler clasp	MUST TO KNOW
2.2.4.4.4	Embrasure clasp	MUST TO KNOW
2.2.4.4.5	Combination clasp	MUST TO KNOW
2.2.4.4.6	'C' clasp	MUST TO KNOW
2.2.4.4.7	Multiple circler clasp	MUST TO KNOW
2.2.4.4.8	Ring clasp	MUST TO KNOW
2.2.4.4.9	Back action clasp	MUST TO KNOW
2.2.4.5	Bar clasps	MUST TO KNOW
2.2.4.5.1	I Bar clasp	MUST TO KNOW
2.2.4.5.2	Y Bar clasp	MUST TO KNOW
2.2.4.5.3	T Bar clasp	MUST TO KNOW
2.2.4.5.4	RPI system	MUST TO KNOW
2.2.5	Indirect retainers	
2.2.5.1	Definition	MUST TO KNOW
2.2.5.2	Requirements and design	MUST TO KNOW
2.2.5.3	Classification	MUST TO KNOW
2.2.6	Tooth replacement	
2.2.6.1	Definition	MUST TO KNOW
2.2.6.2	Requirements	MUST TO KNOW
2.2.6.3	Types	MUST TO KNOW
2.2.7	Denture bases	
2.2.7.1	Requirements	MUST TO KNOW

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2.2.7.2 Types	MUST TO KNOW
2.3 Principles of RPD design	
2.3.1 Philosophies of RPD design	MUST TO KNOW
2.3.2 Configurations in RPD designs	MUST TO KNOW
2.4 Survey and design	
2.4.1 Surveyors	MUST TO KNOW
2.4.2 Surveying	MUST TO KNOW
2.5 Mouth preparations and master cast	MUST TO KNOW
2.6 Impression materials and functional impression procedures for RPD	MUST TO KNOW
2.7 Preliminary jaw relation and esthetic try-in for some anterior replacement teeth	MUST TO KNOW
2.8 Laboratory procedures for framework construction – in brief	DESIRABLE TO KNOW
2.9 Fitting the framework – in brief	DESIRABLE TO KNOW
2.10 Try-in of the RPD - in brief	DESIRABLE TO KNOW
2.11 Completion of the RPD - in brief	DESIRABLE TO KNOW
2.12 Inserting the RPD - in brief	DESIRABLE TO KNOW
2.13 Post insertion observations	MUST TO KNOW
2.14 Temporary acrylic partial dentures	MUST TO KNOW
2.15 Immediate removable partial denture	GOOD TO KNOW
2.16 Removable partial dentures opposing complete denture	GOOD TO KNOW
3. Fixed Partial Denture:	
3.1 Fundamentals of occlusion - in brief	MUST TO KNOW
3.2 Articulators - in brief	MUST TO KNOW
3.3 Treatment planning for single tooth restorations	MUST TO KNOW
3.4 Treatment planning for replacement of missing teeth including selection and choice of abutment teeth	MUST TO KNOW
3.5 Fixed partial denture configurations	MUST TO KNOW
3.6 Principles of tooth preparations	MUST TO KNOW
3.7 Preparation for full veneer crowns - in brief (FLIPPED CLASSROOM)	MUST TO KNOW
3.8 Preparation for partial veneer crowns - in brief	MUST TO KNOW
3.9 Provisional restorations	MUST TO KNOW

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A. Syllabus for Practical:

a. I term:

i. Verification of completion of all pre-clinical work in the journal.

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- ii. Written assignment, viva & demonstration of all clinical and laboratory procedures.
- iii. Minimum 1 Complete denture
- iv. 2 FPD Tooth preparation (complete metal) and impression making
- v. Peer teaching 02 per batch

b. II term:

- i. Demonstration for all clinical and laboratory steps for Removable partial denture
- ii. Minimum 1 complete denture
- iii. 02 FPD tooth preparation (complete metal) and impression making
- iv. Demonstration of generation of a PICO question, search strategy literature search and appraisal through checklists

B. Recommended Books:

Sr. No	Title	Author
1.	Syllabus of complete denture	Charles M Heartwell & Arthur O Rahn
2.	Prosthetic treatment for edentulous patients	C O Boucher
3.	Essentials of complete denture prosthodontics	Sheldon Winkler
4.	Removable partial prosthodontics	McCracken
5.	Clinical removable partial prosthodontics	Stewart Rudd Kuebker
6.	Contemporary fixed prosthodontics	Rosensteil
7.	Prosthetic Treatment for Edentulous Patients	Zarb Bolender
8.	Removable partial prosthodontics	Ernest L Miller & Joseph E. Grasso
9.	Fundamentals of fixed prosthodontics	Herbert Shillingburg
10.	Theory & practice of fixed prosthodontics	Tylman
11.	Dental lab Procedures: Complete dentures, removable partial prosthodontics, Fixed	Rudd and Morrow

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	Prosthodontics	
12.	Maxillofacial Prosthetics	Taylor
13.	Contemporary Implant dentistry	C E Misch

### C. Examination Scheme

**The following amendments in III BDS Prosthodontics practical syllabus is as under: (Board of Studies Letter No. KMSDCH/BOS/02/AY2016-17 dated 08/11/2016 and Board of Management resolution Ref: No. SV/R/2016/3750 dated 22.12.2016).**

*The change in III BDS Prosthodontics practical syllabus shall be as following:*

1. *To introduce open book examination as a part of I internal examination and to be considered for internal assessment.*

*These will enable students to assess there subjective understanding of the subject.*

III Year I term:

- i. Open book examination (25 marks)

III Year II term:

- ii. Internal assessment as a Clinical step and viva (25 marks)

University Exams shall be conducted at the end of fourth BDS

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## PERIODONTOLOGY

### 1. DEFINITION:

- 1.1. The science that deals with the structures and behavior of the periodontium in health and in disease is called Periodontology, and the branch of dentistry concerned with prevention and treatment of periodontal disease is termed Periodontics.

### 2. AIMS:

- 2.1. Provide the knowledge, skills and attitudes of the student fundamental to diagnosis and treatment of periodontics and related procedures to enable critical evaluation and problem solving for periodontal problems to allow independent practice based on the highest level of available evidences.
- 2.2. Provide the knowledge, skills and attitudes Provide the knowledge relating to the contemporary practice of periodontics (including an appreciation of an interdisciplinary approach to comprehensive patient care), to allow communication with both specialist and non-specialist audiences
- 2.3. Produce students who are competent in the design and interpretation of original clinical research at the forefront of current dental research

### 3. OBJECTIVES:

- 3.1. The student shall acquire the skill to perform scaling, diagnostic tests of periodontal diseases; to use the instruments for periodontal therapy and maintenance of the same. The student shall develop attitude to impart the preventive measures namely, prevention of periodontal diseases and prevention of the progression of the disease. The student shall also develop an attitude to perform the treatment will 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.

### 4. SCOPE:

- 4.1. Our specialty has expanded considerably with a lot of emphasis on microbiology, immunology, tissue engineering and periodontal medicine. The surgical aspects have seen tremendous advances both in the techniques and equipments and materials.

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Course outcomes assessed:

Were the students able to: Describe the anatomy and physiology of the periodontium and correlate it with health and diseased states. Describe the types, etiopathogenesis diagnosis and treatment plan for periodontal pathologies. Diagnose periodontal pathologies Perform dental scaling, diagnostic tests of periodontal diseases; use the instruments for periodontal therapy and maintenance of the same. Impart the preventive measures namely, the prevention of periodontal diseases and prevention of the progress of the disease. Perform the treatment with full aseptic precautions. Prevent iatrogenic diseases; to conserve the tooth to the maximum possible time by maintaining periodontal health. Refer the patients who require specialist's care.

A. COURSE CONTENT AND APPROACH TO THE SUBJECT:

TOPIC	DISTRIBUTION
1. Historical Background	Desirable to Know
2. Normal Periodontium	Must to Know
2.1. Gingiva	
2.1.1. Definition	Must to Know
2.1.2. Clinical Features	Must to Know
2.1.3. Microscopic Features	Must to Know
2.1.4. Correlation of clinical and microscopic features	Must to Know
2.2. Periodontal Ligament	Must to Know
2.2.1. Definition	Must to Know
2.2.2. Periodontal fibers	Must to Know
2.2.3. Cellular elements	Must to Know
2.2.4. Ground substance	Must to Know
2.2.5. Functions of periodontal ligament	Must to Know
2.3. Cementum	Must to Know
2.3.1. Definition	Must to Know
2.3.2. Cementoenamel junction and	Must to Know

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cementodentinal junction	
2.3.3. Clinical features of Cementum	Must to Know
2.3.4. Classification of Cementum	Must to Know
2.4. Alveolar Bone	Must to Know
2.4.1. Definition	Must to Know
2.4.2. Cells and intercellular matrix	Must to Know
2.4.3. Parts of alveolar bone	Must to Know
2.4.4. Clinical and radiographic features	Must to Know
2.4.5. Osseous topography	Must to Know
2.5. Aging & the Periodontium	Good to Know
2.5.1. Effects of aging on the periodontium	Good to Know
2.5.2. Effects of aging on the progression of periodontal disease	Good to Know
2.5.3. Aging and response to periodontal treatment	Good to Know
3. Classification of Periodontal Diseases	Must to Know
3.1. American academy of periodontology classification (1999)	Must to Know
3.2. Other classification of periodontal diseases	Desirable to Know
4. Epidemiology of Gingival & Periodontal Diseases	
4.1. Definition of epidemiology	Must to Know
4.2. Epidemiology of gingival diseases	Good to Know
4.3. Epidemiology of periodontal diseases	Good to Know
4.4. Periodontal indices	Good to know
5. Etiology of Periodontal Diseases	
5.1. Plaque	
5.1.1. Definition of plaque	Must to Know
5.1.2. Structure and composition of plaque	Must to Know
5.1.3. Formation of plaque	Must to Know

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5.1.4. Physiologic properties of plaque	Good to Know
5.1.5. Micro-organisms associated with specific periodontal diseases	Must to Know
5.1.6. Various Plaque hypothesis	Good to Know
5.2. Calculus	
5.2.1. Definition of calculus	Must to Know
5.2.2. Classification and composition of calculus	Must to Know
5.2.3. Mode of attachment of calculus to tooth	Must to Know
5.2.4. Theories of calculus formation	Good to Know
5.2.5. Etiologic significance	Must to Know
5.3. Other Predisposing Factors with Periodontal Disease	
5.3.1. Iatrogenic factors	Good to Know
5.3.2. Malocclusion	Good to Know
5.3.3. Periodontal complications associated with orthodontic therapy	Good to Know
5.3.4. Extraction of impacted third molars	Desirable to Know
5.3.5. Habits and self-inflicted injuries	Desirable to Know
5.3.6. Tobacco use	Good to Know
5.3.7. Radiation therapy	Desirable to Know
5.3.8. Genetic Factors associated with Periodontal Disease	Desirable to Know
6. Host Response-Basic Concepts	
6.1. Microbial aspects	Good to Know
6.2. Immunologic aspects	Good to Know
6.3. Microbiology and immunology in gingival health	Good to know
6.4. Microbiology and immunology in periodontal diseases	Good to know
7. Smoking in Periodontal Diseases	
7.1. Effect of smoking on periodontal diseases	Good to know

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7.2.Effect of smoking on response to periodontal treatment	Good to know
8. Influence of Systemic Disorders & Stress on the Periodontium	
8.1.Endocrine disorders and hormonal changes	
8.1.1. Diabetes mellitus	Must to know
8.1.2. Female sex hormones	Must to know
8.1.3. Corticosteroid hormones	Desirable to know
8.1.4. Hyperparathyroidism	Desirable to know
8.2.Hematologic disorders and immune deficiencies	
8.2.1. Leukemia	Good to Know
8.2.2. Anemia	Good to Know
8.2.3. Thrombocytopenia	Good to Know
8.2.4. Neutrophil disorders	Good to Know
8.2.5. Antibody deficiency disorders	Desirable to Know
8.3.Stress and psychosomatic disorders	Desirable to Know
8.4.Nutritional deficiencies	Desirable to Know
8.5.Other systemic conditions	
8.5.1. Hypophosphatasia	Desirable to Know
8.5.2. Congenital heart disease	Desirable to Know
8.5.3. Metal intoxications	Desirable to Know
9. Periodontal medicine	
9.1.Focal infection theory	Good to Know
9.2.Subgingival environment as a reservoir of bacteria	Good to Know
9.3.Periodontal diseases and coronary heart diseases/atherosclerosis	Good to Know
9.4.Periodontal diseases and stroke	Good to Know
9.5.Periodontal diseases and pregnancy outcomes	Must to Know
9.6.Periodontal diseases and diabetes mellitus	Must to Know

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9.7. Periodontal diseases and COPD	Desirable to Know
10. Oral Malodor	
10.1. Definition	Must to Know
10.2. Classification	Must to Know
10.3. Etiology	Must to Know
10.4. Diagnosis	Must to Know
10.5. Treatment	Must to Know
11. Defense mechanism of the gingiva	
11.1. Sulcular fluid	Good to know
11.2. Leukocytes in dento-gingival area	Good to know
11.3. Saliva	Good to know
12. Gingival Inflammation	
12.1. Stages of gingivitis	Must to Know
13. Clinical features of gingivitis	
13.1. Course and duration	Must to Know
13.2. Clinical findings	Must to Know
14. Gingival Enlargement	
14.1. Inflammatory enlargement	Must to Know
14.2. Drug-induced enlargement	Must to Know
14.3. Idiopathic enlargement	Must to Know
14.4. Enlargement associated with systemic diseases	Must to Know
14.5. Neoplastic enlargement	Desirable to Know
14.6. False enlargement	Desirable to Know
15. Acute Gingival Infections	
15.1. Necrotizing ulcerative gingivitis	Must to Know
15.2. Primary herpetic gingivostomatitis	Must to Know
15.3. Pericoronitis	Must to Know
16. Desquamative Gingivitis	Good to Know
17. AIDS & Periodontium	

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17.1. Pathogenesis	Good to Know
17.2. Classification and staging	Desirable to Know
17.3. Oral and periodontal manifestations of HIV infection	Must to Know
17.4. Dental treatment complications	Must to Know
17.5. Gingival and periodontal diseases in AIDS	Must to Know
17.6. Periodontal treatment protocol	Must to Know

### A. PRACTICALS:

#### DEMONSTRATIONS-

1. History taking and clinical examination of the patients
2. Recording of different indices, Use of disclosing agents
3. Methods of using various scaling instruments and identification of periodontal surgical instruments (FLIPPED CLASSROOM)
4. Identifying a clinical problem, formulating a question and searching the relevant databases for the evidence (First 2 steps of Evidence Based Decision Making)

#### Clinical Work Quota

1. 10cases- Diagnosis, treatment planning and discussion and total periodontal treatment Cases with supporting evidence for it (related evidences searched, appraised and discussed along with the history)
2. 15 complete cases / equivalent-Dental scaling, oral hygiene instructions

### B. RECOMMENDED BOOKS:

Refer to page no.

### C. SCHEME OF EXAMINATION:

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## CLINICAL POSTING END EXAMINATION -

The Clinical posting term ending examination shall be conducted on the Last day of the posting, as under:

Term	Particulars	Marks
Third BDS	• Viva voce on basics of Periodontology	15
First term & Second term	• Assignment	10
	Total marks-	25

Final Exams shall be conducted at the end of fourth BDS

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## ORAL AND MAXILLOFACIAL SURGERY

Oral and maxillofacial surgery is the specialty of dentistry that includes the diagnosis and surgical and adjunctive treatment of diseases, injuries and defects including both the functional and esthetic aspects of the hard and soft tissues of the oral and maxillofacial region

### Aim:

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

### Objectives:

a. Knowledge & Understanding :

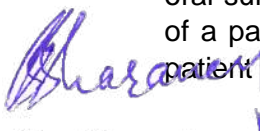
At the end of the course and the clinical training the graduate is expected to –

1. 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 the patient on the basis of best available evidence. (understand the principles of treatment of patients with oral surgical problems.
3. Knowledge of range of surgical treatments.
4. To promote evidence based decision making taking into consideration the requirement of a patient to have oral surgical specialist opinion or treatment.
5. Understand and apply the principles of evidence based dentistry in patient management.
6. Understanding of the protocols and complications associated with management of major oral surgical procedures and principles involved in patient management based on the best possible available evidence.
7. Should know ethical issues and communication ability.

### Course outcomes assessed:

Were the students 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. Diagnose, manage and treat (understand the principles of treatment of) patients with oral surgical problems. Explain range of surgical treatments. Ability to decide the requirement of a patient to have oral surgical specialist opinion or treatment. Explain the principles of patient management. Explain the management of major oral surgical procedures and

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principles involved in patient management. Explain ethical issues. Examine any patient with an oral surgical problem in an orderly manner. Prescribe various clinical and laboratory investigations and is capable of formulating differential diagnosis. Extract teeth under both local and general anaesthesia. Perform minor oral surgical procedures under L.A. like frenectomy, alveolar procedures & biopsy etc. Assess, prevent and manage various complications during and after surgery. Provide primary care and manage medical emergencies in the dental office. Describe management of major oral surgical problems and principles involved in in-patient management.

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT:

TOPIC	DISTRIBUTION
1. Trigeminal nerve,	
1.1 Course and Distribution	Must Know
2. Facial nerve,	
2.1 Course and Distribution	Must Know
3. Blood supply and lymphatic drainage of face and jaws,	
3.1 Arterial Supply	Must Know
3.2 Venous Drainage	Must Know
3.3 Lymphatic Drainage	Must Know
4. Applied anatomy of the mid face skeleton and mandible	
4.1 Applied Anatomy of Maxilla	Good Know
4.2 Applied Anatomy of Zygomatico Maxillary complex	Good Know
4.3 Applied Anatomy of Orbital Cavity	Desirable Know
4.4 Applied Anatomy of Nasal Cavity	Desirable Know
4.5 Applied Anatomy of Mandible	Must Know
5. Case history	
5.1 Past illness and present medical illness	Must Know
5.2 Types of pulse, respiration Effect of systemic factors over oral manifestations	Desirable Know
5.3 Differential Diagnosis	Good Know
6. Introduction, classification, mode of action, types, complication, use of vasoconstrictor and armamentarium of L.A.	
6.1 Introduction of Local Anesthesia	Must Know
6.2 Classification of Local Anesthesia	Must Know
6.3 Mode of Action of Local Anesthesia	Must Know
6.4 Types of Local Anesthesia	Must Know
6.5 Complications of Local Anesthesia	Must Know
6.6 Use of Vasoconstrictors with Local Anesthesia	Must Know

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6.7 Armamentariums used for Local Anesthesia	Must Know
7. Exodontia- Definition, indication and contraindication, types of extractions-intra and trans-alveolar, mechanical principles, complication, patient and operator positioning, armamentarium	
7.1 Principles of Exodontia (FLIPPED CLASSROOM)	Must Know
7.2 Method of Exodontia	
7.2.1 Forceps or Intra –alveolar or closed method	Must Know
7.2.2 Surgical or Trans-alveolar or open method	Must Know
7.3 Types of Movements & Forces	Must Know
7.4 Elevators used for Exodontia	Must Know
7.5 Indications & Contraindications of Exodontia	Must Know
7.6 Complication of Exodontia	Must Know
7.7 Extractions in medically compromised patients	Desirable to Know
8. Trismus	
8.1 Types of Trismus	Must Know
8.2 Causes of Trismus	Good to Know
8.3 Management of Trismus	Desirable to Know
9. Healing of Extraction Socket	
9.1 Stages of Healing	Desirable to Know
9.2 Factors Affecting Healing	Desirable to Know
10. Management of medically compromised patient,	
10.1 Hypertensive Patient	Must Know
10.2 Cardiac conditions like angina, CCF,	Must Know
10.3 Diabetic Patient	Must Know
10.4 Thyroid Disorders	Must Know
10.5 Bleeding Disorders	Must Know
10.6 Patient on Steroid Therapy	Must Know
10.7 Tuberculosis	Must Know
10.8 HIV/ AIDS	Must Know
11. Management of unconscious patient and pregnant/lactating women	
11.1 Management of Unconscious Patient	Must Know
11.2 Management of Pregnant Woman	Must Know
11.3 Management of Lactating Woman	Desirable to Know

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**B. CLINICAL WORK:**

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- a. Various local anaesthetic techniques including nerve blocks(as required for dental tooth extraction)
- b. Extraction

Quota of Work to Be Completed

3 <sup>rd</sup> year	Minimum of 05 patients extraction under local anesthesia
4 <sup>th</sup> year	Minimum of 10 patients extraction under local anesthesia with various nerve block techniques
Total	Minimum of 15 patients extraction

C. RECOMMENDED BOOKS:

Refer page no.

D. SCHEME OF EXMINATION:

The students have to appear for a Term End Examination at the end of their posting in the Department of oral and maxillofacial surgery twice a year.

The Clinical posting term ending examination shall be conducted as under

Term	Particulars	Marks
IVth BDS 1 <sup>st</sup> Term & 2 <sup>nd</sup> Term	Format for term ending five theory question for (50) marks and one patient during the posting will be evaluated for the end posting assessment (50)	100 marks in each term end

FINAL Exams shall be conducted at the end of fourth BDS

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# CONSERVATIVE DENTISTRY AND ENDODONTICS

## Definitions

### Operative Dentistry

“Art and science of the diagnosis, treatment and prognosis of defects of teeth that do not require full coverage restorations for correction. Such treatment should result in the restoration of proper tooth form, function and esthetic while remaining the physiologic integrity of the teeth in harmonious relationship with the adjacent hard and soft tissues, all of which should enhance the general health and welfare of the patient.”

### Endodontics

“It is the branch of dentistry that is concerned with the morphology, physiology and pathology of the human dental pulp and peri-radicular tissues. Its study and practice encompass the basic clinical sciences including biology of the normal pulp; the etiology, diagnosis, prevention and treatment of disease and injuries of the pulp; and associated peri-radicular conditions.

### Aims and objectives

A. Knowledge and understanding

B. Skills and

C. Attitudes

A. Knowledge and understanding:

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

- i. To take a detailed history, perform needed investigations, diagnose the disease conditions and manage the disease condition effectively.
- ii. To gain knowledge about aesthetic restorative material and to translate the same to patient's needs.
- iii. To gain the knowledge about endodontic treatment on the basis of scientific foundations.
- iv. To carry simple endodontic treatment.

### Skills:

He should attain skills necessary for practice of dentistry as said above.

### Attitudes:

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

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- ii) Expected to participate in CDE programme to update the knowledge and professional skill from time to time.
- iii) To help and participate in the implementation of the national oral health policy.
- iv) He should be able to motivate the patient for proper dental treatment at the same time proper maintenance of oral hygiene.

## Scope of the subject

### Operative dentistry

The scope of operative dentistry includes

- To know the condition of the affected tooth and other teeth.
- To examine not only the affected tooth but also the oral and systemic health of the patient.
- To diagnose the dental problem and the interaction of problem area with other tissue.
- Provide optimal treatment plan to restore the tooth to return to health and function and increase the overall well being of the patient.
- Thorough knowledge of dental material which can be used to restore the affected areas.
- To understand the biological basis and function of the various tooth tissue.
- To maintain the pulp vitality and occurrence of pulpal pathology.
- To have knowledge of dental anatomy and histology
- To understand the effect of the operative procedures on the treatment of other disciplines.
- An understanding and appreciation for infection control to safe guard both patient and the dentist against disease transmission.

### Endodontics

The scope of endodontics includes

- The differential diagnosis and the treatment of oral pain of pulpal or peri-radicular origin;
- Vital pulp therapy, such as pulp capping and pulpotomy;
- Non-surgical treatment of root canal system with or without peri-radicular pathosis of pulpal origin and the obturation of these root canal system;
- Selective surgical removal of pathological tissues resulting from pulpal pathosis;
- Repair procedures related to such surgical removal of pathological tissues;
- Intentional implantation and replantation of avulsed teeth;
- Surgical removal of tooth structure such as root-end resection and root end filing;
- Hemisection, bicuspidization and root resection;
- Endodontic implants;
- Bleaching of discoloured dentin and enamel;
- Retreatment of teeth previously treated endodontically.

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- And treatment procedures related to coronal restorations by means of post and/or cores involving the root canal space.

### Course outcomes assessed:

Were the students able to: Diagnose diseases of the teeth -Perform simple restorative work for decayed teeth using medium and high speed hand pieces to carry out restorative work. Describe aesthetic restorative material and to translate the same to patients needs. Explain endodontic treatment on the basis of scientific foundation. Identify endodontic instruments and materials needed for carrying out simple endodontic treatment. Perform simple endodontic treatment and emergency endodontic treatment. Explain treatment of luxated teeth. Exhibit a high standard of professional ethics and conduct and apply these in all aspects of professional life. Participate in CDE programme to update the knowledge and professional skill from time to time. Participate in the implementation of the national oral health policy. Motivate the patient for proper dental treatment, maintenance of oral hygiene and maintenance of the restorative work to prevent future damage.

## A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. Dentinal hypersensitivity	
1.1 Definition, causes, theories of pain	Must to Know
1.2 Clinical features, various anti-hypersensitive agents	Must to Know
1.3 Bio-active materials	Desirable to Know
2. Management of Deep Carious Lesions	
2.1 Direct and indirect pulp capping	Must to Know
2.2 Interim restoration	Must to Know
2.3 Rationale	Must to Know
2.4 interim restorative materials	Must to Know
2.5 prefabricated crowns	Good to Know
2.6 Indirect acrylic restoration	Good to Know
3. Pain control	
3.1 Local anesthesia, analgesia	Must to Know
3.2 Inhalation, sedation and hypnosis	Good to Know
4. Amalgam failure	
4.1 Causes of failure	Must to Know
4.2 Pain following restoration	Must to Know
4.3 Secondary caries, marginal leakage	Must to Know
4.4 Bulk fracture	Must to Know
4.5 Tooth fracture, dimensional change	Must to Know
4.6 Tarnish and corrosion	Must to Know
4.7 Steps/methods to prevent amalgam failure	Must to Know
5. Gingival Tissue Management	

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5.1 Moisture and soft tissues management,	Must to Know
5.2 Biological width,	Must to Know
5.3 Gingival retraction cord,	Must to Know
5.4 Mechanical, chemical, surgical, electrosurgical means	Must to Know
6. Principles and scope and endodontics	
6.1 Application of rubber dam	Must to Know
6.2 Sterilization of instruments	Must to Know
6.3 Debridement, drainage	Must to Know
6.4 Chemoprophylaxis, immobilization	Must to Know
6.5 Avoidance of trauma, trephination	Must to Know
6.6 Chemical irritation	Must to Know
7. Rational of endodontic treatment	
7.1 Reaction of pulp and peri-radicular tissue	Must to Know
7.2 Endodontic implication	Must to Know
7.3 Fish's theory and four zones of infection	Must to Know
8. Anatomy of pulp cavity	
8.1 Structure and function of dentin pulp complex	Must to Know
8.2 Development, morphologic zones of pulp, cells of pulp	Must to Know
8.3 Metabolism, connective tissue fibers, innervations	Must to Know
8.4 Ground substance, vascularity, repair	Must to Know
8.5 Check out for no. of canals, orifice, variation in no. of canals, c- shape canals etc.	Must to Know
8.6 Pulp calcification and age changes	Must to Know
9. Pulp protection	
9.1 Causes of pulpal injuries	Must to Know
9.2 Uses of varnish	Must to Know
9.3 Liners and bases,	Must to Know
9.4 Direct and indirect pulp capping,	Must to Know
9.5 Pulpotomy	Must to Know
9.6 Pulp capping agents	Must to Know
9.7 Direct bonding of pulp exposure,	Good to Know
9.8 MTA	Good to Know
10. Diagnosis and treatment planning	
10.1 Definition	Must Know
10.2 History taking	Must Know
10.3 Clinical examination	Must Know
10.4 Pulp vitality test	Must Know
10.5 Radiograph	Must Know
10.6 Diagnosis of acute and chronic lesions	Must Know
10.7 Emergency management, diagnosis of crack tooth and root fractures	Must Know
10.8 General considerations	Must Know
10.9 Treatment planning sequence	Must Know
10.10 Interdisciplinary consideration	Good to Know
10.11 Indication for endodontic treatment.	Must Know

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11. Pulpal diseases	
11.1 Introduction,	Must Know
11.2 Classification,	Must Know
11.3 Diagnosis and their management	Must Know
12. Periapical diseases	
12.1 Introduction,	Must Know
12.2 Classification,	Must Know
12.3 Diagnosis and their management	Must Know

**B. PRACTICAL –**  
Clinical exercises

Term		Type of exercise	Number
First term	Extracted teeth	Simple Class I preparation for silver amalgam	5
		Class I preparation for silver amalgam with modifications(buccal and palatal extensions)	5
		Class V preparation for silver amalgam	5
	Patient work	Simple Class I preparation and restoration	5
		Class V GIC restoration	3
Second term	Extracted teeth	Simple Class I preparation for Silver amalgam	05
		Class I preparation with modifications(Palatal / lingual/buccal extensions) base and band application followed by restoration with silver amalgam	05
		Class V preparation for silver amalgam	2
		Class V preparation for composite	2
	Patient work	Simple Class I preparation and restoration	5
		Class V GIC restoration	3

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\*Demonstration of class I and Class V composite restoration to be completed in first term of posting.

\*Management of deep carious lesion (FLIPPED CLASSROOM)

\* Before second term viva for composite is mandatory.

Students should use the PICO format to search the relevant articles categorized according to the level of evidence to help them in formulating strategies for clinical application of restorative materials.

### C. RECOMMENDED BOOKS:

Refer page no.

### D. SCHEME OF EXAMINATION:

The students have to appear for a Term End Examination at the end of their posting twice a year.

The Clinical posting term ending examination shall be conducted as under

Term	Particulars	Marks
IIIrd BDS 1 <sup>st</sup> Term & 2 <sup>nd</sup> Term	Viva voce	25

FINAL Exams shall be conducted at the end of fourth BDS

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# ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

## 1. DEFINITION:

American Association of Orthodontics- The area of Dentistry concerned with the supervision , guidance, and correction of the growing and matured dentofacial structures, including those conditions that require movement of teeth or correction of malrelationships and malformations of related structures by the adjustment of relationship between and among teeth and facial bones by the application of forces and/or the stimulation and redirection of the functional forces within the craniofacial complex.

British Society of Orthodontics- Orthodontics includes the study of growth and development of jaws and face particularly, and the body generally as influencing the position of the teeth; the study of action and reaction of internal and external influences on the development and the prevention and correction of arrested and perverted development.

## AIM:

The dental graduate student should acquire adequate knowledge, necessary skills and reasonable attitudes which are required for carrying out the prescribed activities in the subject of Orthodontics and Dentofacial Orthopaedics.

## OBJECTIVE:

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

## SCOPE OF THE SUBJECT:

The Dental graduate will be able to diagnose the type of malocclusion and treat simple malocclusions with removable Orthodontic appliances based on highest level of evidence.

## COURSE OUTCOMES ASSESSED:

Were the students able to: -Diagnose, analyse and treat common orthodontic problems by preventive, interceptive and corrective orthodontic procedures. Analyse and Interpret Radiographs for orthodontic diagnosis. Explain principles and fabrication of intra-oral and extra-oral appliances. Fabricate and deliver simple orthodontic appliances

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## B. COURSE CONTENTS AND APPROACH TO THE SUBJECT:

TOPIC	DISTRIBUTION
<b>1. Introduction to Orthodontics</b>	
• 1.1 Definition of Orthodontics	Must to Know
• 1.2 Division of orthodontic	Must to Know
• 1.3 Goals of orthodontic treatment	Must to Know
• 1.4 Need for orthodontic treatment	Must to Know
• 1.5 Unfavorable sequelae of malocclusion	Must to Know
• 1.6 Scope of orthodontic treatment	Must to Know
• 1.7 History of orthodontics	Desirable to Know
• 1.8 Orthodontic indices	Good to Know
<b>2. Growth and Development</b>	
• 2.1 Introduction to Growth and Development	Must to Know
• 2.2 Growth spurts and differential growth	Must to Know
• 2.3 Methods of measuring growth	Must to Know
• 2.4 Growth theories – Genetic, Sicher's, Scott's, Moss's, Petrovics, Multifactorial	Must to Know
• 2.5 Genetic and epigenetic factors in growth	Must to Know
• 2.5 Scammons Growth curve	Must to Know
• 2.6 Cephalocaudal gradient of growth	Must to Know
• 2.7 Osteogenesis	Desirable to Know
• 2.8 Methods of studying growth	Good to Know
• 2.9 Factors affecting growth and development	Good to Know
<b>3. Morphologic Development of craniofacial structures</b>	
• 3.1 Methods of bone growth	Must to Know
• 3.2 Prenatal growth of craniofacial structures	Must to Know
• 3.3 Post natal growth of cranial base, maxilla, mandible dental arches and occlusion.	Must to Know
<b>4. Development of occlusion</b>	
• 3.1 Introduction	Must to Know
• 3.2 Development of tooth	Must to Know
• 3.3 Sequence of eruption	Must to Know
• 3.4 Pre deciduous dentition	Must to Know
• 3.5 Deciduous dentition	Must to Know
• 3.6 Permanent dentition	Must to Know
• 3.7 Establishment of occlusion	Must to Know
• 3.8 Self correcting malocclusions at different stages of dentition	Must to Know

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• 3.9 Dental age	Good to Know
• Wolff's law of transformation of bone	Desirable to Know
• Trajectories of force	Desirable to Know
<b>5. Normal Occlusion</b>	
• Definition	Must to Know
• Terminology used	Must to Know
• Compensatory curves	Must to Know
• Andrew's six keys to occlusion	Must to Know
• Ideal vs normal occlusion	Must to Know
• Dynamics of occlusion	Desirable to Know
• Canine guidance	Desirable to Know
• Anterior guidance	Desirable to Know
• Posterior guidance	Desirable to Know
• Mutually protected occlusion	Desirable to Know
• Gnathology	Good to Know
• Centric relation	Good to Know
• Centric occlusion	Good to Know
• Role of TMJ in occlusion age changes in occlusion	Good to Know
• Natural vs artificial occlusion	Good to Know

### C. CLINICAL SYLLABUS:

- Making upper Alignate impression
- Making lower Alignate impression
- Study model preparation
- Model Analysis
  - Pont's analysis
  - Ashley Howe's Analysis
  - Carey's Analysis
  - Bolton's Analysis
  - Moyer's Mixed Dentition Analysis

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### D. RECOMMENDED BOOKS:

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TITLE	AUTHOR
William R. Profit – Contemporary	Orthodontics
Orthodontics For Dental Students	White And Gardiner
Handbook Of Orthodontics	Moyers R.E
Orthodontics - Principles And Practice	Graber T.M.
Design, Construction And Use Of Removable Appliances	Adams C.P
Clinical Orthodontics: Vol 1 & 2	Salzmann

### Reference Books

TITLE	AUTHOR
Introduction to Orthodontic	Laura Mitchell
Rakosi Orthodontic Diagnostic Atlas	Rakosi
Removable Orthodontic Appliances	Issacson

### E. EXAM SCHEME:

The students have to appear for a Term End Examination at the end of their 15 day posting in the Department of Orthodontics twice a year.

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EXERCISE	MARKS
Basic Wire Bending – Straight wire or geometric shapes	10
C- clasp	10
U- clasp	10
Viva	20
Total	50 Marks

2<sup>nd</sup>End posting exam:

EXERCISE	MARKS
Spring	10
Canine retractor	10
Clasp	10
Viva	20
Total	50marks

- University Exams shall be conducted at the end of IV BDS

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## PAEDODONTICS & PREVENTIVE DENTISTRY

- Definition:- “An age-defined specialty providing primary and comprehensive, preventive and therapeutic oral health care for infants and children through adolescence, including those with special health care needs (American Academy of Pediatric dentistry)”
- Aim:-
  - During training in Paediatric dentistry, students should acquire knowledge regarding preventive measures, diagnosis of oral pathologies in oral cavity of children, necessary skills and reasonable attitude for preventive and clinical management with emphasis on treatment needs for children with disabilities with best and relevant evidence.
- Objectives:-

The Objectives are dealt under three headings, Knowledge and Understanding, Skills, and Attitudes

- Knowledge and Understanding: the graduate student should acquire the following during the period of training.
  - Adequate knowledge of the scientific foundations on which paediatric dentistry is based and good understanding of various relevant scientific methods, principles of biological functions and ability to evaluate and analyse scientifically various established facts and data.
  - Adequate knowledge of the development, structure and function of teeth ,mouth and jaws and associated tissues both in health and disease in children and their relationship and effect on general state of child’s health with psychological and social well-being of the patient.
  - To understand the behavior of the child in health and sickness as well as influence of the natural and social environment on the state of oral health.
- Skills: Graduate should be able to demonstrate the following skills necessary for practice in paediatric dentistry.
  - Promote oral health and help to prevent oral diseases in children.
  - Control pain and anxiety amongst the child patient during dental treatment with best available evidence.
  - Diagnose and manage various common dental problems encountered in children keeping in mind the expectations and the right of the child to receive the best possible treatment available based on best evidence.
  - Prevent and manage complications if encountered while carrying out various surgical and other procedures in children with best evidence.

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- Attitude: Should develop during the training period
  - Willingness to apply the current knowledge of dentistry in the best interest of the patient and community.
  - Maintain a high standard of professional ethics and conduct and apply this in all aspects of professional life.
  - Seek to improve awareness and provide possible solutions for oral health problems and needs for special children.
  - Willingness to participate in the Evidence based CDE programs to update knowledge and professional skills from time to time.
  - Help and participate in the implementation of the National Oral Health Policy.

- Scope of the subject:-

- Pediatric dentistry encompasses all aspects of oral health care of children and adolescents. It is based on basic knowledge of various specialties of dentistry like cariology, dental radiology, oral medicine, preventive and restorative dentistry, oral surgery and rehabilitation, child psychology, endodontics, periodontics, preventive and interceptive orthodontics, special care dentistry, immunology, neonatology and allied health sciences.
- Pediatric dentistry also includes treatment and early diagnosis of oral diseases and conditions found in child and adolescent besides preventive approach.
- Present trends in the scope of paediatric dentistry
  - Preventive and public health dentistry.
  - Child psychology and management
  - Advanced restorative dentistry
  - Preventive and interceptive orthodontics
  - Special care dentistry
  - Child abuse and neglect (Forensic Pedodontics)
  - Genetics in pediatric dentistry

**Course outcomes assessed: Were the students able to:**

CO1-Perform a proper clinical history, methodologically examine the child patient, and perform essential diagnostic procedures, interpret them, and arrive at a reasonable diagnosis to treat appropriately.

CO2-Treat dental diseases which occur in child patient.

CO3-Repair and restore the lost / tooth structure to maintain harmony between both hard and soft tissues of the oral cavity.

CO4-Manage the disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions.

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CO5-Manage efficiently life threatening conditions with emphasis on basic life support measure.

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT

TOPIC	DISTRIBUTION
1. Introduction, definition, scope & importance of Pedodontics	
1.1 Definition, Aim, scope, Objectives and Importance of Pedodontics	Must to Know
1.2 Adequate Knowledge of scientific foundations on which paediatric dentistry is based & good understanding of various relevant scientific methods & Principles	Must to Know
2. Setting up of Paediatric dental clinic	
2.1 Modifications for handicapped child	Good to Know
2.2 To know the setting & functioning of a paediatric dental clinic	Good to Know
3. Case History Recording	
3.1 Outline of principles of examination, diagnosis, and treatment planning	Must to Know
3.2 Able to record a case history from pedodontics point of view	Must to Know
4. Growth & Development of dentition	
4.1 Development of teeth and associated structures	Must to Know
4.2 Eruption and shedding of teeth	Must to Know
4.3 Teething disorders and their management	Must to Know
4.4 Chronology of eruption of teeth	Desirable to Know
4.5 Adequate knowledge of the development of dentition from birth through adolescence	Must to Know
5. Development of Occlusion from birth through adolescence	
5.1 Pre-deciduous Stage	Must to Know
5.2 Mixed dentition	Must to Know
5.3 Deciduous dentition stage	Must to Know
5.4 Permanent dentition stage	Must to Know
5.5 Understanding the sequence & Eruption of each tooth & its role in the development of occlusion	Good to Know
6. Infant oral health care	
6.1 Pre birth parent counseling	Desirable to Know
6.2 Guiding parents in different techniques of oral hygiene maintenance	Good to Know
6.3 Learn the Harmful effects of non-maintenance of proper oral hygiene	Good to Know
7. Pit & Fissure sealants & preventive resin restoration	
7.1 History, classification, indications, contraindications, method of application	Must to Know
7.2 Learn indication, types & application of pit & fissure sealants – Flipped classroom	Good to Know
8. Applied Morphology & Histology of deciduous & permanent teeth	

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8.1 Morphology & histological differences in crown, root, enamel, dentin, cementum & pulp between primary & permanent teeth	Must to Know
8.2 Learn morphological features of each deciduous tooth in detail – Flipped classroom	Must to Know
9. Importance of first permanent molar	
9.1 Learn eruption pathway & importance of first permanent molar in establishing occlusion	Good to Know
10. Dental caries	
10.1 Historical background	Good to Know
10.2 Definition, etiology & pathogenesis	Must to Know
10.3 Caries pattern in Primary, young permanent and permanent teeth in children	Good to Know
11. Rampant caries and early childhood caries	
11.1 Definition, aetiology, pathogenesis, Clinical features, Complications & Management.	Good to Know
11.2 Role of diet and nutrition in dental caries	Desirable to Know
11.3 Dietary modifications & diet counseling	Desirable to Know
11.4 Caries activity, tests, caries prediction, caries susceptibility & their clinical application	Desirable to Know
11.5 Clinically able to classify a carious lesion	Must to Know
12. Oral surgical procedures in children	
12.1 Indications and contraindications of extractions of primary and permanent teeth in children	Good to Know
12.2 Knowledge of local and general anesthesia	Must to Know
12.3 Minor surgical procedures in children	Desirable to Know
12.4 Learn about the basic surgical procedures & Local Anesthesia techniques in pediatric dentistry	Good to Know

## B. CLINICAL WORK:

1. Diagrams – Cavity preparation
2. Case history recording and chair side discussions
3. Cases
4. Seminar

Quota for third year

1. Restorations:-

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1.1. Class 1 and Class 2 - 10

2. Preventive:-

2.1. Oral Prophylaxis - 10

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- 2.2. Fluoride application - 08
- 3. Extractions - 10
- 4. Clinical History taking - 03
- 5. Education and Motivation

C. RECOMMENDED BOOKS:  
Refer to page no.

D. SCHEME OF EXAMINATION:

**CLINICAL / PRACTICAL POSTING END EXAMINATION -**

The Clinical posting term ending examination shall be conducted on the Last day of the posting, as under:

Term	Particulars	Marks
1. 3 <sup>rd</sup> year 1 <sup>st</sup> term end	Viva voce on the discussed topics in practical sessions	25
2. 3 <sup>rd</sup> year 2 <sup>nd</sup> term	Case history taking	25

FINAL Exams shall be conducted at the end of fourth BDS

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## PUBLIC HEALTH DENTISTRY

### DEFINITION OF THE SUBJECT:

Public Health Dentistry is a specialty of dentistry concerned with the oral health of a population rather than individuals. It has been defined as the science and art of preventing oral diseases, promoting oral health and improving the quality of life through the organised efforts of the community.

### 3. AIM AND OBJECTIVES AND SCOPE OF THE SUBJECT:

#### I. AIM:

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

#### II. OBJECTIVES:

##### A. Knowledge:

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

##### B. Skill and Attitude Development:

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

##### C. Effective Communication :

At the conclusions of the course, the students should be able to communicate the needs of the community efficiently, inform the society of all the recent methodologies in preventing oral disease with substantial scientific evidence

### III. SCOPE OF THE SUBJECT:

The subject has wide scope as described by the following key areas of dental public health practice.

#### 1. Oral health surveillance

2. Assessing the evidence on oral health and dental interventions, programmes and services

3. Policy and strategy development and implementation

4. Strategic leadership and collaborative working for health

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5. Oral health improvement
6. Health and public protection
7. Developing and monitoring quality dental services
8. Dental Public Health intelligence
9. Academic Dental Public Health
10. Appropriate and evidence- based decision-making and judgement
11. Appropriate attitudes, ethical understanding and legal responsibilities
12. Role within the Health Service
13. Personnel Development

**Course outcomes assessed: Were the students able to:**

CO1-Describe the basis of public health, preventive dentistry, public health problems in India, Nutrition, Environment and their role in health, basics of dental statistics, epidemiological methods, National oral health policy with emphasis on oral health policy.

CO2-Identify health problems affecting the society, conducting health surveys, conducting health education classes and decide health strategies.

CO3-Exhibit a positive attitude towards the problems of the society and must take responsibilities in providing health.

CO4-Communicate the needs of the community efficiently, inform the society of all the recent methodologies in preventing oral disease

**A. COURSE CONTENT AND APPROACH TO THE SUBJECT**

APPROACH TO THE SUBJECT	
TOPIC	APPROACH
1. INTRODUCTION TO PUBLIC HEALTH DENTISTRY	
1.1 Definition of dentistry	Must know
1.2 Pioneers of dentistry	Desirable to know
1.3 History of dentistry	Must know
1.3.1 Milestones in the field of dentistry	Good to know
1.3.2 Historical dates	Good to know
1.3.3 Dentistry in ancient times	Good to know
1.4. Aim, scope and objectives of dentistry	Must know
1.4.1 Dentistry in future	Good to know
2. PUBLIC HEALTH DENTISTRY	
2.1 Health and disease	Must know
2.1.1 Concepts, philosophy, definition and characteristics	Must know

Arrested etc

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2.2 Public health	Must know
2.2.1 Definition, concepts and history of public health	Must know
2.3 General epidemiology	Must know
2.3.1 Definition, objectives, methods, uses and screening for disease	Must know
2.3.2 Investigation of an epidemic	Desirable to know
2.3.3 Quarantine procedures	Good to know
2.4. Public health administration	Must know
2.4.1 Priority, establishment, manpower, health management	Must know
2.4.2 infectious disease epidemiology	Desirable to know
2.4.3 Control of epidemics	Good to know
2.5 Health care delivery system	Must know
2.5.1 Centre and state, oral health policy, primary health care, national health programmes, health organizations and agencies	Must know
2.5.2 Health care delivery systems of other countries	Desirable to know
2.6 Behavioral science	Must know
2.6.1 Definition of sociology, anthropology and psychology and their role in health and oral health of community	Must know
2.7 Health economics	Desirable to know
<b>3. DENTAL PUBLIC HEALTH</b>	
3.1 Introduction to dental public health	Must know
3.1.1 Definition and difference between community and clinical health	Must know
3.2 Epidemiology of dental diseases dental caries, periodontal diseases, malocclusion, dental fluorosis and oral cancer.	Must know
3.2.1 Epidemiological studies related to oral diseases, etiology and risk factors for oral diseases	Must know
3.3 Survey procedures	Must know
3.3.1 Planning, implementation and evaluation, WHO oral health survey methods 1997, indices for dental diseases.	Must know
3.4 Delivery of dental care	Must know
3.4.1 Dental auxiliaries( operating and non- operating), incremental and	Must know
3.5 Comprehensive health care, School dental health	Must know
3.6 Payments of dental care	Must know
3.6.1 Methods of payments, dental insurance, Government plans	Must know
3.7 Preventive dentistry	Must know
3.7.1 Definition, levels, role of individual, community and profession	Must know

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3.7.2 Fluorides in dentistry, plaque control programmes	Must know
4. Dentist Act 1948 with amendment	
4.1.1 Objectives, functions, composition, registration and membership of IDA (FLIPPED CLASSROOM)	Must know
4.2 Dental Council of India and State Dental Councils , Composition and responsibilities (FLIPPED CLASSROOM)	Must know
4.2.1 Objectives, functions and composition of centre and state DCI (FLIPPED CLASSROOM)	Must know
4.3 Indian Dental Association , Head Office, State, Local and branches (FLIPPED CLASSROOM)	Must know

## B. PRACTICAL

Preparation of oral health education material  
 Assuming Leadership role in organizing and solving Community Health Problems  
 Discussion and Demonstration of Dental Indices

## C. RECOMMENDED BOOK:

Refer to Page no.

## D. SCHEME OF EXAMINATION:

First Term End Posting:

S.No	Exercise	Marks
1	Viva Voce	50

Second Term End posting:

S.No	Exercise	Marks
1	Viva Voce	50

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# ORAL MEDICINE AND RADIOLOGY

## ORAL MEDICINE:

Oral Medicine is the specialty of dentistry that is concerned with the oral health care of medically compromised patients and with the diagnosis and nonsurgical management of medically related disorders or conditions affecting the oral and maxillofacial region. The practice of oral medicine will provide optimal health to all people through the diagnosis and management of oral diseases.

## ORAL DIAGNOSIS:

Oral Diagnosis is art of using scientific knowledge of identifying oral disease process and distinguishing one disease from other.

## ORAL RADIOLOGY:

Radiology is a science dealing with x-rays and their uses in diagnosis and treatment of diseases in relation to oro-facial diseases.

### 1. AIM:

- To train the student to diagnose the common disorders of Oro-facial region by clinical examination and with the help of such investigations as may be required and medical management of Oro-facial disorders with drugs and physical agents.
- To train the student about the importance, role, use and techniques of Radiographs and other imaging methods in Diagnosis.
- To train the student about the Principles of the Clinical and Radiographic aspects of Forensic Odontology.
- To train the student to ensure higher competence in both general & special areas of Oral Medicine & Radiology.
- To prepare the student for teaching, research and clinical abilities including prevention of various oral & maxillofacial lesions.
- To train the student to apply evidence based knowledge for the diagnosis and treatment of oral diseases.

### 2. OBJECTIVES:

At the end of curriculum, the student should be able to acquire -

- Knowledge: Theoretical, Clinical and practical knowledge of all orofacial lesions, diagnostic procedures pertaining to them and latest information of imaging modules and recent advances in treatment modalities.

- Skills: Three important skills need to be imparted -

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- Diagnostic skill in recognition of oral lesions and their management.
- Research skills in handling scientific problems pertaining to oral treatment.
- Clinical and Didactic skills in encouraging younger doctors to attain learning objectives.
- Evidence Searching Skills using various databases for treatment protocol of various oral diseases.
- Evidence based diagnostic skills in using the latest gold-standard investigative procedures.
- Critical Appraisal of available evidence for diagnosis and Implementation of best clinical evidence in the management of individual patients.
- Evaluation of the evidence implemented to the patients.

● **ATTITUDE:**

- The positive mental attitude and the persistence of continued learning need to be inculcated.
- Inculcating positive approach towards newer learning methodologies and treatment modalities based on clinical evidence

**COURSE OUTCOMES ASSESSED:**

Were the students able to Describe the disorders of Orofacial region. Diagnose the common disorders of Orofacial region by clinical examination and with the help of such investigations as may be required and medical management of oro-facial disorders with drugs and physical agents. Describe the role, use and techniques of radiographs/digital radiograph and other imaging methods in diagnosis. Take radiographs for intra-oral conditions and interpret them to arrive at radiographic diagnosis. Explain the principles of the clinical and radiographic aspects of Forensic Odontology.

**A. COURSE CONTENT AND APPROACH TO SUBJECT:**

**1. APPROACH TO THE SUBJECT OF ORAL MEDICINE**

TOPIC	DISTRIBUTION
1. Introduction to Oral Medicine	
1.1. Definition and Scope	Must to Know
1.2. Clinical Applications	Must to Know
2. Principles of Oral Diagnosis	
2.1. Definition.	Must to Know
2.2. Importance and Various types of diagnosis	Must to Know
3. Behavioral Sciences	
3.1. Introduction	Good to Know
3.2. Social Sciences	Good to Know
3.3. Health behavior and lifestyle	Good to Know

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3.4. Theories of behavior change	Good to Know
3.5. Life style and oral health	Good to Know
3.6. Social stratification and oral health	Good to Know
3.7. Risk behavior	Good to Know
3.8. Utilization of dental services	Good to Know
3.9. Conclusion	Good to Know
<b>4. Jurisprudence and Ethics in Medicine and Dentistry</b>	
4.1. Introduction	Good to Know
4.2. History	Good to Know
4.3. Ethical Principles	Good to Know
4.4. Ethical rules for dentist	Good to Know
4.5. Declaration of Geneva	Good to Know
4.6. World medical association international code of medical ethics	Good to Know
4.7. Ethics in dental research	Good to Know
4.8. The Nuremberg code	Good to Know
4.9. Declaration of Helsinki	Good to Know
4.10. Ethical guidelines for biomedical research on human participants – By the Indian Council of Medical Research (ICMR)	Good to Know
4.11. Conclusion	Good to Know
<b>5. Clinical Case history and components</b>	
5.1. Importance of Clinical Case History	Must to Know
5.2. Vital Statistics	Must to Know
5.3. Chief Complaint	Must to Know
5.4. History of Present Illness	Must to Know
5.5. Past & Present Medical History	Must to Know
5.6. Past and Present Dental History	Must to Know
5.7. Personal History	Must to Know
5.8. General Examination	Must to Know
5.8.1. Extraoral Examination	
5.8.2. Intraoral Examination	
5.9. Examination of Area of Chief Complaint	Must to Know
5.10. Provisional / Clinical Diagnosis	Must to Know
5.11. Differential Diagnosis	Must to Know
5.12. Laboratory Investigations	Must to Know
5.13. Final Diagnosis	Must to Know
5.14. Treatment Plan	Must to Know
5.14.1. Emergency Treatment	
5.14.2. Planned Treatment	
<b>6. Referral for Opinions</b>	
6.1. What is Referral	Good to Know
6.2. Need for referring patients	Good to Know

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6.3. Methods for referring patients 6.3.1. Conventional referrals 6.3.2. Information and Communication Technology referrals	Good to Know
6.4. Dental Reference	Good to Know
6.5. Medical Reference	Good to Know
7. Regressive changes and teeth staining	
7.1. Attrition	Desirable to Know
7.2. Abrasion	Desirable to Know
7.3. Erosion	Desirable to Know
7.4. Abfraction	Desirable to Know
7.5. Intrinsic stains	Desirable to Know
7.6. Extrinsic stains	Desirable to Know
8. Developmental Anomalies of Jaw and Teeth	
8.1. Developmental Anomalies involving size of jaw	Must to know
8.2. Developmental Anomalies involving shape of jaw	Must to know
8.3. Developmental Anomalies involving size of tooth	Must to know
8.4. Developmental Anomalies involving shape of tooth	Must to know
8.5. Developmental Anomalies involving number of tooth	Must to know
8.6. Developmental Anomalies involving structure of tooth	Must to know
8.7. Developmental Anomalies involving eruption of tooth	Must to know
8.8. Names of associated syndromes	Good to know
9. Spread of Infection:	
9.1. Inflammation and infection	Must to know
9.2. Focus of infection	Must to know
9.3. Focal infection	Must to know
9.4. Facial space infections	Must to know
9.5. Oral sepsis and its effect on general system	Must to know
10. Pharmaco-therapeutics:	
10.1 General therapeutic measures- drugs commonly used in Oral Medicine	Good to know
10.1.1. Antibiotics	Good to know
10.1.2. Chemotherapeutic agents	Good to know
10.1.3. Anti-inflammatory and analgesic drugs	Good to know
10.1.4. Corticosteroids	Good to know
10.1.5. Antiviral drugs	Good to know
10.1.6. Antifungal drugs	Good to know
10.1.7. Anti-tubercular drugs	Good to know
10.1.8. Antihistamines	Good to know
10.1.9. Immunomodulators	Good to know
10.1.10. Immunosuppressive drugs	Good to know
10.1.11. Sialogogues and antisialogogues	Good to know
11. Geriatric Dentistry	
11.1. Concept of Aging	Good to know

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11.2. Geriatric Patient Assessment	Good to know
11.3. Age related Systemic Changes	Good to know
11.4. Age related Oral Changes	Good to know
11.5. Institutionalized Older Adults	Good to know
11.6. Summary	Good to know
12. Pediatric Dentistry	
12.1. Evaluation of Pediatric Patient	Good to know
12.2. Medical and Dental Issues Associated with Craniofacial Abnormalities	Good to know
12.3. Developmental Variations of Normal Structures	Good to know
12.4. Diseases of Tongue	Good to know
12.5. Diseases of Gingiva and Periodontium	Good to know
12.6. Salivary Gland Pathology	Good to know
12.7. Diseases with altered Immune System	Good to know
12.8. Infections	Good to know
13. Pigmented Lesions of the Oral Mucosa -	
13.1 Hemangioma	Must to Know
13.2 Varix	Must to Know
13.3 Angiosarcoma	Desirable to Know
13.4 Kaposi's Sarcoma	Desirable to Know
13.5 Hereditary Hemorrhagic Telangiectasia	Desirable to Know
13.6 Café au Lait Pigmentation	Desirable to Know
13.7 Smoker's Melanosis	Must to Know
13.8 Ecchymosis	Must to Know
13.9 Petechia	Must to Know
13.10 Graphite Tattoo	Desirable to Know

## 2. APPROACH TO THE SUBJECT OF ORAL RADIOLOGY

TOPIC	DISTRIBUTION
1. Introduction to Oral Radiology	
1.1. History	Good to know
1.2. Origin	Good to know
1.3. Definitions	Good to know
1.4. Scope	Good to know
1.5. Limitations	Good to know
2. Radiation physics	
2.1 Atomic structure & ionization of radiation	Must to Know
2.2 Different types of radiation	Must to Know
2.3 Details of parts of x- ray machine	Must to Know
2.4 Electromagnetic spectrum	Must to Know
2.5 Bremstrahlung radiation	Must to Know
2.6 Characteristic radiation	Must to Know

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2.7 Exposure time, current, voltage	Must to Know
2.8 Filtration	Must to Know
2.9 Collimation	Must to Know
2.10 Inverse-square law	Must to Know
2.11 Different dosimeters	Must to Know
2.12 Wave theory & quantum theory	Desirable to Know
2.13 Details about power supply	Desirable to Know
2.14 Photoelectric, Compton and coherent scattering	Desirable to Know
2.15 Half wave rectification	Good to Know
2.16 Different units of radiation	Good to Know
<b>3. Radiation biology</b>	
3.1 Radiolysis of water, direct & indirect effects	Must to Know
3.2 Stochastic & deterministic effects	Must to Know
3.3 Late somatic effects	Must to Know
3.4 Radiation effect at cellular level	Desirable to Know
3.5 Radiation effect at tissue and organ level	Desirable to Know
3.6 Modifying factors	Desirable to Know
3.7 Effect of whole body irradiation	Good to Know
<b>4. Radiation safety and protection</b>	
4.1 Sources of radiation	Must to Know
4.2 Dose limits	Must to Know
4.3 Estimates of risks	Must to Know
4.4 Methods of dose reduction	Must to Know
4.5 Various equipments to reduce the exposure and dose	Must to Know
4.6 Methods of protection of environment	Desirable to Know
4.7 Radiology department design	Desirable to Know
4.8 NCRP & ICRP guidelines of radiation protection	Good to Know
<b>5. Quality assurance and infection control</b>	
5.1 Importance of Radiographic quality assurance	Must to Know
5.2 Schedule of Radiographic quality assurance procedure	Must to Know
5.3 Key steps in radiographic Infection control	Must to Know
5.4 Universal precautions	Desirable to Know
5.5 Coin test	Good to Know
<b>6. Radiographic Techniques</b>	
6.1 All intraoral radiographic technique procedures (FLIPPED CLASSROOM)	Must to Know
6.2 Principles, indications, advantages, disadvantages, contraindications	Must to Know
6.3 All film holding instruments (FLIPPED CLASSROOM)	Desirable to Know
6.4 Radiographic examination of children	Good to Know
6.5 Special considerations Radiographic techniques for endodontics	Good to Know
6.6 Radiographic techniques in pregnancy	Good to Know
6.7 Radiographic techniques for edentulous patients	Good to Know
6.8 Different extraoral views, their indications, advantages,	Must to Know

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disadvantages, uses, principles	
6.9 Technique & Evaluation of image	Desirable to Know
6.10 Interpretation	Good to Know
6.11 Panoramic Radiography	
6.11.1 Indications, advantages, disadvantages, principle	Must to Know
6.11.2 The image layer	Must to Know
6.11.3 Panoramic machines	Must to Know
6.11.4 Patient positioning and head alignment (FLIPPED CLASSROOM)	Must to Know
6.11.5 Errors	Desirable to Know
6.11.6 Ghost image	Desirable to Know
6.11.7 Different image receptors	Desirable to Know
6.11.8 Interpretation of opg	Good to Know
7. Factors Affecting Ideal Radiographs:	
7.1. K.V.P. and mA of X-ray machine	Must to Know
7.2. Filters	Must to Know
7.3. Collimation	Must to Know
7.4. Intensifying screens	Must to Know
7.5. Grids	Must to Know
7.6. X-ray films	Must to Know
7.7. Exposure time	Must to Know
7.8. Techniques	Must to Know
7.9. Dark room	Must to Know
7.10. Safe light	Must to Know
7.11. Developer and Fixer solutions	Must to Know
7.12. Film Processing (FLIPPED CLASSROOM)	Must to Know
7.13. Storage of Films	Good to Know
7.14. Image Characteristics	Good to Know
8. Normal radiographic anatomy	
8.1 Radiographic appearance of Teeth Supporting structures, Maxilla, Mandible	Must to Know
8.2 Cervical burn out	Desirable to Know
8.3 Y line of Ennis	Desirable to Know
8.4 Differentiating points between normal anatomy & jaw pathologies.	Desirable to Know
8.5 Radiographic appearance of different Restorative materials	Good to Know
9. Faulty Radiographs and Artifacts in Radiographs	
9.1 Common Problems in Film Exposure and Development	Must to Know
9.1.1 Light Radiographs	Must to Know
9.1.2 Dark Radiographs	Must to Know
9.1.2 Insufficient Contrast	Must to Know
9.1.3 Film Fog	Must to Know

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9.1.4 Dark Spots or Lines	Must to Know
9.1.5 Light Spots	Must to Know
9.1.6 Yellow or Brown Stains	Must to Know
9.1.7 Blurring	Must to Know
9.1.8 Partial Images	Must to Know
9.1.9 Emulsion Peel	Must to Know
10. Principles of radiographic interpretation	
10.1 Role in radiographs in disease detection and monitoring	Must to Know
10.2 Guidelines for ordering radiographs	Must to Know
10.3 Common dental radiographic examinations	Desirable to Know
10.4 Special considerations	Good to Know
10.5 Ideal viewing conditions	Must to Know
10.6 Systematic radiographic analysis of intraoral radiographs	Must to Know
10.6 Analysis of intraosseous lesion: Aunt Minnie and step-by-step method	Desirable to Know
10.7 Systematic radiographic analysis of intraoral radiographs	Good to Know
10.8 Lamina dura in health & disease	Good to Know
11. Dental caries	
11.1 Radiographic appearance of all types of caries	Must to Know
11.2 Radiographic classification	Must to Know
11.3 Use of bitewing radiograph	Must to Know
11.4 Radiographic interpretation of caries	Must to Know
11.5 Alternative diagnostic tools to detect caries	Desirable to Know
11.6 Differentiation of secondary caries from caries	Good to Know
12. Periodontal diseases	
12.1 Indications of radiographs in periodontal diseases	Must to Know
12.2 Limitations of radiographs in periodontal diseases	Must to Know
12.3 General radiographic features of periodontal disease	Must to Know
12.4 Radiographic classification of periodontal disease	Must to Know
12.5 Dental considerations with periodontal diseases	Desirable to Know
12.6 Effect of systemic diseases on periodontium	Must to Know
12.7 Digital subtraction radiography	Must to Know
13. Inflammatory lesions of the jaws	
13.1 Clinical and radiographic features of periapical&pericoronal infection	Must to Know
13.2 D/D of different inflammatory lesions of jaw	Must to Know
13.3 Clinical and radiographic features of osteomyelitis	Desirable to Know
13.4 Clinical and radiographic features of osteoradionecrosis	Good to Know
14. Developmental disturbances of the face, jaws and teeth	
14.1 Classification, general & radiographic features of Developmental disturbances of the face, jaws and teeth	Must to Know
14.2 Genetics	Desirable to Know

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## B. PRACTICAL / CLINICAL SCHEME FOR III BDS

**The following amendments in Oral Medicine and Radiology practical for III BDS is as under: (Board of Studies Letter No. KMSDCH/BOS/16/2019 dated 26/12/2019 and Board of Management resolution Ref: No. SVDU/NOTFN/061/2019-20 dated 02/03/2020).**

**The changes in Oral Medicine and Radiology for III BDS practical for shall be as following:**

- Under practical / clinical scheme for III BDS,
- Examination of Trigeminal and Facial Nerves as writing assignment – in III BDS first term
  - Discussion on Pulp, periapical & periodontal diseases and Prescribing Intraoral Radiographs - in III BDS second term
  - Demonstration of Clinical examination of pathology (Swelling, PMDs, Malignancy, Ulcer etc.) - in III BDS second term
  - Peer teaching on topics General physical examination and Extraoral examination - in III BDS second term

### IIIrd year 1<sup>st</sup> term

- Demonstration on Patient shall be given to every Clinical Posting batch during the Clinical posting:
  - OPD
    - Introduction
    - Importance of case history
    - Patient Positioning on dental chair
    - Dental and Oral Examination
    - Recording of OPD Case Paper
  - Radiology
    - Introduction
    - Importance of Dental Radiographs
    - Patient Positioning on dental chair
    - Dental Radiograph taking procedure and techniques
    - Processing of Radiograph
    - Interpretation of Radiograph
    - Faults / Artifacts on Radiographs
    - Prescribing Intra-oral radiograph

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- Each student shall be given a writing assignment during the Clinical Posting:

- Case History – Description and Importance
- Head and Neck Lymph nodes

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- 2.3. Salivary Glands
- 2.4. Muscles of Mastication
- 2.5. Temporomandibular Joint
- 2.6. X-ray films
- 2.7. Processing solutions and techniques
- 2.8. IOPAR Technique
- 2.9. Dark room

3. Each student shall perform clinical examination and shall take Intraoral Periapical Radiographs during the clinical posting. The record for the same shall be maintained in the Record / Log book.

**III BDS Second Term:**

- a. Demonstration shall be given to every Clinical Posting batch during the Clinical posting of III BDS Second Term on:
  - 1.1. Medicine Prescription writing
  - 1.2. Prescribing Intraoral &Extraoral Radiographs and Advanced Imaging Modalities

- b. Each student shall be given a Writing Assignment during the Clinical posting:
  - 2.1. Swelling
  - 2.2. Oral Ulcer
  - 2.3. Classification and Five trade names of NSAIDs
  - 2.4. Classification and Five trade names of Antibiotics
  - 2.5. Classification and Five trade names of Antioxidants
  - 2.6. Classification, Contraindications and Five trade names of Corticosteroids
  - 2.7. Five trade names of Gum Paints, Mouthwash, Topical Anesthetic & Antiseptic gel / cream and Dental Antihypersensitivity toothpaste
  - 2.8. Schematic diagrams of radiographic anatomical landmarks of maxilla and mandible

3. The Student shall be trained to arrive at Proper Diagnosis by following a Scientific and Systematic procedure of History taking and Examination of the Oro-facial region.

**C. RECOMMENDED BOOKS:**

Refer page no.

**D. SCHEME OF EXAMINATION:**

Third BDS First term	<ul style="list-style-type: none"><li>• Viva voce on basics of Oral Medicine &amp; Radiology</li></ul>	10
	<ul style="list-style-type: none"><li>• Assignment</li></ul>	10

Attested STS

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	Total marks-	20
Third BDS Second term	<ul style="list-style-type: none"> <li>• Theory Viva voce</li> <li>• Writing of Two Medicine Prescriptions based on Diagnosis</li> <li>• Short Case history based on Patient's Chief complaint, recording of correlated findings, Examination of area of Chief complaint, Provisional &amp; Differential diagnosis and Proposed Treatment plan.</li> </ul>	10 20 30
	Total marks-	60

**Attested CTC**

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## FOURTH BDS ORAL MEDICINE AND RADIOLOGY

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT:

#### 1. APPROACH TO THE SUBJECT OF ORAL MEDICINE

- **The following amendments in IV BDS Oral Medicine & Radiology theory syllabus is as under: (Board of Studies Letter No. KMSDCH/BOS/02/AY2016-17 dated 08/11/2016 and Board of Management resolution Ref: No. SV/R/2016/3750 dated 22.12.2016).**

*The change in IV BDS Oral Medicine & Radiology theory syllabus shall be as following:*

1. *Intoduction of Biomedical waste management chapter under the section of Environmental Science*

*These will enable students to handle the material waste with caution.*

### COURSE OUTCOMES ASSESSED:

Were the students able to-Describe the disorders of Orofacial region. Diagnose the common disorders of Orofacial region by clinical examination and with the help of such investigations as may be required and medical management of oro-facial disorders with drugs and physical agents. Describe the role, use and techniques of radiographs/digital radiograph and other imaging methods in diagnosis. Take radiographs for intra-oral conditions and interpret them to arrive at radiographic diagnosis. Explain the principles of the clinical and radiographic aspects of Forensic Odontology.

TOPIC	DISTRIBUTION
1. Infectious Diseases	
1.1 C/F,O/M investigations, D/D & treatment - TB, syphilis, hepatitis, AIDS	Must to Know
1.2 C/F,O/M investigations, D/D & treatment of actinomycosis, other STDs	Desirable to Know
1.3 C/F,O/M investigations, D/D & treatment of protozoal infection	Good to Know
2. <del>Acute and</del> White Lesions of Oral Mucosa - Definitions and Burket,s classification, C/F, investigations, D/D & treatment	
2.1 Leukoedema	Must to Know
2.2 White Sponge Nevus	Desirable to Know

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2.3 Linea Alba (White Line)	Must to Know
2.4 Frictional (Traumatic) Keratosis	Must to Know
2.5 Cheek Chewing	Must to Know
2.6 Chemical Injuries of the Oral Mucosa	Desirable to Know
2.7 Actinic Keratosis (Cheilitis)	Good to Know
2.8 Smokeless Tobacco–Induced Keratosis	Must to Know
2.9 Oral Hairy Leukoplakia	Desirable to Know
2.10 Candidiasis	Must to Know
2.11 Mucous Patches	Good to Know
2.12 Leukoplakia	Must to Know
2.13 Erythroplakia	Must to Know
2.14 Oral lichen planus	Must to Know
2.15 Lupus Erythomatosus	Good to Know
3. Ulcerative, vesicular, and Bullous lesions - Definitions of all surface lesions. C/F, investigations, D/D & treatment	
3.1 Primary Herpes Simplex Virus Infections	Must to Know
3.2 Coxsackievirus Infections	Desirable to Know
3.3 Varicella-Zoster Virus Infection	Must to Know
3.4 Erythema Multiforme	Must to Know
3.5 Contact Allergic Stomatitis	Must to Know
3.6 Oral Ulcers Secondary to Cancer Chemotherapy	Desirable to Know
3.7 Acute Necrotizing Ulcerative Gingivitis	Desirable to Know
3.8 Recurrent Aphthous Stomatitis	Must to Know
3.9 Behçet's Syndrome	Desirable to Know
3.10 Pemphigus	Must to Know
3.11 Subepithelial Bullous Dermatoses	Good to Know
3.12 Histoplasmosis	Good to Know
4. Oral Cancer	
4.1 Epidemiology, etiology & risk factors	Must to Know
4.2 Precancerous lesions & conditions	Must to Know
4.3 C/F and D/D of all Head & Neck cancers	Must to Know
4.4 Imaging and all treatment modalities	Must to Know
4.5 Tumor biology	Desirable to Know
4.6 Nutrition: risk and prophylaxis	Desirable to Know
4.7 Viruses in oral cancer	Good to Know
4.8 Regimens of radiotherapy and chemotherapy	Good to Know
4.9 Complications of treatment and their management	Good to Know
5. Diseases of Tongue:	
5.1. Developmental	Must to know
5.2. Inflammatory	Must to know
5.3. Nutritional and Metabolic	Must to know
5.4. Neoplastic	Must to know
5.5. Miscellaneous	Must to know
Salivary Gland Diseases	
6. Anatomy & physiology, functions of saliva	Must to Know

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6.2 classification of salivary gland disorders	Must to Know
6.3 C/F of salivary gland disorders	Must to Know
6.4 Diagnostic approaches to the patient with salivary gland disease	Must to Know
6.5 Basic imaging methods	Must to Know
6.6 C/F	Must to Know
6.7 Investigations	Must to Know
6.8 D/D	Must to Know
6.9 Treatment of Specific diseases and disorders of the Salivary glands	Must to Know
6.10 Xerostomia	Must to Know
6.11 Salivary gland tumors	Must to Know
6.12 Medicinal treatment of sialorrhoea and xerostomia	Desirable to Know
6.13 Methods of saliva collection	Good to Know
6.14 advanced imaging modalities like sialography	Good to Know
6.15 Scintigraphy	Good to Know
6.16 CT	Good to Know
6.17 MRI	Good to Know
7. Temporo-Mandibular Joint Disorders	
7.1. Functional Anatomy	Must to know
7.2. Etiology, Epidemiology & Classification	Must to know
7.3. Assessment	Must to know
7.4. General Clinical Characteristics	Must to know
7.5. Specific Disorders and their Management	Must to know
7.6. Arthritis of the Temporo-mandibular Joint	Must to know
7.7. Developmental Defects & Trauma	Must to know
8. Maxillary sinus disorders:	
8.1. Developmental Disorders	Must to know
8.2. Inflammatory Disorders	Must to know
8.3. Cystic Disorders	Must to know
8.4. Neoplasm	Must to know
8.5. Trauma	Must to know
8.6. Miscellaneous	Must to know
9. Oral Manifestations of:	
9.1. Metabolic Disorders	Good to know
9.2. Endocrine disorders	Good to know
9.3. Nutritional deficiency	Good to know
10. Oro-Facial Pain:	
10.1. Pain arising from diseases of oro-facial tissues	Must to know
10.2. Pain arising due to CNS diseases	Must to know
10.3. Referred Pain	Must to know
11. Hematologic Diseases	
11.1 Physiology of blood	Must to Know
11.2 Clinical & lab findings	Must to Know
11.3 Classification of hematologic disorders	Must to Know

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11.4 General and oral manifestation	Must to Know
11.5 Investigations & treatment of RBC & WBC disorders	Must to Know
11.6 Leukemias	Must to Know
11.7 General and oral manifestation of Lymphomas	Desirable to Know
11.8 Multiple myeloma	Desirable to Know
11.9 Different chemotherapeutic regimens for leukemia and their complications	Good to Know
12. Bleeding and clotting disorders - Vessel Wall Disorders, Platelet Disorders, Coagulation Disorders	
12.1 Physiology of blood coagulation	Must to Know
12.2 clinical & lab findings	Must to Know
12.3 classification of bleeding & clotting disorders	Must to Know
12.4 Clinical Features	Must to Know
12.5 Oral manifestations	Must to Know
12.5 Investigations	Must to Know
12.6 D/D	Must to Know
12.7 Treatment	Must to Know
12.8 C/F, investigations, D/D & treatment of Fibrinolytic Disorders	Desirable to Know
12.9 PT, INR, dented management of patients with bleeding & clotting disorders	Good to Know
13. Cervicofacial Lymphadenopathy	Must to Know
14. Management of Dental Problems In Medically Compromised patients:	
14.1. Physiological changes: Puberty, Pregnancy and Menopause	Desirable to know
14.2. Patients suffering with Cardiac, Respiratory, Liver, Kidney, Bleeding Disorders, Hypertension, Diabetes , AIDS and Post-irradiated Patients.	Desirable to know
15. Allergy:	
15.1. Local allergic reactions	Must to Know
15.2. Anaphylaxis	Must to Know
15.3. Serum sickness	Must to Know
15.3.1. Local allergic manifestations to food drugs & chemicals.	Must to Know
15.3.2. Systemic allergic manifestations to food drugs & chemicals	Must to Know
16. Neuromuscular Diseases	
16.1 Types, causes, C/F, investigations and management of Facial palsy, Epilepsy along with recent updates	Must to Know
16.2 Dental considerations in patients with epilepsy	Desirable to Know
16.3 Muscular atrophy	Good to Know
17. Forensic Odontology:	
17.1. Medico legal aspects of Oro-facial injuries	Good to know
17.2. Identification of Bite marks	Good to know
17.3. Determination of Age and Sex	Good to know

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17.4. Identification of cadavers by Dental Appliances, Restorations and Tissue remnants	Good to know
17.5. Role of Dentist in Forensic Science	Good to know
18. Benign Tumors of the Oral Cavity - Definition of tumor, hamartomas, choriostoma and teratoma with examples. Classification of odontogenic and non-odontogenic benign tumors, C/F, investigations, D/D & treatment	
18.1 Pyogenic Granuloma	Must to Know
18.2 Hemangioma and Angiomatous Syndromes	Must to Know
18.3 Lymphangioma	Desirable to Know
18.4 Giant Cell Granuloma (Peripheral and Central)	Must to Know
18.5 Fibrous Dysplasia of Bone	Good to Know
18.6 Albright's Syndrome	Good to Know
19. Environmental Science including Biomedical Waste Management	
19.1. Introduction	Good to Know
19.2. What is Bio- Medical Waste	Good to Know
19.3. Risk from Bio- Medical Waste	Good to Know
19.4. Environmental Hazard	Good to Know
19.5. Occupational Hazard	Good to Know
19.6. Public Health Hazard	Good to Know
19.7. Legal Provision	Good to Know
19.8. Treatment and Disposal Methodology	Good to Know

## 2. APPROACH TO THE SUBJECT OF DIFFERENTIAL DIAGNOSIS

TOPIC	DISTRIBUTION
Soft tissue lesions	
1.1. White lesions of oral mucosa	Must to Know
1.2. Solitary oral ulcers and fissures	Must to Know
1.3. Peripheral oral exophytic lesions	Good to Know
1.4. Pits, fistulas and draining lesions	Good to Know
1.5. Intraoral brownish, bluish or black conditions	Good to Know
1.6. Solitary red lesions	Good to Know
1.7. Generalized red conditions and multiple ulcerations	Good to Know
1.8. Red conditions of the tongue	Good to Know
1.9. Yellow conditions of the oral mucosa	Good to Know
Bony lesions	
<b>Attested CTC</b>	
2.1. Radiolucencies of Jaws	
2.1.1. Anatomic radiolucencies	Must to Know
2.1.2. Periapical radiolucencies	Must to Know

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2.1.3. Pericoronal radiolucencies	Must to Know
2.1.4. Solitary cystlike radiolucency not necessarily containing teeth	Good to Know
2.1.5. Multiple separate well defined radiolucencies	Good to Know
2.1.6. Generalized rarefactions of jawbones	Good to Know
2.2. Mixed radiolucent-radiopaque lesions	Good to Know
2.2.1. Mixed radiolucent-radiopaque lesions associated with teeth	Good to Know
2.2.2. Mixed radiolucent-radiopaque lesions not necessarily containing teeth	Good to Know
2.3. Radiopacities of the jawbones	Good to Know
2.3.1. Anatomic radiopacities	Good to Know
2.3.2. Periapical radiopacities	Good to Know
2.3.3. Solitary radiopacities not necessarily containing tooth	Good to Know
2.3.4. Multiple separate radiopacities	Good to Know
2.3.5. Generalized radiopacities	Good to Know

### 3. APPROACH TO THE SUBJECT OF ORAL RADIOLOGY

- The following amendments in IV BDS Oral Medicine & Radiology theory syllabus is as under: (Board of Studies Letter No. KMSDCH/BOS/02/AY2016-17 dated 08/11/2016 and Board of Management resolution Ref: No. SV/R/2016/3750 dated 22.12.2016).**

The change in IV BDS Oral Medicine & Radiology theory syllabus shall be as following:

1. Introduction of Radiological waste management chapter under the section of Environmental Science

These will enable students to handle the material waste with caution.

TOPIC	DISTRIBUTION
1. Radiographic Techniques:	
1. Extra oral radiographic examination	
1.1 Different extraoral views, their indications, advantages, disadvantages, uses, principles	Must to Know
1.2 Technique & Evaluation of image	Desirable to Know
1.3 Interpretation	Good to Know
2. Trauma Radiography	

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1.2.1. Traumatic injuries of the teeth	Good to Know
1.2.2. Traumatic injuries to facial bones	Good to Know
1.2.2.1. Mandibular fractures	Good to Know
1.2.2.2. Midfacial fractures including maxillary fractures	Good to Know
1.2.3. Monitoring the healing of fractures	Good to Know
1.3 Digital imaging	
1.3.1 Principles, advantages & disadvantages over conventional radiography	Must to Know
1.3.2 Digital detectors	Must to Know
1.3.3 Digital image display	Must to Know
1.3.4 Characteristics of digital detectors	Desirable to Know
1.3.5 Characteristics of image, storage	Good to Know
1.3.6 Teleradiology	Good to Know
1.4 Specialized radiographic techniques	
1.4.1 Principles, advantages & disadvantages over conventional radiography	Must to Know
1.4.2 Indications & contraindications	Must to Know
1.4.3 Parts of machines	Must to Know
1.4.4 Different dyes used in Specialized radiographic technique	Desirable to Know
1.4.5 Radioisotopes	Good to Know
1.4.6 Contrast imaging	Good to Know
1.4.7 USG transducers	Good to Know
2. Principles and Complications of Radiotherapy in oro-facial malignancies.	Good to Know
3. Contrast Radiography & Basic Knowledge of Radio-Active Isotopes.	Good to Know
4. Orofacial implants	
4.1 Importance of imaging, commonly used R/Gic techniques, indications, prescribing proper radiographs.	Must to Know
4.2 Preoperative planning Intra operative and post operative assessment	Desirable to Know
4.3 Radiographs signs of failure of implants	Good to Know
4.4 Imaging stents	Good to Know
4.5 Basic knowledge about CBCT	Good to Know
5. Radiography in Forensic Odontology [Based on EBES]	
5.1. Radiographic Age Estimation	Good to Know
5.2. Post-Mortem Radiographic Methods	Good to Know
6. Guidelines for prescribing radiographs	
6.1 Role in radiographs in disease detection and monitoring	Must to Know
6.2 Guidelines for ordering radiographs	Must to Know
6.3 Common dental radiographic examinations	Desirable to Know
6.5 Special considerations	Good to Know
7. Principles of radiographic interpretation	

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7.1 Ideal viewing conditions	Must to Know
7.2 Systematic radiographic analysis of intraoral radiographs	Must to Know
7.3 Analysis of intraosseous lesion: Aunt Minnie and step-by-step method	Desirable to Know
7.4 Systematic radiographic analysis of intraoral radiographs	Good to Know
7.5 Lamina dura in health & disease	Good to Know
8. Dental caries	
8.1 Radiographic appearance of all types of caries	Must to Know
8.2 Radiographic classification	Must to Know
8.3 Use of bitewing radiograph	Must to Know
8.4 Radiographic interpretation of caries	Must to Know
8.5 Alternative diagnostic tools to detect caries	Desirable to Know
8.6 Differentiation of secondary caries from caries	Good to Know
9. Periodontal diseases	
9.1 Indications of radiographs in periodontal diseases	Must to Know
9.2 Limitations of radiographs in periodontal diseases	Must to Know
9.3 General radiographic features of periodontal disease	Must to Know
9.4 Radiographic classification of periodontal disease	Must to Know
9.5 Dental considerations with periodontal diseases	Desirable to Know
9.6 Effect of systemic diseases on periodontium	Must to Know
9.7 Digital subtraction radiography	Must to Know
10. Dental anomalies	
10.1 Developmental abnormalities number of teeth, Size of teeth, number of teeth, Shape of teeth	Must to Know
10.2 Syndromes associated with these abnormalities	Desirable to Know
10.3 Genetic factors associated with these anomalies	Good to Know
11. Inflammatory lesions of the jaws	
11.1 Clinical and radiographic features of periapical&pericoronal infection	Must to Know
11.2 D/D of different inflammatory lesions of jaw	Must to Know
11.3 Clinical and radiographic features of osteomyelitis	Desirable to Know
11.4 Clinical and radiographic features of osteoradionecrosis	Good to Know
12. Cysts of the jaws	
12.1 Definition, classification, theories of cyst enlargement	Must to Know
12.2 Radiographic features of Odontogenic cyst & Non odontogenic cyst	Must to Know
12.3 Syndromes associated with cysts	Desirable to Know
12.4 Malignant potential of differed cysts,	Good to Know
12.5 Complications of cyst	Good to Know
13. Benign tumours of the jaws	
13.1 Definition, classification, radiographic features of benign tumors, odontogenictumours, Non odontogenictumours	Must to Know
13.2 Hyperplasias	Desirable to Know
13.3 Indications of different radiographs	Good to Know

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13.4 Malignant potential	Good to Know
14. Malignant diseases of the jaws	
14.1 General features and radiographic features of malignancies of jaws	Must to Know
14.2 Radiographic D/D of malignancies	Desirable to Know
14.3 Metastatic tumors, Malignancy of the hematopoetic system	Good to Know
15. Diseases of bone manifested in the jaws	
15.1 General and radiographic features of bone dysplasias	Must to Know
15.2 Syndromes associate with bone dysplasias	Desirable to Know
15.3 Genetic factors with bone dysplasias	Good to Know
16. Systemic diseases manifested in the jaws	
16.1 General features of systemic diseases, radiographic changes in jaws.	Must to Know
16.2 Differentiation form other jaw lesions	Desirable to Know
16.3 Pathophysiology for changes in jaws	Good to Know
17. Radiographic Waste Disposal	
17.1. Introduction	Good to Know
17.2. What is Radiographic Waste	Good to Know
17.3. Risk from Radiographic Waste	Good to Know
17.4. Disposal of Lead waste	Good to Know
17.5. Disposal of X-ray system cleaners	Good to Know
17.6. Disposal of Processing solutions	Good to Know
17.7. Disposal of Dental films	Good to Know

## B. PRACTICAL / CLINICAL:

**The following amendments in Oral Medicine and Radiology practical for III BDS is as under: (Board of Studies Letter No. KMSDCH/BOS/16/2019 dated 26/12/2019 and Board of Management resolution Ref: No. SVDU/NOTFN/061/2019-20 dated 02/03/2020).**

**The changes in Oral Medicine and Radiology for III BDS practical for shall be as following:**

- Under practical / clinical scheme for IV BDS,
- Discussion on Ideal and Faulty radiographs - in IV BDS first term
  - Peer teaching on topics Radiation physics, biology & protection; Intraoral Radiography techniques and Anatomical Landmarks in IOPA - in IV BDS first term
  - Discussion on Scope and recent advances in Oral Medicine and Radiology - in IV BDS second term

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IV BDS First Term

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1. The students, during the clinical posting, shall be given demonstration on:
  - 1.1. Clinical examination of Normal Structure and Pathology (Swelling, OPMDs, Oral Malignancy, Oral Ulcer etc.)
  - 1.2. Evidence based Literature Search for developing Search Skills
2. Each student shall be given a writing assignment during the clinical posting:
  - 2.1. Treatment of Oral Submucous Fibrosis
  - 2.2. Treatment of Oral Leukoplakia
  - 2.3. Treatment of Oral Lichen Planus
  - 2.4. Treatment of Recurrent Aphthous Stomatitis
  - 2.5. Treatment of Oral Candidiasis
3. The students after identifying the clinical problem will formulate questions and will search the relevant databases for the evidence.
4. The Critical appraisal for different types of research papers as per the Hierarchy of Evidence will be undertaken by each student.
5. Role-modeling shall be practiced under the supervision of Department Teaching Faculty, especially during the clinical case discussions.
6. Each student shall perform clinical examination and shall take Intraoral Periapical Radiographs during the clinical postings of III and IV BDS. The record for the same shall be maintained in the record / log book.

#### IV BDS Second Term

1. The students, during the clinical posting, shall be given demonstration on:
  - 1.1. Electric Pulp Testing
  - 1.2. Toluidine blue solution test for OPMD's and Oral Malignancy
  - 1.3. Digital OPG procedure
2. Each student shall be given a writing assignment during the clinical posting on:
  - 2.1. Tooth vitality
  - 2.2. Vital staining and other Oral Cancer Screening Aids
  - 2.3. Indications for Intra-oral and Extra-oral Radiographs

#### C. RECOMMENDED BOOKS:

Sr. No.	Title	Author	Publisher
1.	Burkit's Oral Medicine, Diagnosis and Treatment	Greenberg Glick	J.B. Lippincott
2.	Oral Radiology	White & Pharoah	Mosby Elsevier

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3.	Differential Diagnosis of Oral & Maxillofacial Lesions	Norman K.Goaz Paul Wood	Mosby Elsevier
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### Books for References:

#### I. Oral Medicine

Sr. No.	Title	Author	Publisher
1.	Principles of Oral Diagnosis	Coleman	Mosby Year Book
2.	Oral Manifestations of Systemic Diseases	Jones	W.B. Saunders company
3.	Clinical Methods	Hutchinson	---
4.	Oral Pathology	Shafers	---
5.	Tobacco related Oral Mucosal Lesions and Conditions	Fali Mehta	---
6.	Synopsis of Oral Pathology	S.N.Bhaskar	---
7.	Principles and Practice of Radiographic Interpretation	H.M.Worth	---
8.	Radiographic Interpretation for the Dentist	S.N.Bhaskar	---
9.	Park		
10.	Soben Peter		

#### II. Oral And Maxillofacial Radiology

Sr. No.	Title	Author	Publisher
1.	Oral Radiology	White &Goaz	Mosby year Book
2.	Dental Radiology	Wuehrmann	C.V. Mosby Company
3.	Oral Roentgenographic Diagnosis	Stafne	W.B.Saunders Co
4.	A Guide to Dental Radiography	Rita Mason	-----

#### D. SCHEME OF EXAMINATION:

- The following amendments in IV BDS Oral Medicine & Radiology practical exams is as under: (Board of Studies Letter No. KMSDCH/BOS/02/AY2016-17 dated 08/11/2016 and Board of Management resolution Ref: No. SV/R/2016/3750 dated 22.12.2016).**

**Attested CRC**

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*practical exams shall be as following:*

**1. Clinical Examination of One normal structure & One pathology**

Exercise on Evidence Based Literature Search

Exercise on Evidence Based Literature Presentation

Theory Viva voce

*These will enable students to develop analytical thinking.*

**1. CLINICAL POSTING END EXAMINATION –**

The Clinical posting term ending examination shall be conducted on the Last day of the posting, as under:

Term	Particulars	Marks
Final BDS First term	• Clinical Examination of One normal structure & One pathology	20
	• Exercise on Evidence Based Literature Search	15
	• Exercise on Evidence Based Literature Presentation	15
	• Theory Viva voce	10
	Total marks-	60
Final BDS Second term	• Long Case history	35
	• Vital Staining- Toluidine Blue / Lugol's Iodine	05
	• Electric Pulp testing on - One Anterior Tooth and One Posterior Tooth	10
	• Theory Viva voce	10
	Total marks-	60

**Attested CTC**

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## II. FINAL BDS INTERNAL EXAMINATION SCHEME –

### 1. FIRST INTERNAL / TERMINAL EXAMINATION:

- **The following amendments in IV BDS Oral Medicine & Radiology internal practical exams is as under: (Board of Studies Letter No. KMSDCH/BOS/02/AY2016-17 dated 08/11/2016 and Board of Management resolution Ref: No. SV/R/2016/3750 dated 22.12.2016).**

*The change in IV BDS Oral Medicine & Radiology internal practical exams shall be as following:*

1. Short Case History
- Chair side Procedure – 1
- Chair side Procedure – 2
- Chair side viva voce
- IOPA procedure & interpretation

*These will enable students to develop analytical thinking.*

- Practical / Clinical:

The Practical / Clinical examination shall comprise of 100 marks. The detail Specification / Scheme is as under

S. No	Particulars	Marks
1.	Short Case History	30
2.	Chair-side Procedure- 1	10
3.	Chair-side Procedure- 2	10
4.	Chair-side Viva voce	10
5.	IOPAR Procedure & Interpretation	20
6.	Spotters (05 SPOTTERS*4)	20
Total		100

SECOND  
EXAMINATION:

INTERNAL

- Practical / Clinical:-

The marks of Clinical posting end examination of Third BDS First Term, Third BDS Second Term, Final BDS First Term and Final BDS second Term shall be considered for Second Terminal Practical/ Clinical examination.

The Total marks allotted are 100.

### 3. THIRD INTERNAL / PRELIMINARY EXAMINATION

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• Practical / Clinical:-

S. No	Particulars	Marks
1	Long Case history	35
2	Chair-side Procedure	10
3	IOPAR procedure & interpretation	10
4	Spotters (05 SPOTTERS*4)	20
5	Viva voce	25
Total		100

University Practical/Clinical Examination

- **The following amendments in IV BDS Oral Medicine & Radiology university practical exams is as under: (Board of Studies Letter No. KMSDCH /DFBOS / OW / 03 / AY 2017 -18 dated 12/01/2018 and Board of Management resolution Ref: No. SV/8539/2017-18 dated 02-04-2018**

The change in IV BDS Oral Medicine & Radiology university practical exams shall be as following:

Long Case history  
Chair Side Examination  
Radiology – IOPA  
Spotter

These will enable students to develop analytical thinking.

S. No	Particulars	Marks
1	Long Case history	40
2	Chair-side Examination	10
3	Radiology – Intraoral Periapical Radiograph	20
	1. Technique - Film Placement & X-ray tube head angulation (07 mks.)	
	2. Processing of Film (06 mks.)	
	3. Interpretation of Radiograph (07 mks.)	
4	Spotters (Five Spotters)	20
Total		90
5	Viva voce	20

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## PROSTHODONTICS AND CROWN & BRIDGE

- *The following amendments in IV BDS Prosthodontics theory is as under: (Board of Studies Letter No. KMSDCH/BOS/1399/2015 dated 20/11/2015 and Board of Management resolution Ref: No. SV/R/2016/10440-2 dated 23.06.2016).*

*The change in IV BDS Prosthodontics theory exams shall be as following:*

1. Geriatric Oral Health Related quality of life
2. Forensic Prosthodontics

*These will enable students to keep up-to-date with the current practices in prosthodontics.*

- *The following amendments in IV BDS Prosthodontics theory is as under: (Board of Studies Letter No. KMSDCH/BOS/1403/2016 dated 04/07/2016 and Board of Management resolution Ref: No. SV/R/2016/2754 dated 24.10.2016).*

*The change in IV BDS Prosthodontics theory exams shall be as following:*

1. To introduce – Implant Prosthodontic as treatment option

*These will enable students to keep up-to-date with the current practices in prosthodontics.*

- *The following amendments in IV BDS Prosthodontics theory is as under: (Board of Studies Letter No. (KMSDCH/BOS/06/AY2016-17 dated 24/1/2017 and Board of Management resolution Ref: No. SVDU/R/2017-18/1565 dated 21.09.2017).*

*The change in IV BDS Prosthodontics theory shall be as following:*

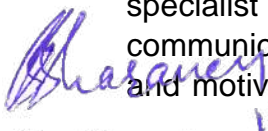
1. Prosthodontic Management of TMJ disorder

*These will enable students to keep up-to-date with the current practices in prosthodontics*

## COURSE OUTCOMES ASSESSED:

Were the students able to: Describe prosthetic needs of patients according to the existing biomechanics of the edentulous state. Diagnose and treat patients who are partially and completely edentulous (including geriatric patients) with complete and partial dentures Perform clinical steps in treating patients with prosthetic needs and fabricate prostheses for all conventional prosthodontic modes of treatment Identify cases requiring specialist prosthodontic treatment needs and refer them for further follow up Plan and communicate treatment plans with special mention on success and failure criteria factors and motivate patients on the significance of preventive prosthodontic care. - Motivate

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patient for proper Prosthodontic treatment, maintenance of oral and prosthesis hygiene Participate in the implementation of the community outreach activities. Exhibit a high standard of professional ethics and conduct and apply these in all aspects of professional life. Participate in CDE programme to update the knowledge and professional skill including evidence based Prosthodontics from time to time.

## A. COURSE CONTENT AND APPROACH TO THE SUBJECT:

TOPIC	DISTRIBUTION
1. Complete Denture	
1.1 Biological consideration in jaw relation & jaw movements – craniomandibular relations	
1.1.1 Mandibular movements	Desirable to Know
1.1.2 Concept of occlusion – Discussion in brief	Desirable to Know
1.2 Relating the patient to the articulator	
1.2.1 Face bow types and uses – discuss in brief	Desirable to Know
1.2.2 Face bow transfer procedure - discuss in brief(FLIPPED CLASSROOM)	Good to Know
1.3 Recording the maxillo-mandibular relation	
1.3.1 Vertical relation	Must to Know
1.3.2 Centric relation records	Must to Know
1.3.3 Eccentric relation records	Good to Know
1.3.4 Lateral relation records	Good to Know
1.4 Teeth selection and arrangement	
1.4.1 Anterior teeth	Must to Know
1.4.2 Posterior teeth	Must to Know
1.4.3 Esthetic and functional harmony	Desirable to Know
1.5 Relating inclination of teeth to concept of occlusion – in brief	
1.5.1 Neurocentric concept	Desirable to Know
1.5.2 Balanced occlusion concept	Must to Know
1.5.3 Lingualized Occlusion concept (FLIPPED CLASSROOM)	
1.6 Trial Dentures	Must to Know
1.7 Laboratory procedures	
1.7.1 Wax contouring	Must to Know
1.7.2 Investing of dentures	Must to Know
1.7.3 Preparing of mould	Must to Know
1.7.4 Preparing and packing of acrylic resin	Must to Know
1.7.5 Processing of dentures	Must to Know
1.7.6 Recovery of dentures - Lab remount procedures	Must to Know
1.7.7 Recovering the complete denture from the cast	Must to Know
1.7.8 Finishing and polishing the complete denture	Must to Know

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1.7.9 Plaster cast for clinical denture remount procedure	Desirable to Know
1.8 Denture insertion	
1.8.1 Insertion procedures	Must to Know
1.8.2 Clinical errors	Must to Know
1.8.3 Correcting occlusal disharmony	Must to Know
1.8.4 Selective grinding procedures	Must to Know
1.9 Problems with associated denture use – in brief	Must to Know
2. Removable Partial Dentures	
2.1 Examination, diagnosis & treatment planning & evaluation of diagnostic Data	Must to Know
2.2 Components of RPD	
2.2.1 Major connectors	Must to Know
2.2.2 Minor connectors	Must to Know
2.2.3 Rest and rest seats	Must to Know
2.2.4 Direct retainers	Must to Know
2.2.5 Indirect retainers	Must to Know
2.2.6 Tooth replacement	Must to Know
2.3 Principles of RPD design	Must to Know
2.4 Survey and design – in brief	
2.4.1 Surveyors	Must to Know
2.4.2 Surveying	Must to Know
2.4.3 Designing	Must to Know
2.5 Mouth preparation and master cast	Must to Know
2.6 Impression materials and procedures for RPD	Must to Know
2.7 Preliminary jaw relation and esthetic try-in for some anterior replacement teeth	Must to Know
2.8 Laboratory procedures for framework construction – inbrief	Desirable to Know
2.9 Fitting the framework – in brief	Desirable to Know
2.10 Try-in of the RPD - in brief	Must to Know
2.11 Completion of the RPD - in brief	Desirable to Know
2.12 Inserting the RPD - in brief	Must to Know
2.13 Post insertion observations	Desirable to Know
2.14 Temporary acrylic partial dentures	Must to Know
2.15 Immediate removable partial denture	Desirable to Know
2.16 Removable partial dentures opposing complete denture	Desirable to Know
3. Fixed Partial Denture	
3.1 Fundamentals of occlusion - in brief	Must to Know
3.2 Articulators - in brief	Must to Know
3.3 Treatment planning for single tooth restorations	Must to Know
3.4 Treatment planning for replacement of missing teeth including selection and choice of abutment teeth	Must to Know
3.5 Fixed partial denture configurations	Must to Know

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3.6 Principles of tooth preparations	Must to Know
3.7 Preparation for full veneer crowns - in brief	Desirable to Know
3.8 Preparation for partial veneer crowns - in brief	Desirable to Know
3.9 Provisional restorations	Must to Know
3.10 Fluid control and soft tissue management(Gingival Retraction Procedure – FLIPPED CLASSROOM)	Must to Know
3.11 Impressions	Must to Know
3.12 Working casts and dies	Desirable to Know
3.13 Wax patterns	Desirable to Know
3.14 Pontics and edentulous ridges	Must to Know
3.15 Esthetic considerations	Desirable to Know
3.16 Finishing and cementation	Desirable to Know
4. Topics to be covered in brief	
4.1 Solder joints and other connectors	Desirable to Know
4.2 All – ceramic restorations	Good to Know
4.3 Metal ceramic restorations	Desirable to Know
4.4 Preparations of intra-coronal restorations	Good to Know
4.5 Preparations for extensively damaged teeth	Good to Know
4.6 Preparations for periodontally weakened teeth	Good to Know
4.7 The functionally generated path technique	Good to Know
4.8 Investing and casting	Must to Know
4.9 Resin – bonded FPD	Desirable to Know
4.10 Occlusion in complete dentures	Must to Know
4.11 Treating abused tissues	Must to Know
4.12 Relining and rebasing of dentures	Must to Know
4.13 Immediate complete dentures	Must to Know
4.14 The single complete denture	Desirable to Know
4.15 Overdentures	Must to Know
4.16 Dental implants in complete denture	Must to Know
4.17 Maxillofacial prosthetics	Desirable to Know
4.18 Geriatric oral health related quality of life	Desirable to Know
4.19 Computer aided designing and computer aided milling	Desirable to Know
4.20 Forensic Prosthodontics	Desirable to Know
4.21 Herbal Prosthodontics	Desirable to Know
4.22 Prosthodontic Management of TMJ disorder	Desirable to Know
4.23 Implant prosthodontic	Desirable to Know

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## B. SYLLABUS FOR PRACTICALS:

### Quota of Work To Be Completed

4 <sup>th</sup> year 1 <sup>st</sup> term	<ul style="list-style-type: none"> <li>• Minimum 1 Complete denture.</li> <li>• 1 Removable Partial Denture</li> <li>• 02 FPD Tooth preparation (Metal Ceramic Maxillary)</li> <li>• End posting assessment as a Clinical step and viva (25 marks)</li> <li>• Generation of a PICO question, search strategy literature search and appraisal through checklists</li> </ul>
4 <sup>th</sup> year 2 <sup>nd</sup> term	<ul style="list-style-type: none"> <li>• Minimum 1 Complete denture.</li> <li>• 1 Removable Partial Denture</li> <li>• 02 FPD Tooth preparation (Metal Ceramic Mandibular) and impression making</li> <li>• End posting assessment as a Clinical step and viva (25 marks)</li> <li>• 1 Seminar presentation with PICO and evidence based evaluation of articles concerned to the seminar topic</li> </ul>
Total	<ul style="list-style-type: none"> <li>• 04 Complete dentures</li> <li>• 02 Removable Partial dentures</li> <li>• 08 FPD Tooth preparations</li> <li>• 1 Seminar presentation with PICO and evidence based evaluation of articles concerned to the seminar topic</li> </ul>

## C. RECOMMENDED BOOKS FOR READING:

Sr. No	Title	Author
1.	Syllabus of complete denture	Charles M Heartwell & Arthur O Rahn
2.	Prosthetic treatment for edentulous patients	C O Boucher
3.	Essentials of complete denture prosthodontics	Sheldon Winkler
4.	Removable partial prosthodontics	McCracken
5.	Clinical removable partial prosthodontics	Stewart Rudd Kuebker
6.	Contemporary fixed prosthodontics	Rosensteil

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7.	Prosthodontic Treatment for Edentulous Patients	ZarbBolender
8.	Removable partial prosthodontics	Ernest L Miller & Joseph E. Grasso
9.	Fundamentals of fixed prosthodontics	Herbert Shillingburg
10.	Theory & practice of fixed prosthodontics	Tylman
11.	Dental lab Procedures: Complete dentures, removable partial prosthodontics, Fixed Prosthodontics	Rudd and Morrow
12.	Maxillofacial Prosthetics	Taylor
13.	Contemporary Implant dentistry	C E Misch

#### D. EXAM SCHEME:

##### a. INTERNAL EXAM

- The following amendments in II BDS Dental Materials internal exam is as under: (Board of Studies Letter No. KMSDCH/BOS/1398A/2015 dated 20/11/2015 and Board of Management resolution Ref: No. SV/R/AC/2016/10440-2 dated 23/06/2016.**

*The change in II BDS Dental Material theory syllabus shall be as following:*

- To restructure clinical prosthodontics terminal practical exam on OSCE/OSPE pattern.*

*These will enable students to develop analytical thinking.*

##### FIRST INTERNAL:

- OSCE AND 01 FPD PREPARATION – 100 MARKS

##### ii. SECOND INTERNAL:

BASED ON MARKS OF ALL END POSTING ASSESSMENT (III BDS & IV BDS) – 100 MARKS

##### iii. THIRD INTERNAL:

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SR.	PARTICULARS	MARKS
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NO		
1	Spotters- 10 X 2	20
2	Case History	10
3	Exercise No 1: Complete denture Prosthodontics: Upper and lower arch complete denture Primary impression	25
4	Exercise No. 2: Fixed Prosthodontics FPD tooth preparation on typhodont	25
5	Viva + Seminar Presentation + Journal (10+5+5)	20
	TOTAL	100

b. UNIVERSITY EXAM

Practical Examination will be of Total 90 marks and will consist of:

Clinical / Practical:

- **The following amendments in IV BDS Posthodontics university practical exam is as under: (Board of Studies Letter No. (KMSDCH/BOS/1403/2016 dated 04/07/2016 and Board of Management resolution Ref: No. SV/R//2016/2754 dated 24.10.2016).**

*The change in IV BDS Prosthodontics university practical exams shall be as following:*

1. *To restructure clinical prosthodontics evaluation pattern by incorporating OSCE/OSPE in place of spotters*
2. *Upper and lower arch complete primary impression*
3. *FPD tooth preparation on typhodonts*

*These will enable students develop analytical thinking.*

SR. NO	PARTICULARS	MARKS
1	Spotters /OSPE- 10 X 2	20
2	Case History	05
3	Exercise No 1: Complete denture Prosthodontics: Upper and lower arch complete denture Primary impression	20+20=40
4	Exercise No. 2: Fixed Prosthodontics FPD tooth preparation on typhodont	25
	TOTAL	90

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## PERIODONTOLOGY

### COURSE OUTCOMES ASSESSED:

Were the students able to:-Describe the anatomy and physiology of the periodontium and correlate it with health and diseased states. Describe the types, etiopathogenesis diagnosis and treatment plan for periodontal pathologies. Diagnose periodontal pathologies Perform dental scaling, diagnostic tests of periodontal diseases; use the instruments for periodontal therapy and maintenance of the same. Impart the preventive measures namely, the prevention of periodontal diseases and prevention of the progress of the disease. Perform the treatment with full aseptic precautions. Prevent iatrogenic diseases; to conserve the tooth to the maximum possible time by maintaining periodontal health. Refer the patients who require specialist's care.

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT:

TOPIC	DISTRIBUTION
1. Periodontal Pocket	
1.1. Definition	Must to Know
1.2. Classification	Must to Know
1.3. Clinical features	Must to Know
1.4. Pathogenesis	Must to Know
1.5. Histopathology	Must to Know
1.6. Relationship of attachment loss and bone loss to pocket depth	Must to Know
1.7. Differences between suprabony and infrabony pockets	Must to Know
1.8. Periodontal abscess	Must to Know
1.9. Periodontal cyst	Desirable to Know
2. Patterns of Bone Loss	
2.1. Normal bone morphology	Must to Know
2.2. Classification of bone defects	Must to Know
3. Trauma From Occlusion	
3.1. Definition	Must to Know

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3.2. Classification	Must to Know
3.3. Stages of tissue response	Must to Know
3.4. Effect of TFO on periodontal disease progression	Must to Know
3.5. Pathologic tooth migration	Must to Know
4. Chronic Periodontitis	
4.1. Clinical features	Must to Know
4.2. Risk factors	Good to Know
5. Necrotizing Ulcerative Periodontitis	
5.1. Clinical features	Must to Know
5.2. Etiology	Must to Know
6. Aggressive Periodontitis	
6.1. Definition	Must to Know
6.2. Classification	Must to Know
6.3. Localized aggressive periodontitis	
6.3.1. Clinical characteristics	Must to Know
6.3.2. Radiographic findings	Must to Know
6.3.3. Prevalence and distribution by age and gender	Desirable to Know
6.4. Generalized aggressive periodontitis	
6.4.1. Clinical characteristics	Must to Know
6.4.2. Radiographic findings	Must to Know
6.4.3. Prevalence and distribution by age and gender	Desirable to Know
6.5. Risk factors for aggressive periodontitis	
6.5.1. Microbiologic factors	Good to Know
6.5.2. Immunologic factors	Desirable to Know
6.5.3. Genetic factors	Desirable to Know
6.5.4. Environmental factors	Desirable to Know
7. Diagnosis	

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7.1. Clinical diagnosis	Must to Know
7.2. Advanced Diagnostic Techniques	Must to Know
8. Radiographic Aids in Diagnosis of Periodontal Diseases	Must to Know
9. Prognosis	
9.1. Definition	Must to Know
9.2. Types of prognosis	
9.2.1. Overall versus individual prognosis	Must to Know
9.3. Factors affecting prognosis	
9.3.1. Overall clinical factors	Good to Know
9.3.2. Systemic and environmental factors	Good to Know
9.3.3. Local factors	Good to Know
9.3.4. Prosthetic and restorative factors	Good to Know
10. Treatment Plan	
10.1. Phases of treatment plan	Must to Know
11. Rationale For Periodontal Treatment	Must to Know
12. Periodontal therapy in female patients	
12.1. Puberty	Good to Know
12.2. Menses	Good to Know
12.3. Periodontal manifestations of pregnancy and its management	Must to Know
12.4. Oral contraceptives	Good to Know
12.5. Menopause	Good to Know
13. Periodontal Treatment of Medically Compromised Patients	
13.1. Cardiovascular diseases	
13.1.1. Hypertension	Must to Know
13.1.2. Ischemic heart diseases	Must to Know
13.1.3. Congestive heart failure	Must to Know
13.1.4. Cardiac pacemakers and defibrillators	Good to Know

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13.1.5. Infective endocarditis	Good to Know
13.1.6. Cerebrovascular accidents	Good to Know
13.2. Endocrine disorders	
13.2.1. Diabetes mellitus	Must to Know
13.2.2. Thyroid and parathyroid disorders	Desirable to Know
13.2.3. Adrenal insufficiency	Desirable to Know
13.3. Renal diseases	Desirable to Know
13.4. Liver diseases	Desirable to Know
13.5. Pulmonary diseases	Desirable to Know
13.6. Immunosuppression and chemotherapy	Desirable to Know
13.7. Radiation therapy	Desirable to Know
13.8. Hematological disorders	
13.8.1. Coagulation disorders	Good to Know
13.8.2. Thrombocytopenic purpuras	Good to Know
13.8.3. Non-thrombocytopenic purpuras	Good to Know
13.8.4. Leukemia	Good to Know
13.8.5. Agranulocytosis	Desirable to Know
13.9. Infectious diseases	
13.9.1. Hepatitis	Good to Know
13.9.2. HIV and AIDS	Good to Know
13.9.3. Tuberculosis	Good to know
14. Treatment of aggressive and atypical forms of periodontitis	
14.1. Management of Aggressive periodontitis	Must to Know
14.2. Periodontitis refractory to treatment	Good to Know
14.3. Necrotizing ulcerative periodontitis	Must to Know
15. Treatment of acute gingival diseases	
15.1. Acute necrotizing ulcerative gingivitis	Must to Know
15.2. Acute pericoronitis	Must to Know
15.3. Acute herpetic gingivostomatitis	Must to Know

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15.4. Gingival and periodontal abscess	Must to Know
16. Plaque control	
16.1. Mechanical plaque control (FLIPPED CLASSROOM)	Must to Know
16.2. Chemical plaque control	Must to Know
17. Periodontal instruments	
17.1. Classification and description	Must to Know
18. General Principles of periodontal instrumentation (FLIPPED CLASSROOM)	
18.1. Accessibility	Must to Know
18.2. Visibility, illumination and retraction	Must to Know
18.3. Condition and sharpness of instrument	Must to Know
18.4. Maintaining a clean field	Must to Know
18.5. Instrument stabilization	Must to Know
18.6. Instrument activation	Must to Know
19. Chemotherapeutic agents	
19.1. Definitions	Must to Know
19.2. Systemic administration of antibiotics	Must to Know
19.3. Serial and combination therapy	Must to Know
19.4. Local drug delivery	Must to Know
20. Host modulation therapy	
20.1. Definition and rationale	Good to Know
20.2. Systemically administered agents	Desirable to Know
20.3. Locally administered agents	Desirable to Know
20.4. Sub-antimicrobial dose doxycycline	Desirable to Know
20.5. Emerging host modulation therapies	Desirable to Know
21. Sonic and ultrasonic instrumentation	
21.1. Mechanism of action	Must to Know
21.2. Types of power instruments	Must to Know
21.3. Efficacy and clinical outcomes	Must to Know

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21.4. Efficiency	Must to Know
21.5. Special considerations	
21.5.1. Aerosol production	Must to Know
21.5.2. Cardiac pacemakers	Must to Know
22. Supragingival and subgingival irrigation	Good to Know
23. Occlusal evaluation and therapy	Good to Know
24. Perio-endodontic continuum	
24.1. Pathogenesis	Good to Know
24.2. Classification	Good to Know
24.3. Management	Good to Know
25. General principles of periodontal surgery	
25.1. Surgical instruments	Good to Know
25.2. Patient preparation	Good to Know
25.3. Sterilization, disinfection and asepsis	Good to Know
25.4. Management of emergency	Good to Know
25.5. Periodontal dressings	Good to Know
25.6. Management of post-operative pain and bleeding	Good to Know
26. Gingival surgical techniques	
26.1. Gingival curettage	Good to Know
26.2. Gingivectomy	Good to Know
26.3. Treatment of gingival enlargement	Good to Know
27. Periodontal flaps	
27.1. Definition and classification of flap	Must to Know
27.2. Designs of flap	Must to Know
27.3. Incisions	
27.3.1. Horizontal incisions	Must to know
27.3.2. Vertical incisions	Must to know
27.3.3. Interdental incisions	Must to know
27.4. Suturing techniques	Good to Know

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27.5. Flap Techniques For Pocket Therapy	
27.5.1. Techniques for access and pocket depth reduction/elimination	Must to know
27.5.1.1. Modified Widman flap	Must to know
27.5.1.2. Undisplaced Flap	Must to know
27.5.1.3. Apically Displaced Flap	Must to know
27.5.2. Flap For Reconstructive Surgery	
27.5.2.1. Papilla Preservation Flap	Good to Know
27.5.2.2. Conventional Flap	Good to Know
27.5.3. Distal Molar Surgery	Desirable to Know
28. Resective osseous surgery	
28.1. Rationale	Good to Know
28.2. Terminology	Good to Know
28.3. Osseous resection technique	
28.3.1. Instrumentation	Good to Know
28.3.2. Vertical grooving	Good to Know
28.3.3. Radicular blending	Good to Know
28.3.4. Flattening interproximal bone	Good to Know
28.3.5. Gradualizing marginal bone	Good to Know
29. Reconstructive periodontal surgery	
29.1. Non-graft associated procedures	Desirable to Know
29.2. Graft materials and procedures	Good to Know
29.3. Combined techniques	Desirable to Know
30. Furcation involvement and its treatment	
30.1. Definition	Must to know
30.2. Etiologic factors	Must to know
30.3. Diagnosis and Classification	Must to know
30.4. Local anatomic factors	Must to know
30.5. Treatment	Must to know
31. Periodontal plastic and esthetic surgeries	

Attested CTC

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31.1. Terminologies	Good to Know
31.2. Objectives	Good to Know
31.2.1. Problems associated with attached gingival	Good to Know
31.2.2. Problems associated with shallow vestibule	Good to Know
31.2.3. Problems associated with aberrant frenum	Good to Know
31.3. Etiology of marginal tissue recession	Good to Know
31.4. Factors affecting surgical outcome	Desirable to Know
31.5. Techniques to increase attached gingiva	Must to know
31.6. Techniques to deepen vestibule	Good to Know
31.7. Techniques to remove frenum	Good to Know
32. Perio-restorative interrelationship	
32.1. Biologic width	Good to Know
33. Dental implants	
33.1. Basic concepts	Good to know
33.2. Periodontal perspective	Good to know
34. Recent advances in surgical technology	
34.1. Lasers	Good to know
34.2. Microsurgery	Good to know

## B. PRACTICAL SYLLABUS:

1. Polishing of teeth
2. Demonstration to patients about different oral hygiene aids
3. Surgical procedures- Gingivectomy, Gingivoplasty and Periodontal flap treatments.
4. Problem based learning

**Attested CTS**  
Critical Appraisal of different types of research papers as per the Hierarchy of Evidence.

(Third Step of Evidence Based Decision Making).

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- Application of the Evidence in local population. (Fourth Step of Evidence Based Decision Making)

Clinical Work Quota

- 15 cases- Diagnosis, treatment planning and discussion and total periodontal treatment Cases with supporting evidence for it (related evidences searched, appraised and discussed along with the history)
- 25 complete cases / equivalent-Dental scaling, oral hygiene instructions – 10 cases- Cases treated with implementing principals of EBDM starting from question formation to appraisal and application of evidence for the particular patient.
- 5 cases - Assistance in periodontal surgery.

***. The following amendments in Periodontology practical for IV BDS is as under: (Board of Studies Letter No. KMSDCH/BOS/16/2019 dated 26/12/2019 and Board of Management resolution Ref: No. SVDU/NOTFN/061/2019-20 dated 02/03/2020).***

*The changes in Periodontology practical for IV BDS shall be as following:*

*1. Consideration of one case in II term posting for end-term after intimation to the students.*

*Case history – 10 marks, clinical exercise – 10 marks and viva voce – 5 marks (total – 25 marks)*

A work record should be maintained by all the students and should be submitted at the time of examination after due certification from the Head of Department. Students should have to complete the work prescribed by the concerned department from time to time and should submit a certified record for evaluation.

**C. RECOMMENDED BOOKS:**

TITLE	AUTHOR	PUBLISHER
Carranza's Clinical Periodontology	Newman	-

**Attested CTC**

**REFERENCE BOOKS:**

TITLE	AUTHOR	PUBLISHER
<i>Paraneer</i>		

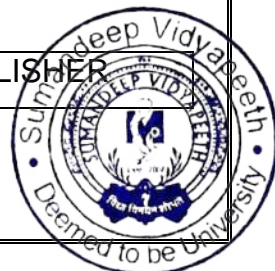
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Clinical Periodontology	Jan Lindhe	-
Periodontics	Eley& Manson	-
Periodontics	Rose &Mealey	-
Decision making in periodontics	Hall	-
Periodontal Medicine	Genco	-
Implant Dentistry	Misch	-

## D. SCHEME OF EXAMINATION

### INTERNAL PRACTICAL EXAMINATION SCHEME

The internal Practical examinations in the subject of Periodontology, shall be conducted as under:

#### 1. CLINICAL POSTING END EXAMINATION -

The Clinical posting term ending examination shall be conducted on the Last day of the posting, as under:

Term	Particulars	Marks
Final BDS First term & Second term	• Clinical Case History Discussion	15
	• Theory Viva voce (all the topics covered in theory classes till date)	5
	• Assignment	5
	Total marks-	25

#### II. FINAL BDS INTERNAL EXAMINATION SCHEME –

##### 4. FIRST INTERNAL / TERMINAL EXAMINATION:

5. SECOND INTERNAL – The marks of all the four end posting exam are considered. The Total marks allotted are 100

##### 6. THIRD INTERNAL / PRELIMS-

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S. No	Particulars	Marks
1	Long Case history	25
2	Scaling	25
3	Viva voce	30
4	Spotters	20
Total		100

UNIVERSITY EXAM:

Theory: As per the university rules

Clinical: As per the university rule.

Details of marking pattern will be as

below:

- **The following amendments in IV BDS Periodontics practical university exam is as under: (Board of Studies Letter No. (KMSDCH/BOS/06/AY2016-17 dated 24/1/2017 and Board of Management resolution Ref: No. SVDU/R/2017-18/1565 dated 21.09.2017.**

*The change in IV BDS Periodontics practical university exam shall be as following:*

*1. Change in marking scheme for university practical examination shall be as given below:*

Total marks: 90 (KMSDCH/BOS/07/AY2016-17, SVDU/R/2017-18/1565 dated 21.09.2017)

1. Spotters: 20 marks (10\*2)
2. Case history, Diagnosis and treatment planning: 30 marks
  - 2.1. Case history: 15 marks
  - 2.2. Diagnosis : 5 marks
  - 2.3. Treatment planning: 10 marks
3. Segmental scaling: 30 marks
  - 3.1. Sterilization & Asepsis: 5
  - 3.2. Armamentarium: 5 marks
  - 3.3. Principles of Instrumentation: 10 marks
  - 3.4. Completeness of scaling: 10
4. Journal: 10 marks

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# ORAL & MAXILLOFACIAL SURGERY

## COURSE OUTCOMES ASSESSED:

Were the students 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. Diagnose, manage and treat (understand the principles of treatment of) patients with oral surgical problems. Explain range of surgical treatments. Ability to decide the requirement of a patient to have oral surgical specialist opinion or treatment. Explain the principles of in-patient management. Explain the management of major oral surgical procedures and principles involved in patient management. Explain ethical issues Examine any patient with an oral surgical problem in an orderly manner. Prescribe various clinical and laboratory investigations and is capable of formulating differential diagnosis. Extract teeth under both local and general anaesthesia. Perform minor oral surgical procedures under L.A. like frenectomy, alveolar procedures & biopsy etc. Assess, prevent and manage various complications during and after surgery. Provide primary care and manage medical emergencies in the dental office. Describe management of major oral surgical problems and principles involved in in-patient management.

## A. THEORY SYLLABUS TOPICS WITH DISTRIBUTION:

TOPIC	DISTRIBUTION
1. Principles of Surgery and Incisions	
1.1 Asepsis	Must Know
1.1.1 Definition, measures to prevent infection during surgery	Must Know
1.1.2 Preparation of patient	Must Know
1.2 Pre anesthetic considerations,	Must Know
1.3 Pre medication : Purpose & Drugs Used	Must Know
1.4 Anaesthetic considerations	Must Know
1.4.1 Anaesthetic Considerations - Local	Must Know
1.4.2 Anaesthetic Considerations - Local with Sedation	Must Know
2. Flap Designing	
2.1 Triangular Flap	Desirable to Know
2.2 Trapezoidal Flap	Good to Know
2.3 Semilunar Flap	Good to Know
3. Infection Control	
3.1 Sterilization	Must Know

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3.2 Disinfection	Must Know
3.3 Hospital Acquired Infection	Must Know
4. Control of Haemorrhage	
4.1 Aetiological Factors	Must Know
4.2 Factors Affecting	Must Know
4.3 Methods of Control	Must know
5. Blood Transfusion	
5.1 Types of Blood Group	Must Know
5.2 Antigenicity	Must Know
5.3 Indications of Blood Transfusion	Must know
5.4 Complications of Blood Transfusion	Must Know
6. Wound management and principles of suturing	
6.1 Primary Healing	Must Know
6.2 Secondary Healing	Must Know
6.3 Types of Suture Materials	Must know
6.4 Principles and Types of Suturing	Must Know
6.5 Types of Wounds	Must Know
7. Local anesthesia-various nerve blocks	
7.1 Inferior Alveolar Nerve Block	Must Know
7.2 Posterior Superior Alveolar Nerve Block	Must Know
7.3 Inferior Orbital Nerve Block	Must know
7.4 Mental Nerve Block	Must Know
8. Laboratory investigation	
8.1 Biopsy	Must know
8.2 FNAC	Must know
8.3 Haematological Investigations	Must know
8.4 Organ Specific Investigations	Must know
9. Infections of the maxillofacial region	
9.1 Ludwig's Angina	Must know
9.2 Osteomyelitis	Must know
9.3 Space Infection	Must know
9.4 Osteoradionecrosis	Must know
9.5 Management with HBO	Must know
9.6 Principals of Antibiotics	Must know
10. Third molar and canine impaction	
10.1 Diagnosis and Treatment Planning	Must know
10.2 Classification	Must know
10.3 Incision Designs	Must know
10.4 Surgical Techniques for Removal	Must know
11 Emergency drugs	
11.1 Adrenaline	Must know
11.2 Atropine	Must know
11.3 Salbutamol	Desirable to Know
11.4 Diazepam	Must know
11.5 Mefentamine	Must know

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*[Signature]*  
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11.6 Hydrocortisone	Must know
11.7 Dexona	Must know
11.8 Avil	Desirable to Know
12 Maxillofacial trauma	
12.1 Mandibular Fracture	Must know
12.2 Mid Face Fracture	Must know
12.3 Condylar Fracture	Must know
12.4 Zygomatic Complex Fracture	Must know
12.5 Nasoethmoid Complex Fracture	Must know
13 Cysts of maxillofacial region	
13.1 Etiology and Classification of Cyst	Must know
13.2 Enucleation	Must know
13.3 Marsupialisation	Must know
14 Maxillary sinus and its clinical implications	
14.1 Surgical anatomy of sinus	Must know
14.2 Sinusitis	Must know
14.3 Caldwell luc procedure,	Must know
14.4 Removal of foreign body	Must know
14.5 Nasal Antrostomy	Must know
14.6 Closure of OAF	Must know
15 TMJ disorders	
15.1 Anatomy	Must know
15.2 Incision Design	Must know
15.3 MPDS	Must know
15.4 TMJ Ankylosis	Must know
15.5 Tumors of TMJ	Must know
16 Salivary gland disorders	
16.1 Anatomic Considerations	Must know
16.2 Mucocele	Must know
16.3 Ranula	Must know
17 Preprosthetic surgery	
17.1 Corrective Procedures	Must know
17.2 Alveoloplasty	Must know
17.3 Reduction of Maxillary Tuberosity,	Must know
17.4 Frenectomy	Must know
17.5 Removal of Tori	Must know
17.6 Ridge extension procedures: indications and various surgical procedures	Must know
18 Dentofacial deformities and their correction	

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18.1 classification and clinical features	Must know
18.2 maxillary procedures	Good to know
18.3 Mandibular procedures	Good to know
19 cleft lip and palate	
19.1 aetiology and classification	Must know
19.2 cleft lip repair	Good to know
19.3 palatoplasty	Good to know
20 Neurological disorders	
20.1 Trigeminal neuralgia	Must know
20.2 Facial nerve paralysis	Must know
20.3 Nerve injuries	Good to know
21 Tumours of oral cavity	
21.1 Benign odontogenic and non-odontogenic tumours	Must know
21.2 Biopsy	Must know
21.3 oral cancer	Must know
22. Oral implantology	Must know
23. Medical jurisprudence and medicolegal considerations	Good to know

Formal and structured evidence based education is integrated in theory which incorporates at least one or two evidences related to the lecture being taken.

#### B. PRACTICAL/ CLINICAL :

- i. VARIOUS THEORY TOPICS WILL BE DISCUSSED
- ii. CLINICALS: During the clinical postings the students are required to appear for daily discussions on various pre-decided topics for which they are asked to systematically search and find best available evidences and produce during discussions either in electronic form or print form

3 <sup>rd</sup> year	Minimum of 05 patients extraction under local anesthesia
4 <sup>th</sup> year	Minimum of 10 patients extraction under local anesthesia with various nerve block techniques

*Sharaney*  
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Total	Minimum of 15 patients extraction Preclinical suturing exercise Preclinical wiring exercise
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iii.  
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of

Work To Be Completed

### C. RECOMMENDED BOOKS:

TITLE	AUTHOR
Impacted teeth	Alling John F
Principles of oral and maxillofacial surgery ; Vol.1,2 & 3	Peterson LJ
Text book of oral and maxillofacial surgery	Srinivasan B.
Handbook of medical emergencies in the dental office	Malamed SF.
Killeys Fractures of the mandible	Banks P.
Killeys fractures of the middle 3rd of the facial skeleton	Banks P.
The maxillary sinus and its dental implications	McGovanda
Killey and kays outline of oral surgery - part -1	Seward GR

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Essentials of safe dentistry for the medically compromised patients	Mc Carthy FM
Oral & maxillofacial surgery, Vol 2	Laskin DM
Extraction of teeth	Howe, GL
Minor Oral Surgery	Howe, GL
Contemporary oral and maxillofacial surgery	Peterson I.J. &EA
Oral and maxillofacial infections	Topazian RG & Goldberg MH

#### D. SCHEME OF EXAMINATION:

##### CLINICAL / PRACTICAL POSTING END EXAMINATION -

The Clinical posting term ending examination shall be conducted on the Last day of the posting, as under

Term	Particulars	Marks
IVth BDS 1 <sup>st</sup> Term & 2 <sup>nd</sup> Term	Format for term ending five theory question for (50) marks and one patient during the posting will be evaluated for the end posting assessment (50)	100 marks in each term end

##### INTERNAL EXAMINATION SCHEME – FIRST TERMINAL EXAM

Exodontia	Grand viva	chair side viva	total marks
30	50	20	100

**Attested CTS**

SECOND INTERNAL – The marks of all the four end posting exam are considered. The Total marks allotted are 100

PRELIMINARY EXAM

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history	L.A	Exodontia	Grand viva-	total marks
10	20	20	50	100

University Examination:

Theory: As per the university examination scheme

Practical & / Clinical: 90 Marks

Extraction 35

Local anaesthesia 15

Chair side viva 20

Spotters 20

**Attested CTC**

*Sharaney*  
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## CONSERVATIVE & ENDODONTICS

- The following amendments in IV BDS Conservative Dentistry and Endodontics theory is as under: (Board of Studies Letter No. KMSDCH/BOS/12/2019 dated 26/08/2019 and Board of Management resolution Ref: No. SVDU/NOTFN/06/2019-20 dated 25/11/2019).

The change in IV BDS Conservative Dentistry and Endodontics theory shall be as following:

1. Management anatomic complexities in Endodontics – as desirable to know

These will enable students to keep up-to-date with the current practices in endodontics.

### COURSE OUTCOMES ASSESSED:

Were the students able to: Diagnose diseases of the teeth Perform simple restorative work for decayed teeth using medium and high speed hand pieces to carry out restorative work. Describe aesthetic restorative material and to translate the same to patients needs. Explain endodontic treatment on the basis of scientific foundation. Identify endodontic instruments and materials needed for carrying out simple endodontic treatment. Perform simple endodontic treatment and emergency endodontic treatment. Explain treatment of luxated teeth Exhibit a high standard of professional ethics and conduct and apply these in all aspects of professional life. Participate in CDE programme to update the knowledge and professional skill from time to time. Participate in the implementation of the national oral health policy. Motivate the patient for proper dental treatment, maintenance of oral hygiene and maintenance of the restorative work to prevent future damage.

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT

S.no	Topics	Sub-topics	Distribution
		Operative	
1	Adhesion	Need for bonding,	Must know
		types of bonding,	Must know
		clinical factors affecting bonding	Must know
		advantage & disadvantages of bonding	Must know
		acid etch techniques	Must know
		Enamel bonding & dentin bonding agents.	Must know
		Formation and thickness of smear layer	Good to know

Attested CTC

*[Signature]*  
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2	Smear layer	removal of smear layer	Good to know
		acid etching,	Good to know
		conditioning,	Good to know
		bonding,	Good to know
		primers,	Good to know
		Smear plugs and smear units.	Good to know
3	Cavity preparation for composite	Difference between tooth preparation for amalgam and composites	Must know
		types of composite restoration,	Must know
		conventional, beveled conventional, modified, facial/ lingual slot,	Must know
		Pulp protection.	Must know
			Must know
4	Anterior Restorations	Resin composites	Must know
		GIC	Must know
		maintenance of contacts,	Must know
		Finishing	Must know
		gingival health.	Must know
5	Dental ceramics	Definition, classifications, composition and properties, condensation types	Must know
		Cavity preparation, castable glass ceramics	Good to know
		Porcelain laminates and veneers	Good to know
6	Smile design	Artistic elements	Good to know
		Alteration of embrasures	Good to know
		Correction of diastema	Good to know
		Treatment of discolored tooth	Good to know
		Pontics	Good to know
7	Cast restorations	Material qualities	Must know
		Indications and contraindications	Must know
		Advantages and disadvantages	Must know
		Initial procedures	Must know
		Tooth preparation for inlays and onlays	Must know
		Restorative technique	Must know

Attested CTC

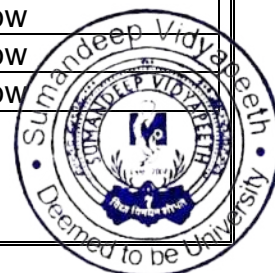
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8	Difference between amalgam and inlay preparation	Principles of cavity preparation	Must know
		Basic concepts of cavity design	Must know
		Path of insertion, taper, bevels, flares	Must know
		Secondary retention features	Must know
		Indications and contraindications	Must know
		Advantages and disadvantages	Must know
		Factors affecting retention of cast restoration	Must know
9	Temporization or inter restoration	Rationale, requisites	Must know
		Various interim restorative materials	Must know
		Indirect acrylic resin	Must know
10	Direct filling gold	Classification	Must know
		Properties, principles of manipulation	Must know
		Types, annealing, degassing	Must know
		Condensation and compaction	Must know
		Biological properties	Must know
		Indication and contraindication	Must know
		Cavity preparation	Must know
11	Pin amalgam restorations	Rationale for uses of pins	Must know
		Indications, advantages, disadvantages	Must know
		Classification, principles of pin placement	Must know
		Pin hole preparation, pin binding	Must know
		Trimming and removal, pin amalgam foundation	Must know
		Pin restoration in various cavities	Must know
		Pin supported tooth restorations	Must know
		Failures	Must know
12	Non carious lesions	Attrition, abrasion, erosion, fractures	Must know
		Discoloration, enamel/dentin Hypoplasia	Must know
		Hypo calcification and fluorosis	Must know
		Causes, clinical features, differential diagnosis, treatment	Must know
		Endodontics	
		Theory of focal infection	Must know
		Organism responsible for in pulpal and	Must know

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13	Microbiology	periapical infection,	
		Methods to identify oral micro flora, histopathology	Must know
		Bio film.	Good to know
14	Endodontic instruments	Classification-hand instruments, rotary instruments	Must know
		Instruments for pulp space preparation, obturation	Must know
		Instrument design	Must know
		Sonic and ultrasonic instruments	Must know
		Effectiveness and wear of instruments	Must know
15	Access preparation	Principles, instruments used, laws	Must know
		Canal orifice identification	Must know
		Access opening of individual tooth	Must know
		Challenges faced	Must know
16	Biomechanical preparations	Definitions, needs	Must know
		Objectives	Must know
		Anatomy of root apex	Must know
		Determination of working length	Must know
		Methods of determination of working length	Must know
		Apex locators	Must know
		Hand and engine driven instruments	Must know
		Irrigants and irrigation techniques	Must know
		Disinfectants	Must know
		Dentin surface modifiers	Must know
		Lubricants	Must know
	Concepts and strategies, techniques for canal preparation & cleaning instrument in size sequence, adequate enlargement of root canals mishaps & its management.	Must know	
17	Irrigation solution in endodontics	Activity of irrigants, ideal properties	Must know
		Passive dentistry	Must know
		Smear layer interference technique	Must know
		Irrigation and disinfection materials and their actions	Must know
		Endodontic sealers	Must know
		Zinc oxide eugenol cements	Must know
		Chloropercha	Must know
		Polymers	Must know

Attested CTC

*Sharaney*  
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18	Root canal sealers	Calcium hydroxide	Must know
		GIC	Must know
		Silicon based sealer	Must know
		Sealer with formaldehyde	Must know
		Properties	Must know
		Recent advances	Must know
19	Intracanal medicaments.	various intracanal medicaments used in root canal treatment	Must know
		mechanism of action	Must know
		duration of application	Must know
		complications and its management	Must know
		Precautions	Must know
20	Obturation of root canal system	Requirement of an ideal root canal filling material	Must know
		When to obturate	Must know
		Composition of gutta-percha	Must know
		Classification of G P cones	Must know
		Obturation methods using guttapercha( Thermoplasticized G P, Thermofill, MCspaden)	Must know
		Recent advances in obturating methods	Good to know
		Obturating methods for open apex(Reverse cone, rollcone, Apexification, revascularization ,Apical Plug etc)	Must know
21	Endo perio relation	Intercommunication between pulpal and periodontal tissues	Must know
		Influence of pulpal pathology and vice versa	Must know
		Theoretic pathways of osseous lesion formation	Must know
		Differential diagnosis	Must know
		Radiology alternatives	Must know
Attested CTC	Vice-Chancellor Sumandeep Vidyapeeth	Causes of discoloration	Must know
		Indication	Must know
		Case selection	Must know
		Vital and non vital bleaching methods	Must know
		Bleaching agents	Must know

*Charan*  
15/2/2021



22	Management of discolored tooth	Microabrasion	Must know
		Recent advances	Good to know
		Oral prophylaxis	Must know
		Oral hygiene instructions	Must know
		Complications	Must know
23	Traumatic injuries	Classification of fractured teeth	Must know
		Causes of injury	Must know
		Symptoms, diagnosis	Must know
		Sequelae of each type of fracture	Must know
		Avulsion	Must know
		Role of storage media	Must know
		Types of storage media	Must know
		Splinting, instructions	Must know
		Endodontic emergency	Must know
		Management of soft tissue	Must know
		Adjunctive therapy	Must know
		Endodontic therapy	Must know
24	Endodontic mishaps	Ledges	Must know
		Perforation	Must know
		Instrument aspiration,	Must know
		Breakage of instruments	Must know
		Missed canals	Must know
		Over extended filling	Must know
		Vertical root fracture	Must know
		Crown fracture management	Must know
		Tissue emphysema	Must know
Masserians kit	Good to know		
25	Root resorption	Definition	Must know
		Types (internal resorption and external resorption, intrusion, subluxation, concussion)	Must know
		Theories	Must know
		Physiologic and pathologic resorption	Must know
		Causes and clinical features	Must know
		Radiological features, histological features	Must know
		Management	Must know
Attested CTC <i>Sharaney</i> 15/2/2021		Objectives	Must know
		Indications	Must know
		Contraindications	Must know
		Local and general considerations	Must know
		Preoperative consultation	Must know



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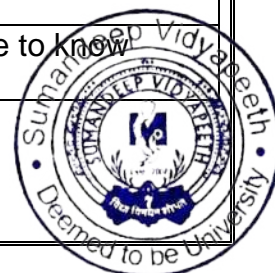
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26	Endodontic surgeries	Premedication	Must know
		Surgical instruments	Must know
		Sterilization	Must know
		Consent	Must know
		Technique	Must know
		LA	Must know
		Post operative care	Must know
		Flap design and preparation	Must know
		Haemostasis procedure	Must know
		Asepsis	Must know
		GTR	Good to know
		Repair	Must know
		Techniques of apicectomy	Must know
		Retrograde filling	Must know
		Hemisection	Must know
		Radisection	Must know
		Techniques for root implantations	Good to know
Complication	Must know		
27	Newer advances	Microscope and endodontic laser	Good to know
		Laser Doppler flowmetry.	Good to know
			Must know
28	Lasers in conservative endodontics and	Introduction only	Must know
		Types – PAP etc	Must know
		Uses	Must know
29	Magnification	Physics of magnification	Desirable to know
		Dental loops	Must know
		Microscopes(introduction only)	Good to know
30	Professional association dentist act 1948 And its amendment 1993		Desirable to know
31	Duties towards government like payments of professional tax, income tax		Desirable to know
32	<b>Attested CTC</b> Ethics		Must know
33	<b>Signature</b> Biomedical waste management 15/2/2021		Desirable to know



	including radiographic waste management		
34	Forensic odontology in relation to conservative dentistry & endodontics		Desirable to know
35	Regenerative Endodontics		Desirable to know
36	Management of anatomical variations/complexities of root canal		Desirable to know

### A. Clinical exercises to be completed in final B.D.S course

Term	Exercise break up	Work quota
First term/ posting	Works on extracted teeth 1. Class II Mo/Do amalgam 2. Root canal treatment on anterior/ single rooted teeth (viva compulsory) Works on patients 1. Class II amalgam 2. Class I amalgam/class I compound 3. Class V GIC 4. Case history 5. Vital pulp therapy in any 1 of the above restorations	10  1 (anterior)  06 05 03 05 05
Second term/posting	Work on extracted teeth 1. Class I Composite/GIC Restorations 2. Class V composite restorations 3. Root canal treatment	02  02 01
	Work on patients 1. Class II amalgam 2. Class I GIC/composite 3. Root canal treatment on anteriors/single rooted teeth	06+any quota remaining in first term 03*  05
	Peer to peer teaching and small group discussion	1 each

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\*Composite restorations will be allocated only if student has finished with silver amalgam quota

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P.S:

1. All students are required to complete the said quota of clinical/preclinical work
2. All students will have to compulsorily appear for aviva before taking any new case/ exercise taught during the posting on a patient
3. All students are also expected to complete the said model work with respect to new exercises introduced in each term
4. Demonstrations will be given on the exercises that are new to the mentioned term and year
5. For getting demonstration for root canal treatment all other exercises must be complete
6. Composite patients will only be allotted if amalgam exercises are complete.
7. Students have to necessarily learn to evaluate the veracity based on critical appraisal checklist categorized according to the best available level of evidence.

## B. Recommended Books

Sr. no.	Title	Author	Publisher
1	Arts and Science of Operative Dentistry	Sturdevant's	Mosby
2	Textbook of Operative Dentistry	Marzouk	IshiyakuEuroAmerica, Inc Publishers
3	Fundamentals of operative dentistry	James summit	Quintessence
4	Endodontic Practice	Grossman	Wolter Kluwer
5	Pathway of Pulp	Cohen Stephen	Elsevier Mosby
6	Endodontic Therapy	FranklinWeine	Quintessence

## Reference books

Sr. no.	Title	Author	Publisher
1	Textbook of Dental Material Science	Phillip	Elsevier
2	Textbook of Operative Dentistry	Vimal Sikri	Cbs
3	Clinical Operative Dentistry Principles & practice	Ramya Raghu	Emmess
4	Textbook of Endodontics	Vimal Sikri	Elsevier
5	Textbook of Endodontics	Nisha Garg	Elsevier

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## C. SCHEME OF EXAMINATION

INTERNAL PRACTICAL EXAMINATION SCHEME

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1. CLINICAL / PRACTICAL POSTING END EXAMINATION -

The Clinical posting term ending examination shall be conducted on the Last day of the posting, as under:

Term	Particulars	Marks
IVth BDS 1 <sup>st</sup> Term & 2 <sup>nd</sup> Term	Viva	25

II. INTERNAL EXAMINATION SCHEME –

1. FIRST INTERNAL / TERMINAL EXAMINATION:

S. No	Particulars	Marks
1	OSCE-OSPE	25
2	Term end patient exercise	75
Total		100

2. SECOND INTERNAL – The marks of all the four end posting exam are considered. The Total marks allotted are 100

3. THIRD INTERNAL / PRELIMS-

S. No	Particulars	Marks
1	Class 1 compound or class 2 cavity	80
2	Viva	20
Total		100

Theory As per the university rules

Practical Examination pattern

Management of any patient attending the department with carious vital posterior or anterior tooth for any of the following procedures:

Operative procedure,

1) Class I Compound (Buccal or palatal extension in molar teeth)

2) Class II

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Marks distribution

Cavity preparation	40
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Base and matrix band & retainer application	20
Restoration	30
Total	90

Endodontic procedure,  
3) Non-vital anterior tooth; Root Canal Treatment

Case history	10
Access cavity Preparation	40
Rubber dam application	15
Working length determination	25
Total	90

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## ORTHODONTICS & DENTOFACIAL ORTHOPAEDICS

- The following amendments in IV BDS Orthodontics and Dentofacial Orthopedics theory is as under: (Board of Studies Letter No. KMSDCH/BOS/1403/2016 dated 04/07/2016 and Board of Management resolution Ref: No. SV/R/2016/2754 dated 24/10/2016).

The change in IV BDS Orthodontics and Dentofacial Orthopedics theory shall be as following:

1. Forensic Orthodontics– as desirable to know

These will enable students to keep up-to-date with the current practices in Orthodontics.

### COURSE OUTCOMES ASSESSED:

Were the students able to: Diagnose, analyse and treat common orthodontic problems by preventive, interceptive and corrective orthodontic procedures. Analyse and Interpret Radiographs for orthodontic diagnosis. Explain principles and fabrication of intra-oral and extra-oral appliances. Fabricate and deliver simple orthodontic appliances

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT

S.no.	Topics	Subtopics	Distribution
1	Functional development stomatognathic system	Definition Muscle of mastication Trajectorial theory of bone formation Swallowing pattern	Must Know
		Buccinators mechanism Various movements and positions of mandible	Desirable to Know
		Speech and malocclusion clinical implications	Good to Know
2	Malocclusion	Definition Classification Description of dental, skeletal and functional Angle's Simon's Lischer's Deway's Ackerman proffit	Must Know
		WHO classification	Desirable to Know

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		British standard classification Ballaard's classification	
		Orthodontic indices	Good to Know
3	Stomatognathic system	Normal functions Abnormal functions Clinical application	Must Know
4	Etiology of malocclusion	Classification Factors – local and general Graber's Proffit's Moyer's Etiology of diaatema, crowding, spacing, open and deep bite, class II and III malocclusion and anterior/posterior cross-bite.	Must Know
		Role of genetics in malocclusion	Desirable to Know
		Butler's field theory Equilibrium theory	Good to Know
5	Child psychology	Definition Theories Erickson's theory Sigmondfrued's Pavlov's theory Behaviorial management	Must Know
		Frankel's rating types of conditioning	Desirable to Know
		Motivation of child	Good to Know
6	Orthodontic diagnosis	Diagnostic aids Classification Clinical examination of the patient Role of intraoral radiographs Hand wrist radiographs Facial photographs	Must Know
		Importance of case history Smile analysis Diagnosis and treatment planning of patients	Desirable to Know
		Panaromic radiographs Occlusograms EMG C.T. scan Photocephalograms	Good to Know
7	Anchorage	Definition Classification	Must Know

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		Types of anchorage TAD'S	Good to Know
8	Orthodontic appliances	Classification of removable and functional appliances Methods of space application Orthodontic materials Principles of soldering and welding	Must Know
9	Preventive Orthodontics	Definition Procedures undertaken Advantages and disadvantages	Must Know
10	Interceptive Orthodontics	Definition Various procedure Serial extractions Role of muscle	Must Know
11	Methods of space gaining	The various methods of gaining space Indications of extraction of various teeth	Must Know
12	Model analysis	Classification Bolton's ratio Ashlweyhowe's index Linder harth's index Carey's index	Must Know
		Korkhous analysis Mixed dentition analysis	Desirable to Know
		Occlusograms Peck and peck index Kesling set up	Good to Know
13	Cephalometrics	Definition Development of cephalograms Landmark plane identification Cephalometric tracing Down's analysis Steiner's analysis Tweed's analysis Role of cephalogram in diagnosis and treatment plan	Must Know
		Technique of taking cephalograms Rickett's analysis Mcnamara's analysis Witt's analysis VTO	Desirable to Know
		Holdaway's soft tissue analysis Computerised cephalometric system	Good to Know
14	Biology of tooth movement	Theories of tooth movement Stages of tooth movement	Must Know

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		Biological reaction to mild force Biological reaction to heavy force Deleterious effects of heavy orthodontic force Types of orthodontic forces	
		Biochemical chain of reactions after application of orthodontic forces	Desirable to Know
		Clinical implications Root resorption Orthopedic forces	Good to Know
15	Removable orthodontic appliances	Components Types of clasps and use Types of bows and use Types of springs and use	Must Know
		Expansion appliances Principles Indications of arch expansion Types of devices RME and SME	Good to Know
16	Fixed orthodontic appliances	Definition Indications and contraindications Components of fixed orthodontic appliances Edgewise, begg's and straight wire appliance	Must Know
17	Extraoral orthopedic appliances	Headgear Facemask Chin cup	Must Know
18	Myofunctional appliances	Definition and principles Muscle exercises Activator Bionator Frankel appliance Twin block Fixed functional appliances	Must Know
19	Management of cleft lip and palate	Embryology Classification Role of orthodontist	Good to Know
20	Surgical orthodontics	Classification Correction of – Mandibular prognathism and	Must Know

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		retrognathism Maxillary prognathism and retrognathism Anterior open bite and deep bite Cross bite	
21	Treatment planning	Deep bite Open bite Cross bite Class II malocclusion Class III malocclusion	Must Know
22	Retention and relapse	Need for retention Causes for relapse Types of retention devices Theories of retention	Must Know
23	Forensic orthodontics	Use of orthodontic records for human identification, Identifying individuals by rugae area, intercanine width, and lower canines as aid in the identification process	Good to Know

B.

## I. CLINICAL SYLLABUS

- Case History taking
- Case discussion
- Discussion on the given topic
- Cephalometric tracings
  - Down's Analysis
  - Steiner's Analysis
  - Tweed's Analysis

## II. PRACTICAL SYLLABUS

- Adam's clasp on anterior teeth – Gauge 0.7mm
- Modified Adams clasp on upper arch – Gauge 0.7mm
- High labial bow with Apron Spring on upper arch
  - (Gauge of labial bow – 0.9mm, Apron spring – 0.3mm)
- Coffin spring on upper arch Gauge 1mm
- Appliance construction –
  - Upper and lower Hawley's appliance
  - Anterior bite plane
  - Habit breaking appliance

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- **Posterior bite plane with Z-spring**
- **Activator**
- **Catlans appliance**
- **Upper expansion plate**

**C. RECOMMENDED BOOKS:**

TITLE	AUTHOR
William R. Profit – Contemporary	Orthodontics
Orthodontics For Dental Students	White And Gardiner
Handbook Of Orthodontics	Moyers R.E
Orthodontics - Principles And Practice	Graber T.M.
Design, Construction And Use Of Removable Appliances	Adams C.P
Clinical Orthodontics: Vol 1 & 2	Salzmann

**Reference Books**

TITLE	AUTHOR
Introduction to Orthodontic	Laura Mitchell
Rakosi Orthodontic Diagnostic Atlas	Rakosi
Removable Orthodontic Appliances	Issacson

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## D. SCHEME OF EXAMINATION

### INTERNAL PRACTICAL EXAMINATION SCHEME

The students have to appear for a Term End Examination at the end of their 15 day posting in the Department of Orthodontics twice a year in IIIrd and IVth BDS each.

#### IV YEAR BDS

#### END POSTING EXAM:

##### 1<sup>st</sup> Term:

EXERCISE	MARKS
Adams clasp	10
Labial bow	10
Spring	10
Model analysis	10
Viva	10
Total	50 Marks

##### 2<sup>nd</sup> Term:

EXERCISE	MARKS
Adams clasp	10
Labial bow	10
Spring	10
Cephalometric analysis	10
Viva	10
Total	50 Marks

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Scheme of Internal Practical Examination:

i) Terminal exam

ii) Prelims

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- **The following amendments in IV BDS Orthodontics and Dentofacial Orthopedics practical internal exam is as under: (Board of Studies Letter No. KMSDCH/BOS/1403/2016 dated 04/07/2016 and Board of Management resolution Ref: No. SV/R/2016/2754 dated 24/10/2016).**

*The change in IV BDS Orthodontics and Dentofacial Orthopedics practical internal exam shall be as following:*

1. *Introduction of OSCE in IV BDS prelims practical examination in place of spotters*

*These will enable students to develop analytical thinking.*

### TERMINAL PRACTICAL:

EXERCISE	MARKS
Adams clasp	20
Labial bow	20
Spring	20
Model analysis	20
Viva	20
Total	100 Marks

### PRELIM PRACTICAL:

EXERCISE	MARKS
Adams clasp	20
Labial bow	20
Spring	20
Cephalometric analysis	20
Viva	20
Total	100 Marks

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Theory As per the university rules.

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Practicals / Clinical: (distribution of marks)

Total Marks: 90 Marks

Subdivision:

- |                     |                         |
|---------------------|-------------------------|
| i. Spotters         | 10 x 2 marks = 20 marks |
| ii. Wire bending    | 45 marks                |
| iii. Model Analysis | 25 marks                |

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## PAEDODONTICS & PREVENTIVE DENTISTRY

### COURSE OUTCOMES ASSESSED:

Were the students able to: Perform a proper clinical history, methodologically examine the child patient, and perform essential diagnostic procedures, interpret them, and arrive at a reasonable diagnosis to treat appropriately. Treat dental diseases which occur in child patient. Repair and restore the lost / tooth structure to maintain harmony between both hard and soft tissues of the oral cavity. Manage the disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions. Manage efficiently life threatening conditions with emphasis on basic life support measure.

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT

- The following amendments in IV BDS Paedodontics & Preventive Dentistry theory syllabus is as under: (Board of Studies Letter No. KMSDCH /DFBOS / OW / 03 / AY 2017 -18 dated 12/01/2018 and Board of Management resolution Ref: No. SV/8539/2017-18 dated 02-04-2018)**

*The change in IV BDS Paedodontics & Preventive Dentistry theory syllabus shall be as following:*

- 1. Forensic Paediatric Dentistry – as desirable to know*

*These will enable students to stay up-to-date with advances in pediatric practice.*

Topics	Distribution
1. Child Abuse & Neglect	Must know
1.1. Classification, Etiology, Identification, Management.	Must know
1.2. Learn about the different types of child abuse & its implications in pediatric dentistry.	Good to know
2. Child psychology	Good to know
2.1.1. Definition	Good to know

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2.1.2. Theories of child psychology.	Good to know
2.1.3. Psychological development of children with age.	Good to know
2.1.4. Principles of psychological growth & development while managing child patient.	Good to know
3. Dental fear and its management.	Must know
3.1. Factors affecting child's reaction to dental treatment.	Must know
3.2. Know different theories of child psychology	Good to know
4. Behaviour management	Must know
4.1. Definitions.	Must know
4.2. Types of behaviour encountered in the dental clinic.	Good to know
4.3. Non-Pharmacological & pharmacological methods of Behaviour Management.	Good to know
4.4. Able to classify the children based on their behavioural patterns.	Good to know
5. Restorative dentistry	Must know
5.1. Principles of Pediatric Operative Dentistry.	Must know
5.2. Modifications required for cavity preparation in primary and young permanent teeth. – Flipped classroom	Good to know
5.3. Various Isolation techniques.	Must know
5.4. Restorations of decayed primary, young permanent and permanent teeth in children using various restorative materials like Glass Ionomer, Composites & Silver Amalgam. Stainless steel, Polycarbonate & Resin Crowns.	Good to know
6. Classification, modification & types of cavity preparation in children.	Must know
7. Pediatric Endodontics	Good to know
7.1. Principles & Diagnosis.	Good to know
7.2. Classification of Pulpal Pathology in primary, young permanent & permanent teeth.	Good to know
7.3. Management of Pulpally involved primary, young permanent & permanent teeth.	Good to know
7.4. Pulp capping-direct & indirect.	Good to know

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7.5. Pulpotomy	Good to know
7.6. Pulpectomy – Flipped Classroom	Good to know
7.7. Apexogenesis	Good to know
7.8. Apexification	Good to know
7.9. Obturation techniques and material used for primary, young permanent and Permanent teeth in children.	Good to know
7.10. Knowledge about different procedures & Materials used in Pediatric Endodontics	Good to know
8. Space Maintainers	Must know
8.1. Definitions.	Must know
8.2. Problems encountered during primary and mixed dentition phases and their Management.	Must know
9. Serial extractions	Must know
9.1. Decision making & Indications of various space maintainers / Regainers.	Must know
10. Traumatic Injuries to the teeth & Supporting structures & their management	Good to know
10.1. Classifications & Importance Squelae & reaction teeth to trauma.	Good to know
10.2. Management of Traumatized teeth.	Good to know
10.3. Classification & Management of different Traumatic Injuries in children.	Good to know
11. Interceptive Orthodontics	Must know
11.1. Identify the cause & Formulate the respective Treatment plan for various Dental malocclusions.	Must know
12. Handicapped children & their management	Good to know
12.1. Definition,	Good to know
12.2. Etiology, Classification, Behavioural and Clinical features	Good to know
12.3. Physically handicapping conditions.	Good to know
12.4. Mentally compromising conditions.	Good to know
12.5. Medically compromising conditions.	Good to know
12.6. Genetic disorders	Desirable to know
12.7. Know in brief about different handicapping conditions & their dental implications.	Desirable to know
13. Oral habits & their management	Must know
13.1. Definition, Etiology & Classification.	Must know
13.2. Clinical features of digit sucking, tongue thrusting, mouth breathing and various other secondary habits.	Must know
13.3. Management of oral habits in children.	Good to know
13.4. Learn the different oral Habits & their effects on Oro-	Good to know

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facial structures.	
14. Gingival & periodontal diseases in children	Must know
14.1. Normal gingival & periodontium in children.	Must know
14.2. Definition, etiology & Pathogenesis.	Must know
14.3. Prevention & Management of gingival & Periodontal diseases.	Good to know
14.4. Knowledge about normal gingival & periodontal Structures & their pathologic conditions	Good to know
15. Pediatric Dental Radiology	Must know
15.1. Different types of films & Projections.	Must know
15.2. Modification for pediatric patients & Handicapped children.	Good to know
15.3. Knowledge about different x-ray projections, Modifications & Advances in Radiology, in accordance with pediatric dentistry.	Good to know
16. Congenital abnormalities in children	Good to know
16.1. Definition, classification, clinical features and management.	Good to know
16.2. To know about the common congenital abnormalities found in children that affect Orofacial Structures.	Good to know
17. Dental emergencies in children and management.	Must know
17.1. Special consideration in Aspirated & Ingested Dental materials & instrument	Good to know
17.2. Know about the different emergencies that can arise in a dental situation.	Good to know
18. Dental materials used in pediatric dentistry	Must know
18.1. Tooth colored Filling materials.	Must know
18.2. Amalgam	Must know
18.3. Recent advances	
18.4. Overall knowledge of composition, manipulation,	Must know
18.5. Applicability of various materials used in pediatric Dentistry.	Must know
19. Dental Health education and school dental health programs.	Good to know
19.1. Outline of school dental health program.	Good to know
19.2. Different school dental health programs.	Good to know
19.3. Different school dental Health programs & planning for a school dental health program.	Good to know
20. Fluorides	Must know
20.1. Historical Background.	Must know
20.2. Systemic and Topical fluorides.	Must know
20.3. Mechanism of Action.	Must know
20.4. Toxicity and Management.	Must know
20.5. Knowledge about systemic & topical fluorides.	Must know
21. Forensic Pediatric Dentistry	Good to know

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21.1.	Introduction	
21.2.	Importance of Primary teeth in forensic dentistry	

**b) CLINICAL WORK:**

1. Diagrams –
  - 1.1. Habit breaking appliance
  - 1.2. Fixed space maintainer
  - 1.3. Myofunctional appliances
  - 1.4. Orthopaedic appliances
  - 1.5. Interceptive orthodontics
2. Discussion of clinical topics
3. Case history records and chair side discussion
4. Cases
5. Seminar

Quota for Final year

- |                                      |    |
|--------------------------------------|----|
| 1. Class 1 and Class 2 restoration   | 35 |
| 2. Oral Prophylaxis                  | 05 |
| 3. Fluoride application              | 02 |
| 4. Pit & Fissure Sealant application | 05 |
| 5. Extractions                       | 15 |
| 6. Clinical History taking           | 07 |
| 7. Education and Motivation          |    |

**c) RECOMMENDED BOOKS:**

Sr. No.	Title	Author	Publisher	Edition	Year
1.	Dentistry for the child and adolescent	Mc Donald	Mosby	10 <sup>th</sup>	2015
2.	Clinical Paedodontics	Finn	W B Saunders Company	4 <sup>th</sup>	2001
3.	Text book of Paedodontics	Sobha Tandon	Jaypee	3 <sup>rd</sup>	2018

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4.	Text book of Paediatric Dentistry	Nikhil Marwah	Jaypee	4 <sup>th</sup>	2018
5.	Paediatric Dentistry – Principles and Practice	Muthu S	Elsevier	2 <sup>nd</sup>	2011
6.	Text book of Paediatric dentistry	Damle S G	Arya	5 <sup>th</sup>	2017

### RECOMMENDED BOOKS FOR REFERENCE

Sr. No.	Title	Author	Publisher	Edition	Year
1.	Paediatric Dentistry (Infancy through adolescences)	Paul Casamassimo, Henry Fields ,DennisMcTigue, Arthur Nowak	Elsevier	5 <sup>th</sup>	2016
2.	Kennedy's Paediatric operative dentistry	Kennedy & Curzon	Wright	4 <sup>th</sup>	2002
3.	Primary Preventive Dentistry	Norman O. Harris	Pearson Prentice Hall	6 <sup>th</sup>	2004
4.	Behaviour Management	Wright	Mosby	1 <sup>st</sup>	1983
5.	Paediatric Dentistry	Mathewson	Quintence book	3 <sup>rd</sup>	1995
6.	Endodontics	Ingle	B.C Decker Inc.	6 <sup>th</sup>	2002
7.	Pathways of Pulp	Cohen	Elsevier	9 <sup>th</sup>	2007

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8.	Principle and of practice Paedodontics	Arathi Rao	Jaypee	3 <sup>rd</sup>	2012
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d) SCHEME OF EXAMINATION:

CLINICAL / PRACTICAL POSTING END EXAMINATION -

The Clinical posting term ending examination shall be conducted on the Last day of the posting, as under:

Term	Particulars	Marks
3. Final year 1 <sup>st</sup> and 2 <sup>nd</sup> term end	Case history and clinical procedure	25+25

II. INTERNAL EXAMINATION SCHEME –

4. FIRST INTERNAL / TERMINAL EXAMINATION:

**The following amendments in IV BDS Paedodontics & Preventive Dentistry practicals internal exam is as under: (Board of Studies Letter No. (KMSDCH/BOS/1403/2016 dated 04-07-2016 and Board of Management resolution Ref: No. SV/R/2016/2754 dated 24.10.2016)**

*The change in IV BDS Paedodontics & Preventive Dentistry practical internal exam shall be as following:*

*1. To introduce OSCE/OSPE ins place of spotters for internal exam*

*These will enable students to develop analytical thinking.*

S No	Particulars	Marks
1	Osce/Ospe	50
2	Viva	25
3	Spotters	20
4	journal	5
		Total:100

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5. SECOND INTERNAL – The marks of all the four end posting exam are considered. The Total marks allotted are 100

6. THIRD INTERNAL / PRELIMS-

S No	Particulars	Marks
1	Case History	25
2	Clinical exercise	25
3	Viva	25
4	Spotter	20
5	journal	5
		Total:100

University Practicals / Clinicals: (distribution of marks)

90 Marks

- |   |          |
|---|----------|
| 1. Spotters 10 * 2 marks                        | 20 marks |
| 2. Case History, Diagnosis & Treatment Planning | 50 marks |
| 3. Clinical procedure                           | 10 marks |
| 4. Journal                                      | 10 marks |

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## PUBLIC HEALTH DENTISTRY

### COURSE OUTCOMES ASSESSED:

Were the students able to: Describe the basis of public health, preventive dentistry, public health problems in India, Nutrition, Environment and their role in health, basics of dental statistics, epidemiological methods, National oral health policy with emphasis on oral health policy. Identify health problems affecting the society, conducting health surveys, conducting health education classes and decide health strategies. Exhibit a positive attitude towards the problems of the society and must take responsibilities in providing health. Communicate the needs of the community efficiently, inform the society of all the recent methodologies in preventing oral disease

### A. COURSE CONTENT AND APPROACH TO THE SUBJECT:

APPROACH TO THE SUBJECT	
TOPIC	APPROACH
1. INTRODUCTION TO PUBLIC HEALTH DENTISTRY	
1.1 Definition of dentistry	Must know
1.2 Pioneers of dentistry	Desirable to know
1.3 History of dentistry	Must know
1.3.1 Milestones in the field of dentistry	Good to know
1.3.2 Historical dates	Good to know
1.3.3 Dentistry in ancient times	Good to know
1.4. Aim, scope and objectives of dentistry	Must know
1.4.1 Dentistry in future	Good to know
2. PUBLIC HEALTH DENTISTRY	
2.1 Health and disease	Must know
2.1.1 Concepts, philosophy, definition and characteristics	Must know
2.2 Public health	Must know
2.2.1 Definition, concepts and history of public health	Must know
2.3 General epidemiology	Must know
2.3.1 Definition, objectives, methods, uses and screening for disease	Must know
2.3.2 Investigation of an epidemic	Desirable to know
2.3.3 Quarantine procedures	Good to know
2.4 Public health administration	Must know

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2.4.1 Priority, establishment, manpower, health management	Must know
2.4.2 infectious disease epidemiology	Desirable to know
2.4.3 Control of epidemics	Good to know
2.5 Health care delivery system	Must know
2.5.1 Centre and state, oral health policy, primary health care, national health programmes, health organizations and agencies	Must know
2.5.2 Health care delivery systems of other countries	Desirable to know
2.6 Behavioral science	Must know
2.6.1 Definition of sociology, anthropology and psychology and their role in health and oral health of community	Must know
2.7 Health economics	Desirable to know
<b>3. ENVIRONMENTAL HEALTH</b>	
3.1 Concepts and principles	Must know
3.2 Role of environment in health, Domains of environment	Must know
3.3 Physical environment	Must know
3.3.1 Role of air, water, radiation, noise in health and disease; air pollution, water pollution,	Must know
3.3.2 Water purification methods	Desirable to know
3.4 Biological environment	Must know
3.4.1 Arthropods in health and disease	Must know
3.4.2 Vector control	Desirable to know
3.5 Social environment	Must know
3.5.1 Definition and role of social environment in health and disease	Must know
3.6 Waste disposal	Must know
3.6.1 Hospital waste management	Must know
3.6.2 Methods of solid waste disposal	Desirable to know
3.6.3 Excreta disposal, sullage, sewage system	Good to know
3.7 Mass disaster and environmental health	Must know
<b>4. HEALTH EDUCATION</b>	
4.1 Introduction to health education	Must know
4.1.1 Definition	Must know
4.2 Concepts and principles	Must know
4.2.1 Theories and models of health education	Desirable to know
4.3 Planning and evaluation of health education programme	Good to know
4.3.1 Health education methods	Must know
4.3.1 Levels of health education	Must know
4.3.2 Health education aids	Must know
4.3.3 Methods of communication	Must know

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4.3.4 Effective use of audio visual aids	Must know
4.4.3 Barriers to communication	Must know
<b>5. ETHICS AND JURISPRUDENCE</b>	
5.1 Professional liabilities	Must know
5.2 Basis for medical ethics	Must know
5.2.1 Hypocratic oath	Desirable to know
5.2.2 Negligence	Must know
5.2.3 Malpractice	Must know
5.4 Principles of ethics(FLIPPED CLASSROOM)	Must know
5.4.1 Ethical rules for dentists prescribed by DCI	Must know
5.4.2 Consents	Must know
5.5 COPRA	Must know
5.5.1 Evidence	Must know
5.6 Contracts	Must know
5.7 Methods of identification in forensic dentistry	Must know
5.7.1 Age, sex identification using forensics	Desirable to know
<b>6. DENTAL PUBLIC HEALTH</b>	
6.1 Introduction to dental public health	Must know
6.1.1 Definition and difference between community and clinical health	Must know
6.2 Epidemiology of dental diseases dental caries, periodontal diseases,malocclusion, dental fluorosis and oral cancer.	Must know
6.2.1 Epidemiological studies related to oral diseases, etiology and risk factors for oral diseases	Must know
6.3 Survey procedures	Must know
6.3.1 Planning, implementation and evaluation, WHO oral health survey methods 1997, indices for dental diseases.	Must know
6.4 Delivery of dental care	Must know
6.4.1 Dental auxiliaries( operating and non- operating), incremental and	Must know
6.5 Comprehensive health care,School dental health	Must know
6.6 Payments of dental care	Must know
6.6.1 Methods of payments, dental insurance, Government plans	Must know
6.7 Preventive dentistry	Must know
6.7.1 Definition, levels, role of individual,community and profession	Must know
6.7.2 Fluorides in dentistry, plaque control programmes	Must know

## 7 RESEARCH METHODOLOGY

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7.1 Introduction	Must know
7.1.1 Definition and applications of research methodology	Must know
7.2 Types of research	Must know
7.2.1 Classification, differences, merits and demerits of research types	Must know
7.3 Designing a research protocol	Must know
7.3.1 Steps and considerations in a research protocol	Must know
7.4 Health information	Must know
7.4.1 Basic knowledge of computers,MS Office and statistical programmes	Must know
<b>8 BIOSTATISTICS</b>	
8.1 Introduction	Must know
8.1.1 Definitions and terminologies	Must know
8.2 Collection of data	Must know
8.2.1 Methods of data collection and their advantages and disadvantages	Must know
8.3 Presentation of data	Must know
8.3.1 Methods of presentation of data and its interpretation	Must know
8.4 Measures of central tendency	Must know
8.4.1 Importance of mean, median,mode and their computation	Must know
8.5 Measures of dispersion	Must know
8.5.1 Standard deviation, variance and its computation	Must know
8.6 Tests of significance	Must know
8.6.1 Parametric and non-parametric tests and their application	Must know
8.6.2 Performing statistical analysis of data	Desirable to know
8.7 Sampling and sampling techniques	Must know
8.7.1 Classification,methods, merits and demerits of each technique	Must know
8.8 Errors and bias	Must know
8.8.1 Definitions , Types of error, common biasesand ways of minimization	Must know
8.9 Calibration	Must know
8.9.1 Methods of calibration	Must know
8.10 Blind trials	Must know
<b>9. Practice management</b>	
9.1 Introduction,Place and locality	Must know
9.1.1 Definitions and terminologies	Must know
9.1.2 Premises & Layout	Must know

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9.2 Types of practice, advantages and disadvantages of each type of practice	Must know
9.2.1 Selection of equipments	Must know
9.2.2 Rules and regulations governing each practice	Must know
9.2.3 Types of practices in various countries	Desirable to know
9.2.4 recent advances and future trends in clinical practice	Good to know
9.3 Maintenance of records / accounts / audit	Must know
9.4 Requirements for starting a practice	Must know
10. Dentist Act 1948 with amendment	
10.1.1 Objectives, functions, composition, registration and membership of IDA	Must know
10.2 Dental Council of India and State Dental Councils , Composition and responsibilities	Must know
10.2.1 Objectives, functions and composition of centre and state DCI	Must know
10.3 Indian Dental Association , Head Office, State, Local and branches	Must know

## B. PRACTICAL (IV BDS)

***The following amendments in IV BDS Public Health Dentistry practical preclinical exercises is as under: (Board of Studies Letter No. KMSDCH/BOS/04/2019 dated 11/02/2019 and Board of Management resolution Ref: No. SVIR/2019/AC/7360 dt.16/03/2019)***

*The change in IV BDS Public Health Dentistry practical preclinical exercise shall be as following:*

***1. To introduce pit and fissure sealant application on two extracted teeth mounted on dental plaster in addition to statutory council guidelines.***

***These will enable students to learn preventive measures in public health dentistry practice.***

Quota:

- Oral health status assessment using WHO oral health survey methods and indices
  - OHI – S
  - Silness and Loe Index for Plaque
  - Loe and Silness Index for Gingiva
  - DMFT and DMFS
  - Dft and dfs
  - Deans Fluorosis Index

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- Visit to PHC, water Purification Plant, water Treatment plan, Public Health Lab
- Visit to the Institution of Special Care groups
- Application of Pit and fissure sealants- 2
- 2 Pit and Fissure sealant application on extracted mounted teeth as pre clinical exercise
- Fluoride Application- 2
- Comprehensives Health Care- 2 cases
- ART- 2
- Case history recording- 2
- Evidence Based Health Education Material

### C. RECOMMENDED BOOKS FOR READING

Sr. No	Title	Author	Publisher
1.	Essentials of preventive and community dentistry	Soben Peter	Arya(Medi) Publishing house
2.	Park's textbook of preventive and social medicine	K.Park	Banarsidasbharat publisher
3.	Prevention of Oral Diseases	JJ. Murray	Oxford university press
4.	Fluorides in dentistry	Ole Fjerskov	Munksgaard
5.	Dentistry dental practice and community	David F striffer Brian A Burt	W.B. Saunders company
6.	Principles of Dental public health	Jameas Morse Dunning	Harvard university press (USA)
7.	Dental Public Health- An introduction to Community Dentistry	Geoffery L Slack	John wright and sons, Bristol
8.	Oral health Survey- Basic methods	W.H.O.	W.H.O, Geneva, 1997
9.	Introduction to Bio-statistics	B.k. Mahajan	Jaypee Publishers
10.	Jong's Community Dental health	George M. Gluck Warren M.	Mosby. Publishers

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## D. SCHEME OF EXAMINATION

### INTERNAL PRACTICAL EXAMINATION SCHEME

The internal Practical examinations for IV BDS students in the subject of Public Health Dentistry, shall be conducted as under:

#### 1. CLINICAL POSTING END EXAMINATION -

The Clinical posting term ending examination shall be conducted on the Last day of the posting, as under:

Term	Particulars	Marks
Final BDS First Posting & Second Posting	Index Recording	40
	Case History & Index Recording	60
	Total marks-	100

#### II. FINAL BDS INTERNAL EXAMINATION SCHEME –

##### 1. FIRST INTERNAL / TERMINAL EXAMINATION:

S. No	Particulars	Marks
1	OSCE & OSPE	100
Total		100

2. SECOND INTERNAL – The marks of end posting exam are considered. The Total marks allotted are 100.

##### 3. THIRD INTERNAL / PRELIMS-

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S. No	Particulars	Marks
1	Long Case history	20

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2	Index Recording (2 X 20)	40
3	Health Education	15
4	Record	5
5	Viva	20
Total		100

UNIVERSITY PRACTICAL EXAM: (DISTRIBUTION OF MARKS)

- **The following amendments in IV BDS Public Health Dentistry university exam is as under: (Board of Studies Letter No. KMSDCH/BOS/02/AY2016-17 dated 08/11/2016 and Board of Management resolution Ref: No. SV/R/2016/3750 dated 22.12.2016)**

*The change in IV BDS Public Health Dentistry university exam shall be as following:*

*1. To change the marking scheme for IV BDS university practical examination*

*This will enable students concentrate more on the minute details of case history recording as it holds more weightage in university examination..*

Will be held for 90 marks.

1. Case History with treatment needs indicating level of prevention(20 marks)
2. Two epidemiological indices (30 marks including chair side viva)
3. Health education material preparation and delivery (20)
4. Spotter Identification (20)

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## SECTION V EVIDENCE BASED DENTISTRY

*Revision of Teaching pattern of evidence based subject is as under: ( Board of Management resolution no. SVDU/R/2019/1586 Dated 15/02/2019.*

*The following amendments in Evidence based Dentistry is as under: (Board of Studies Letter No. KMSDCH/BOS/16/2019 dated 26/12/2019 and Board of Management resolution Ref: No. SVDU/NOTFN/061/2019-20 dated 02/03/2020).*

*The change in Evidence based dentistry shall be as following:*

*To introduce use of google class room for all the teaching modules of evidence based dentistry and to share the e-content to the students for teaching and learning.*

### EVIDENCE BASED DENTISTRY:

Teaching Evidence Based Dentistry to dental students is the key to increasing the uptake of evidence-based treatments and practices in dentistry. Hence a formal curriculum on Evidence Based Dentistry is designed for undergraduate dental students. This EBD curriculum is built upon adult learning principles which include peer teaching, hands on training, group discussion, integration of research, reasoning, independent learning etc. Problem-based and evidence based learning in a classroom environment with a predetermined teaching scenario is also an effective method for introducing the principles of evidence based health care. The course is designed to help students understand the fundamental knowledge of EBD, including research methodology, epidemiology, biostatistics, and acquire the skills of literature searching and critically appraising the scientific literature.

The course fits integrally with EBD spread across Four years of BDS where the principles learned are applied in reading and evaluating the literature. The course is designed to take

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advantage of adult learning and includes independent, online small group and workshop learning environments.

## Aim

The aim is to facilitate a learning experience that will provide the skills to develop implement and disseminate an evidence-based approach for effective dental practice.

The course supports the following objectives:

- [1] The ability to critically evaluate new knowledge and to determine its relevance to the clinical problems and challenges presented by the individual patient.
- [2] The ability to interpret, assess, integrate, and apply data and information in the process of clinical problem solving, reasoning, and decision making.

The EBD course is a step to achieve the following competencies:

### A. Knowledge

1. Define basic statistics, epidemiologic concepts, and study designs
2. Locate high quality medical information resources and know how to use them

### B. Skills

1. Use computers and PDAs effectively to find answers to clinical questions at the point-of care
2. Complete and effective MEDLINE search of intermediate complexity
3. Assess the quality of a study

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4. Critically evaluate the medical and dental literature and weigh competing evidence

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5. Integrate evidence, clinical expertise, and patient preferences in medical decision-making

C. Attitude

1. Believe in the value of life-long learning
2. Value evidence in making medical decisions over opinion
3. Inculcate a habit of search and research
4. Patient centric scientifically sound practice

Educational objectives of the course:

At the completion of EBD teaching, students will be able to:

1. Define evidence-based dentistry, and describe the EBD process.
2. Value evidence in making medical decisions over opinion and the practice of life-long learning.
3. Distinguish between different scales of measurement; define mean, median, mode, variance, range, and probability.
4. Understand epidemiologic concepts of incidence, prevalence, rate etc.
5. Recognize differences in study design for both observational and experimental studies including randomized controlled trials, community intervention trials, cohort studies, case-control, cross-sectional, case series, community surveys, systematic reviews, and meta-analyses.
6. Discuss the strengths and weaknesses of each and the application of appropriate statistics for each study type.

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7. Recognize the value of a literature search strategy and define MeSH. Translate strategy into a MEDLINE search of moderate complexity using MeSH and limits appropriately.
8. Understand and utilize principles of statistics used in cohort and case-control studies including odds ratio, relative risk, and absolute risk. Define and recognize types of bias found in these studies.
9. Appreciate the difference between statistical significance and clinical significance
10. Understand the use of and define markers to evaluate the strength of evidence, including absolute and relative risk reduction, number needed to treat, and confidence intervals. Differentiate between disease and patient oriented evidence.
11. Understand the application of statistical and study-design concepts in evaluating clinical trials.
12. Describe and define characteristics of randomized controlled trials such as randomization, blinding, concealed allocation, intention-to-treat analysis and explain how these characteristics reduce bias.
13. Recognize appropriate statistical methods for categorical and continuous data, including Chi-squared, survival analysis, linear regression, logistic regression, and ANOVA.
14. Describe how the EBD process is used and applied in a medical setting. Distinguish between narrative review articles, systematic reviews, and meta-analysis and understand issues in using them such as publication bias, forest plots, and heterogeneity.
15. Use the basic knowledge in understanding the evidence when integrated in text and practice.

**Attested** practice.

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16. Formulate clinical problems in PICO format and undertake adequate search to get best answer.

17. Develop ability to formulate hypothesis based, community oriented questions and undertake short research projects.

### Conduct of the course:

Module based EBD curriculum incorporates EBES concepts in Teaching, Learning & Evaluation. The teaching will be student centric and interactive. Due to this adult learning method the students will develop more interest in subject. Internal Evaluation is based on their attendance, participation and performance throughout the module. The silent features of proposed Module are:

1. There shall be 4 modules for a dental student, one module per academic year.
2. Each module shall consist of 16 credit hours divided in 4 to 6 continuous days. (Preferably 2<sup>nd</sup> term of the academic year)
3. Each module shall have
  - a. Theory lectures
  - b. Practical classes &/ hands on exercise &/ role modelling
  - c. Peer Teaching, small group discussion
  - d. Internal assessment &/ Assignments
4. Three to Five Teaching staff shall be appointed for each module
5. At end of each module students shall be given module completion certificates
6. Teaching staff will be provided a certificate of appreciation after completion of one module

### CONTENT:

MODULE 1: Students shall be from First BDS

- Introduction to the concept of Evidence Based Practice

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- Introduction to Medical Database

- Internet use Protocols

Steps of Evidence based decision making

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- Internal assessment will be based on participation in peer teaching and small group discussion.

**MODULE 2: Students shall be from Second BDS**

- Research designs as related to EBP
- Levels of Evidence
- Bio Statistics and its application in EBD
- Internal assessment will be based on assignments and performance in peer teaching

**MODULE 3: Students shall be from Third BDS**

- Formulation of Question(PICO)
- Searching for Evidence
- Application to patient
- Revision of Research designs and Bio Statistics
- Internal assessment will be based on PICO & Searching assignments

**MODULE 4: Students shall be from Fourth BDS**

- Critical Appraisal of all study designs
- Internal assessment: identification of clinical problem and prepare critically appraised topic

NOC is mandatory from EBD co-ordinator/co-coordinator before appearing in university exam each year.

For repeater students NOC is not applicable.

NOC will be given to the students once they present module completion certificated for that year.

**EVALUATION :**

Students shall obtain NOC from Evidence based subject co-ordinator before appearing in the university exam of that year. NOC will be given to the students who present module completion certificate.

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At the time of university exam, the exam for this subject will also be conducted. Evidence based health care as a subject will be assessed for 50 marks and grading will be reflected in final mark sheet. (20 Internal Marks + 30 University theory examination marks)

1 to 10 marks = 'C' grade; 11 to 20 marks = 'B' grade; 20 to 30 marks = 'B+' grade  
31 to 40 marks = 'A' grade; 41 to 50 marks = 'A+' grade

Internal assessment will carry 20 marks. Internal assessment will be carried out at institutional level during module. Assessment marks will be based on their performance during peer teaching, small group discussion, assignments or project.

The paper pattern for University examinations of Evidence Based Health Care subject in all the faculties will be as mentioned below. ***The following amendments in Oral medicine and radiology university exam is as under: (Board of Studies Letter No. KMSDCH/BOS/02/AY2016-17 dated 08/11/2016 and Board of Management Resolution Ref: No. SVDU/EXAM/4958/06/2017 dated 23.06.2017)***

*The change in Evidence based dentistry university exam shall be as following:*

*1. To follow universal theory exam pattern for Evidence Based Exam as mentioned below:*

Total Marks:30

Time Duration: One hour

Q.1 Short Notes( 2 out of 3) [2x5=10 Marks]

Q.2 Descriptive Type/Application Type/Problem Solving Type Question [1x5=5 Marks]

Q.3 Short Answer (5 out of 6) [5x2=10 Marks]


Q.4 Multiple Choice Questions [5x1=5 Marks]

Marks may not be calculated for rank.

Student who excels with 'A' grade will be granted subject proficiency award

Student who secure 'A' grade in all four years should be awarded for excellence in EBD

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## SECTION VI ETHICS IN DENTISTRY

*The following amendment in curriculum for value addition is as under: (Board of Studies Letter No. KMSDCH/BOS/13/2019 dated 27/08/2019 and Board of Management resolution Ref: No. SVDU/NOTFN/06/2019-20 dated 25.11.2019)*

*The change in Ethics in Dentistry shall be as following:*

*1. To introduce a value added section of Ethics in Dentistry in III BDS*

*This will enable students to understand and follow ethics while in practice.*

### ETHICS (20 hrs. of instruction)

#### Introduction:

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

#### Course content:

##### Introduction to ethics –

- What is ethics?
- What are values and norms?
- How to form a value system in one's personal and professional life?
- Hippocratic oath.
- Declaration of Helsinki, WHO declaration of Geneva, International code of ethics.
- DCI codes of ethics.

##### Ethics of the individual –

The right person as a person  
Right to be respected  
Truth and confidentiality  
Autonomy of decision  
Doctor Patient relationship

##### Profession Ethics –

Code of conduct  
Contract and confidentiality  
Charging of fees, fee splitting  
Prescription of drugs  
Over-investigating the patient

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Malpractice and negligence

Research Ethics –

Animal and experimental research/ humanness

Human experimentation

Human volunteer research- informed consent

Drug trials

Ethical workshop of cases

Gathering all scientific factors

Gathering all value factors

Identifying the areas of value- conflict, setting of priorities

Working our criteria towards decisions

Recommended:

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

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## SECTION VIII CURRICULUM OF DENTAL INTERNSHIP PROGRAM

- The duration of Internship shall be of one year.
- All parts of internship shall be done in the dental college duly recognized/approved by the Dental Council of India for the purpose of imparting education and training to dental graduates in the country.
- The internship shall be compulsory and rotating as per the regulation prescribed for the purpose.
- The degree BDS shall be granted after completion of internship.
- The applicants seeking NOC for doing their one year paid rotating internship programme from one recognised dental college to another recognised dental college, are hereby advised to apply online to DCI. The NOC of the DCI, in reference to the details submitted by the applicant on the portal of the DCI, will be sent to the concerned applicant at his/her email ID instantly as well as to the parent dental college and the transferee dental college of the applicant. (Council Letter No.DE-1 MiscIII/2017/16511 dated 04<sup>th</sup> January 2018).

Organization of content:

The Curriculum during the 4 year of BDS training is subject based with more emphasis on learning practical skill. During one year internship the emphasis will be on competency based and community oriented training. The practical 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. The supervisors should see that proper facilities are provided in all departments and attached institutions for their performance.

Specification of teaching activities:

Didactic lectures are delivered during the four years training in BDS. These shall be voided during the internship program. 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:

Overhand projectors, slide projectors, film projectors charts diagrams, photographs, posters, specimens, models and other audiovisual aids shall be provide in all the dental colleges and attached institutions and field area. If possible, television, video and tapes showing procedures and techniques to be mastered by the interns should be provided.

Determinantsof Curriculum for internship for interns:

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. Nation 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.

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- VI. Task analysis of what graduates in dentistry in various practice settings, private and government's service actually perform.
- VII. Epidemiological studies conducted to find out prevalence of different dental health problem taking into consideration the magnitude of dental problem. Seventy of dental problems and social disruption caused by these problems.

### Objectives:

- A. To facilitate reinforcement of learning and acquisition of addition knowledge.
  - a. Reinforcement of knowledge.
  - b. Technique & resources available to the individual and the community, Social and cultural setting.
  - c. Training in a phased manner from a shared to 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 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 clinical setting and community team work.
- C. To facilitate attribute of sound attitudes and habits
  - i) Emphasis on individual and human being 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
  - i) Right and dignity of patients
  - ii) Consultation with other professionals and referral to seniors/institutions
  - iii) Obligations to peers colleagues patient families and community
  - iv) Provision of free professional services in an emergency situation
- E. To initiate individual and group action, leading to disease prevention and dental health promotion at the level of individual families and the community

### Content (Subject matter)

The Compulsory rotating paid Dental Internship shall include training in Oral Medicine & Radiology, Oral & Maxillofacial Surgery, Prosthodontics, Pedodontics, Conservative Dentistry Pedodontics Oral Pathology & Microbiology, Othodontics and Community Dentistry.

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General Guidelines:

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1. It shall be task oriented training, The interns should participate in various institutions and field programmes and be given due responsibility to perform the activities in all the department of the dental College and associated Institutions.
2. To Facilitate achievement of basic skills and attitude the following facilities should be provide 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 the field.
  - VIII. Communication aimed at inspiring hope, confidence and optimism.
  - IX. Legal rights of patients and obligations of dental graduate under forensic jurisprudence.

***The following amendments in Intern guidelines is as under: (Board of Studies Letter No. KMSDCH / DFBOS/OW/07/AY 2017-18 dated 21/05/2018 and Board of Management resolution Ref: No. SV/R/2017-18/12638 dated 07-07-2018)***

*The change in Internship guidelines shall be as following:*

- X. Compulsory training on BLS 2. training on Adobe Photoshop and Corel Draw  
This will enable students to manage emergency situation more competently.

***The following amendments in Intern guidelines is as under: (Board of Studies Letter No. KMSDCH / Dean/1105a/2018-19 dated 12/11/2018 and Board of Management resolution Ref: No. SVDU/R/2019/5209 dated 02/01/2019)***

*The change in Internship guidelines shall be as following:*

- XI. Conducting lectures, seminars, course for interns as capacity building training programmes on compulsory training on Basic Life Support, Courses on Soft skills,  
Communication, Biomedical waste, dental photography, practice management.

***This will enable students to manage emergency situation more competently.***

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**A. Oral Medicine & Radiology:**

1. Standardized examination of patients 25 Cases
2. Exposure to clinical, pathological laboratory procedures

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- |   |                        |
|---|------------------------|
| and biopsies.   | 5 Cases                |
| 3. Effective training in taking of Radiographs.<br>(Intra-Oral) I.O.(Extra Oral) E.O<br>Cephalogram | 2 Full mouth<br>1<br>1 |
| 4. Effective management of cases in wards   | 2 Cases                |

**The following amendments in Intern guidelines is as under: (Board of Studies Letter No. (KMSDCH/BOS/08/2019 dated 15/05/2019 and Board of Management resolution Ref: No. SV/R/2019/AC/10340 dated 08.07.2019)**

*The change in Internship guidelines shall be as following:*

5. Pre clinical exercise for intern 5 radiographic tracing of impacted 3rd molars on OPG and/or IOPAs

### B. 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. Cyst enucleations  | 1  |
| 6. Incision and drainage  | 2  |
| 7. Alveoloplasties, Biopsies & Frenetomies, etc...                | 3  |
| 8. Assisting/ observing major surgeries under general anaesthesia | 2  |

b. The interns shall perform the following on cancer patients:

1. Maintain file work
2. Do extractions for radiotherapy cases.
3. Perform biopsies.
4. Project.
5. Observe varied cases of oral cancers.
6. Evidence based case presentation
7. **The following amendments in Intern guidelines is as under: (Board of Studies Letter No. (KMSDCH/BOS/02/AY2016-17 dated 08/11/2016 and Board of Management resolution Ref: No. SV/R/2016/3750 dated 22.12.2016)**

*The change in Internship guidelines shall be as following:*

Peer group teaching in clinics for interns,

8. **This will enable students to manage emergency situation more competently.**

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 the period they shall attend to all emergencies under the direct supervision of surgeon during any operation:

1. Emergencies

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

2. Work in I.C.U. with particular reference to resuscitation procedures.
3. Conduct tutorials on medico-legal aspects including reporting on actual cases coming to casualty. They should have visits to law courts.
4. One Evidence based peer group discussion topic to be presented

### 3. Prosthodontics:

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 eg: reline/over Denture/<br>repaints of Maxillofacial prosthesis | 1 |
| 6. Learning Use of Face bow and semi adjustable articulators.                     |   |
| 7. Crowns   |   |
| 8. Introduction of Implants   |   |
| 9. Project  |   |

### 4. Periodontics:

- A. The Dental graduates shall perform the following procedures
- |                    |          |
|--------------------|----------|
| 1. Prophylaxis     | 15 Cases |
| 2. Flap Operation  | 2 Cases  |
| 3. Root Planning   | 1 Case   |
| 4. Curettage       | 1 Case   |
| 5. Gingivectomy    | 1 Case   |
| 6. Perio-Endo Case | 1 Case   |

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

### 5. Conservative Dentistry:

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

- |  |         |
|--|---------|
| 1. Restoration of extensively mutilated tooth        | 5 Cases |
| 2. Inlay and only Preparations                       | 1 Cases |
| 3. Use of tooth colored restorative materials        | 4 Cases |
| 4. Treatment of discolored vital and non-vital teeth | 1 Cases |

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- |  |         |
|--|---------|
| 5. Management of dento-alveolar fracture                                 | 1 Cases |
| 6. Management of pulpless, single-rooted teeth without periapical lesion | 4Cases  |
| 7. Management of acute dento alveolar infection                          | 2 Cases |
| 8. Management of pulpless, single-rooted teeth with periapical lesion    | 1Cases  |
| 9. Non-surgical management of traumatized teeth during formative period. |         |

## 6. Pedodontics and Preventive Dentistry:

During their posting in Pedodontics and dental home the dental gradates 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   | 1 Cases  |
| 5. Fabrication and insertion of space maintainers                 | 1 Cases  |
| 6. Oral habits breaking appliances                                | 1 Cases  |
| 7. Project  |          |
| 8. Camps  |          |

## 7. Oral Pathology and Microbiology:

The interns shall perform the following:

- |   |         |
|---|---------|
| 1. History-recording and clinical examination               | 5 Cases |
| 2. Blood, Urine and Sputum examination                      | 5 Cases |
| 3. Exfoliative Cytology and smears study, age determination | 2 Cases |

**The following amendments in Intern guidelines is as under: (Board of Studies Letter No. (KMSDCH / DFBOS/OW/07/AY 2017-18 dated 21/05/2018 and Board of Management resolution Ref: No. SV/R/2017-18/12638 dated 07-07-2018)**

*The change in Internship guidelines shall be as following:*

- |  |         |
|--|---------|
| 4. Biopsy-Laboratory Procedure & resorting | 1 Cases |
| 6. forensic odontology exercise            |         |

**The following amendments in Intern guidelines is as under: (Board of Studies Letter No. (KMSDCH/BOS/1403/2016 dated 04/07/2016 and Board of Management resolution Ref: No. SV/R/2016/2754 dated 24.10.2016)**

*The change in Internship guidelines shall be as following:*

- |  |  |
|--|--|
| 7. Two days biodesigning will be added during the period of routine department posting |  |
| <del>8. project/camp</del>   |  |

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- 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 and processing of myo-functional appliances.
  3. Treatment of plan options and decisions
  4. Making of bands, bonding procedures and wire insertions.
  5. Use of extra oral anchorage and observation of force values.
  6. Retainers.
  7. Observe handling of Patients with oral habits causing malocclusions

The Interns shall do the following laboratory work:

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

## 9. Public Health Dentistry:

1. The interns shall conduct health education sessions for individuals and group on oral health public health nutrition, behavioral sciences, environmental health, preventive dentistry and epidemiology.

**The following amendments in Intern guidelines is as under: (Board of Studies Letter No. (KMSDCH/DBOS/1105a/2018 dated 12/11/18 and Board of Management resolution Ref: No. SVDU/R/2019/5209 dated 02/01/19)**

*The change in Internship guidelines shall be as following:*

2. They shall conduct a short term epidemiological survey in the community or in the, alternate participate in the planning and methodology including RHS

*This will enable student to develop a sense of service to the society*

3. They shall arrange effective demonstrations of:

- A) Preventive and interceptive producers for prevalent dental diseases.
- B) Mouth-rising and other oral hygiene demonstrations 5Cases
- C) Toothbrushing techniques 5Cases
4. Conduction of oral health education programmers at
  - A) School setting 2
  - B) Community setting 2
  - C) Adult Education Programmers 2
5. Preparation of Heath Education Materials 5

**Attested by**

6. Exposure to team concept and National health Care systems:

- a) Observation of functioning of heath infrastructure.
- b) Observation of functioning of heath care team including multipurpose workers male and female, health education and other workers.

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- c) Observation of at least one national Health Programme
- d) Observation of interlinkages of delivery of oral health care with Primary Health Care. Mobile Dental clinics, as and when available, should be provided for this teachings.

## Elective Posting

The interns shall be posted for 15 days in any of dental departments of their choice mentioned in the foregoing.

**Continuing Dental Education:** The Interns shall from time to time attend various CDE programs, conferences inside and outside the campus.

***The following amendments in Intern guidelines is as under: (Board of Studies Letter No. (KMSDCH/DBOS/1105a/2018 dated 12/11/2018 and Board of Management resolution Ref: No. SVDU/R/2019/5209 dated 02.01.2019)***

*The change in Internship guidelines shall be as following:*

The Institution shall compulsorily conduct Lecture series on topics like ethics and jurisprudence, Sterilization, infection control, waste management, CPR and Basic Life support, and courses on soft skills, communication, dental photography and Practice management etc. Attendance in these lectures conducted in the institution is compulsory for internship completion.

*These changes will enable student to be more competent and confidently handle dental practice.*

## Student Exchange, Field Visit & Field Project:

***The following amendments in Intern guidelines is as under: (Board of Studies Letter No. (KMSDCH/DBOS/12/2019 dated 26/08/2019 and Board of Management resolution Ref: No. SVDU/NOTFN/06/2019-20 dated 25.11.2019)***

*The change in Internship guidelines shall be as following:*

The Interns shall from time to time attend various student exchange, field visits and field project from time to time.

*These changes will enable student to be updated with current advances, boost commeredre, team work, research studies along with community well being..*

## Evaluation

### 1. Formative Evaluation:

Day to day assessment of the interns during their internship posting should be done. The objective is that all the items must acquire necessary minimum skill required for carrying out day to day professional work competently. This can be achieved by maintaining records and performance 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 rotated to performance. It shall form a part of formative evaluation and shall also constitute component of final grading of interns.

### Summative Evaluation:

It shall be based on the observation of the supervisors of different departments and the records and performance data / log book maintained by the interns. Grading shall be done accordingly.

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## Rural Service

In the rural services, the student will have to participate in –

1. Community Health Monitoring programs and services which include Preventive, Diagnostic and corrective procedures
2. To create educational awareness about dental hygiene and diseases.
3. Conduction of Oral Health Education Program at-
  - (a) School Setting -5
  - (b) Community Setting -5
  - (c) Adult Education Program -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 tobacco consumption and the predisposition to oral cancer- Two Lectures per student.

## Period of Postings

1. Oral Medicine & Radiology - 1 month
2. Oral and Maxillofacial Surgery - 1 ½ months
3. Prosthodontics - 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. Community Dentistry /Rural Services - 3 months
10. Elective - 15 days

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