BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY), PUNE

Faculty of Dentistry
MDS
New Syllabus

MDS COURSE REVISED REGULATIONS

Year 2018

BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITYDENTAL COLLEGE AND HOSPITAL, PUNE.

Bharati Vidyapeeth was established in Pune in 1964by the eminent educationist and visionary Hon'ble Dr. Patangrao Kadam with the objective of bringing about intellectual awakening and all-round development of people of our country through education.

Vision: To be a World Class University "Transformation through Dynamic Education"

The mission that Bharati Vidyapeeth has defined for itself is to bring about intellectual awakening of people through the spread of education and to prepare human resources needed for all round development, particularly economic, of the country.

Office:

The corporate office of Bharati Vidyapeeth is located in the prestigious area of Deccan Gymkhana in thecity of Pune. Its 10 storied building, once the tallest in Pune, is a landmark of the city.

Deemed University Status:

April 26, 1996 was the moment of crowning glory in the life of Bharati Vidyapeeth, as well as, of Dr. Patangrao Kadam. It was the day on which a cherished dream came true for Dr. Patangrao Kadam. It was the day the Government of India, on the recommendation of the University Grants Commission, granted the status of "Deemed University" to a cluster of 12 institutions of Bharati Vidyapeeth in appreciation of their academic excellence. Thus, Bharati Vidyapeeth University came into existence on that day.

Achievements of Bharati Vidyapeeth (Deemed to be University):

Accredited & Re-Accredited with 'A' Grade by NAAC in 2004 & 2011.

Re-Accredited again with A+ by 'NAAC' in 2017 54th Rank among universities by NIRF-2017

The Ministry of Human Resource Development, Government of India has accorded "A" grade status to theUniversity

The University Grants Commission has conferred 12(B) status on the University, which makes it eligible toenter into collaborations with universities abroad.

The University has been among the Top 10 Universities preferred by Overseas Students for HigherEducation in India.

Salient Features:

University is recognized by Government of India

All the programs are approved by UGC and respective statutory councils

It is a Member of Association of Indian Universities (AIU) & Association of Commonwealth Universities(ACU)

There are 29 Constituent Institutions including 3 Research InstitutesIt has 8 Campuses

Students come from all over India and 48 countries
The institution of Bharati Vidyapeeth (BV) was accorded Deemed University status in1996 for its academic excellence.
The Bharati Vidyapeeth(Deemed to be University) has established academic excellence and Offers programs in innovative and emerging areas.
It is multi-campus and multi-disciplinary and is catering to the needs of urban and rural students.It has significant achievements in research.
It has world-class infrastructure and facilities, launched several innovative academic programmes, best teaching-learning processes and has entered into National, as well as, International collaborations.

Website:
www.bvuniversity.edu.in

PREAMBLE

Bharati Vidyapeeth (Deemed to be University) has completely accepted the Dental Council of India's"MDS Regulation 2017" received in September 2017.

The said Regulation is applicable to all the Dental

Specialties.The Different Dental Specialties are as under:

1. Oral and Maxillofacial Prosthodontics and Implantology
2. Periodontology
3. Oral and Maxillofacial surgery
4. Conservative Dentistry and Endodontics
5. Orthodontics and Dentofacial orthopedics
6. Oral and Maxillofacial Pathology and Microbiology
7. Public health Dentistry
8. Pediatric and Preventive Dentistry
9. Oral Medicine and Radiology

Bharati Vidyapeeth Deemed To Be University Faculty of Dentistry

GENERAL PROGRAM OUTCOMES FOR MDS

PO 01	Understand the basic medical and dental sciences relevant to dentistry.
PO 02	Assess and diagnose patients with common dental ailments or diseases.
PO 03	Provide oral healthcare within the scope of general dentistry in a safe, ethical, legal and socially acceptable manner.
PO 04	Understand the unique needs of vulnerable and special care patients (with medical, physical, cognitive, emotional or developmental challenges).
PO 05	Communicate effectively with patients, caregivers, healthcare professionals and support personnel.
PO 06	Integrate biomedical knowledge, best quality research, clinical expertise and values to provide evidence-based oral healthcare comprising of modern treatments and ICT-enabled approaches.
PO 07	Lead oral healthcare teams, collaborate with other healthcare providers and actively participate in professional and community organizations.
PO 08	Advocate the profession for promotion and improvement of community health.
PO 09	Possess awareness of environmental issues and willingness to participate in conservational and sustainability practices.
PO 10	Possess lifelong commitment to learning and professional development.
PO 11	Conduct research and publish it in index based journal and present the research study at Conferences and PG Conventions.
PO12	Willing to share Knowledge with juniors, colleagues and interested learners.
PO13	Effectively and efficiently perform all evidence based basic as well as advanced procedures for wellbeing of the patient.
PO14	Understand the advances in treatment modalities of the respective specialty
PO15	Refer the cases to concerned specialty when needed
PO16	Deliver Interdisciplinary treatment to the patient with co-operation and co-ordination with other specialty.
PO17	Continue to evince keen interest in research and should evaluate the area of research in the respective specialty.
PO18	Develop communication and technology skills and keep updating and increasing knowledge by attending scientific conferences and activities.

COMPETENCIES FOR EACH SPECIALTY

1. ORAL AND MAXILLOFACIAL PROSTHODONTICS AND IMPLANTOLOGY

Post Graduates of Bharati Vidyapeeth (Deemed to be University) Dental College in the subject of Prosthodontics and Crown & Bridge must demonstrate the following competencies for specialty practice of Prosthodontics

K	**Domain : Knowledge and Understanding:**
K.1	Have adequate knowledge, and understanding of applied basic medical science, in general and in particular to head and neck regions.
K.2	Understand the various Dental Materials and Biomaterials used in the specialty and be able to provide appropriate indication, understand the manipulation characteristics and be adeptwith recent advancements of the same
K.3	Understand the importance of case history recording ,diagnosis and planned treatment for patients requiring Prosthodontic therapy
K.4	Understand the merits of comprehensive rehabilitation concept for patient treatment
K.5	Knowledge pertaining to reading and interpretation of radiographs, and other investigations for the purpose of diagnosis and Prosthodontic treatment planning.
K.6	Possess theoretical and clinically relevant knowledge of tooth and tooth surface restorations, Removable Prosthodontics, fixed Prosthodontics, maxillofacial and Craniofacial Prosthodontics, Implant Prosthodontics, Esthetic dentistry, Temporo-mandibular disorders and occlusion
K.7	Know how to diagnose a failed prosthesis and plan corrective treatment and after care for patients
K.8	Identify social, cultural, economic, environmental, educational and emotional determinants of the patients and consider them in planning the treatment
K.9	Have knowledge of age changes, geriatric psychology, nutritional considerations and prosthodontic therapy in the aged population.
K.10	Understand and identify cases, which are beyond the scope of his/her specialty / competence, and recognise the importance of interdisciplinary case management
K.11	Know essentials of personal hygiene, infection control, prevention of cross infection and safe disposal of waste.
K.12	Update knowledge by self-study and by attending courses, conferences and seminars pertaining to specialty
K.13	Demonstrate understanding and knowledge required for carrying out research, both in basic and clinical areas
K.14	Have essential knowledge on ethics, laws, and Jurisprudence in Prosthodontics.
S	**Domain- Skills: Cognitive, Communication, IT, Numerical, Psychomotor**

S.1	Apply knowledge of basic biomedical sciences and Prosthodontics for patient assessment and treatment.
S.2	Examine patients requiring Prosthodontic therapy, formulate an outcome - driven treatment plan, and execute it in a systematic and precise manner following prosthodontic principles.
S.3	Restore the lost functions of the stomatognathic system namely speech, mastication, esthetics to provide quality health care for the craniofacial region
S.4	Demonstrate the clinical competence necessary to carry out appropriate treatment at higher level practice skills currently available in the specialty of Prosthodontics
S.5	Perform clinical and laboratory procedures related to Removable Prosthodontics, fixed Prosthodontics, maxillofacial Prosthodontics, Implant Prosthodontics and Esthetic dentistrywith competent dexterity and skill.
S.6	Interact with other specialty experts including medical specialty whenever interdisciplinary case management is required for comprehensive rehabilitation of a patient requiring
S.7	Apply the concepts of Preventive Prosthodontics clinically whenever deemed necessary.
S.8	Manipulate dental materials and biomaterials pertaining to Prosthodontics with proficiency, as per the clinical situation.
S.9	Communicate effectively with patients, staff and other health care providers
S.10	Communicate with dental laboratories and technicians and evaluate dental laboratory outcomes.
S.11	Deliver post treatment care for patient including management of failed prosthesis and faulty prosthesis
S.12	Interpret various radiographs like IOPA, OPG and CBCT and analyze investigation results relevant to the execution, outcome and prognosis of any particular prosthodontic treatment
S.13	Use information technology tools and carry out research both basic and clinical, with the aims of publishing his / her work and presenting his / her work at various scientific forums
V	**Domain- Values: Ethics, Professionalism, Affective, Interpersonal, Responsibility**
V.1	Apply behavioural science principles and patient-centered approaches while rendering prosthodontic care to all patients in general and geriatric patients in particular.
V.2	Guide and counsel the patient with regards to various treatment modalities available.
V.3	Willing to adopt new methods and techniques in Prosthodontics from time to time based on scientific research, which is in patient's best interest.
V.4	Develop an attitude towards quality, excellence and precision in delivering in prosthodontic treatment.
V.5	Willing to share the knowledge and clinical experience with professional colleagues
V.6	Demonstrate a high level of ethical and responsible behavior.
V.7	Demonstrate evidence-based practice while handling cases.

V.8	Willing to contribute significant, relevant and useful information, concept or methodology to the scientific fraternity whenever feasible.
V.9	Respect patient's rights and privileges.

2. PERIODONTOLOGY

Post Graduates of Bharati Vidyapeeth (Deemed to be University) Dental College in the subject of Periodontology must demonstrate the following competencies for practice of Periodontics.	
K	**Domain-Knowledge and Understanding:**
K.1	Understanding in basic subjects like applied anatomy,physiology, biochemistry, General pathology and microbiology and pharmacology related to the oro-facial tissues.
K.2	Knowledge on growth and development of stomatognathic system in general and the periodontium in particular.
K.3	Knowledge and understanding of the normal anatomy and physiology of periodontal tissues.
K.4	Knowledge about research methodology and biostatistics.
K.5	Understanding regarding different classifications and epidemiology of periodontal diseases.
K.6	Knowledge of etiopathogenesis and biochemical,microbiologic,immunologic,and genetic aspects of periodontal pathology.
K.7	Understanding of the common oral and systemic diseases affecting the periodontium and the interrelationship between periodontal disease and various systemic conditions.
K.8	Knowledge of principles of instrumentation, periodontal surgeries and management of medical emergencies.
K.9	Critically analyze the various nonsurgical and surgical treatment options and deliver it with most efficient manner based on evidence-based dentistry
K.10	Updated knowledge on the recent advancements in treating periodontal disease and be able to modify their treatment accordingly.
K.11	Update the knowledge by attending courses, conferences and seminars relevant to Periodontics or by self-learning process.
K.12	Understanding regarding preventive periodontal measures and motivation and education of the public to prevent periodontal disease
K.13	Knowledge of interdisciplinary approach for the overall treatment of patient's oral cavity and referral to other specialties of dentistry if needed for the same.
K.14	Develop knowledge in the science of oral implantology and be aware of the various designs, placement of oral implants, follow up of implant patients and treatment of any peri-implant disease
S	**Domain-Skills: Cognitive,Communication,IT,Numerical,Psychomotor**

S.1	Able to design a research study and carry out dissertations.
S.2	Develop skill to document and present cases at institute,state,national and International level.
S.3	Develop skill regarding writing and publication of article in peer reviewed journals.
S.4	Critically evaluate published articles and learn how to gather, assimilate and read Data from library resources including online resources.
S.5	Develop soft skills for effective communication with patients
V	**Domain- Values: Ethics, Professionalism, Affective, Interpersonal, Responsibility**
V.1	Apply behavioural science principles and patient-centred approaches while rendering Periodontal care to all patients in general and geriatric patients in particular.
V.2	Guide and counsel the patient with regards to various treatment modalities available.
V.3	Willing to adopt new methods and techniques based on scientific research, which is in patient's best interest.
V.4	Develop an attitude towards quality, excellence and precision in delivering Periodontal treatment treatment.
V.5	Willing to share the knowledge and clinical experience with professional colleagues
V.6	Demonstrate a high level of ethical and responsible behavior.
V.7	Demonstrate evidence-based practice while handling cases.
V.8	Willing to contribute significant, relevant and useful information, concept or methodology to the scientific fraternity whenever feasible.
V.9	Respect patient's rights and privileges.

3. ORAL AND MAXILLOFACIAL SURGERY

Postgraduates of Bharati Vidyapeeth (Deemed to be University) Dental College must demonstratethe following competencies for Oral and Maxillofacial Surgery by the end of MDS program.	
K	**Domain- Knowledge and Understanding:**
K.1	Clinical Knowledge: Demonstrate a comprehensive understanding of oral and maxillofacial anatomy, pathology, and surgical principles to make informed clinical decisions.
K.2	Diagnostic Skills: Possess advanced diagnostic abilities to accurately assess and diagnose a broad spectrum of oral and maxillofacial conditions, including the use of imaging modalities.
	Domain-Skills: Cognitive, Communication, IT, Numerical, Psychomotor
S.1	Surgical Proficiency: Exhibit technical proficiency in performing a wide range of oral and maxillofacial surgical procedures, encompassing dento-alveolar surgery, trauma management,tumor resection, Reconstruction and corrective jaw surgery.
S.2	Patient Management: Effectively manage pre-operative, intra-operative, and post-operative care, including the ability to handle complications and provide optimal treatment outcomes.

S.3	Anesthesia Management: Competently administer appropriate local anesthesia, ensuring patient safety and comfort during surgical procedures.
S.4	Demonstrate proficiency in teaching oral and maxillofacial surgery.
V	**Domain-Values: Ethics, Professionalism, Affective, Interpersonal, Responsibility**
V.1	Interdisciplinary Collaboration: Collaborate effectively with other healthcare professionals, fostering interdisciplinary teamwork for comprehensive patient care.
V.2	Communication Skills: Demonstrate clear and concise communication skills with patients, their families, and colleagues, ensuring understanding and informed decision-making.
V.3	Professional Ethics: Adhere to high ethical standards, maintaining patient confidentiality, and practicing with integrity in all aspects of oral and maxillofacial surgery.
V.4	Continuing Education: Engage in continuous learning and stay updated on the latest advancements in oral and maxillofacial surgery through participation in conferences, workshops, and ongoingprofessional programs.
V.5	Research and Scholarly Activity: Contribute to the field through research, publications, and scholarly activities, advancing knowledge and innovation in oral and maxillofacial surgery.

4. CONSERVATIVE DENTISTRY

Postgraduates of Bharati Vidyapeeth (Deemed to be University) Dental College must demonstratethe following competencies for Conservative Dentistry and Endodontics by the end of MDS program.	
K	**Domain- Knowledge and Understanding:**
K.1	Describe the etiology, pathophysiology, diagnosis, prognosis, and treatment of restorative and endodontic conditions including contemprary management of dental caries, trauma, endodonticsurgery, endodontic periodontic conditions and esthetic corrections.
K.2	Demonstrate understanding of basic sciences as relevant to conservative dentistry and endodontics.
K.3	Demonsrate necessary skills for differential diagnosis, interdisciplinary approachs, and need for referral.
K.4	Update knowledge by attending cdes, workshops and conferences.
K.5	Develop pedagogical and presentations skills necessary for teaching undergraduates and presenting research papers in conferences.
K.6	Possess necessary knowledge to write the university theory exams in basic sciences, conservative and esthetic dentistry, endodontics and essay.
	Domain-Skills: Cognitive, Communication, IT, Numerical, Psychomotor
S.1	Take proper case history, perform clinical examination and necessary tests to arrive at a diagnosis and make a treatment plan.

S.2	Perform all levels of esthetics, restorative as well as nonsurgical and surgical endodontic treatment, carry out relatively complicated procedures such as the management of trauma and endo-perioconditions.
S.3	Provide basic life support in emergency situations.
S.4	Emergency management of acute pulpal and periapical conditions. S5. Adhere to good clinical practices for infection control.
V	**Domain-Values: Ethics, Professionalism, Affective, Interpersonal, Responsibility**
V.1	Professional integrity and honesty should be top priority.
V.2	Adoption of strict ethical standards in all aspects of restorative dentistry, non-surgical and surgical endodontics.
V.3	Dental care must be provided to every patient regardless of religion, caste or social status.
V.4	Development of communication skills to explain various procedures and expected results in order to obtain a true informed consent from the patient.
V.5	He/she should not carry out any heroic procedures and must not hesitate to consult teachers and senior colleagues when in doubt.
V.6	Respect patient's rights and previliges, including patient's right to confidentiality.

5. ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

Postgraduates of Bharati Vidyapeeth (Deemed to be University) Dental College must demonstrate the following competencies for Orthodontics and Dentofacial orthopedics by the end of MDS program.	
K	**Domain- Knowledge and Understanding:**
K.1	To have acquired adequate knowledge and understanding of growth and development of craniofacial structures, aetiology, pathophysiology and diagnosis, treatment planning of variouscommon malocclusions.
K.2	Basic sciences relevant to the practice of Orthodontics
K.3	Interaction of social, cultural, economic, genetic and environmental factors and their relevance to management of oro-facial deformities
K.4	Factors affecting the long-range stability of orthodontic correction and their management
K.5	Personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste, keeping in view the high prevalence of Hepatitis and HIV and other highly contagiousdisease.
K.6	The students will be encouraged to follow and adapt to the recent advances with the help of thorough research and application of biostatistics and apply them in their routine procedures.
	Domain-Skills: Cognitive, Communication, IT, Numerical, Psychomotor

S.1	To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures, and interpret them and arrive at a reasonable diagnosis about the Dentofacialdeformities.
S.2	To be competent to fabricate and manage the most appropriate appliance – intra or extra oral, removable or fixed, mechanical or functional, and active or passive – for the treatment of any orthodontic problem to be treated singly or as a part of multidisciplinary treatment of orofacial deformities.
V	**Domain-Values: Ethics, Professionalism, Affective, Interpersonal, Responsibility**
V.1	Develop an attitude to adopt ethical principles in all aspects of Orthodontics practi
V.2	Treatment care is to be delivered irrespective of the social Status, cast, creed or colleagues
V.3	Willingness to adopt, after a critical assessment, new methods and techniques of orthodontic management developed from time to time based on scientific research, which are in the best interest of the patient.
V.4	Respect patients' rights and privileges, including patient's right to information and right to seek a second opinion.

6. ORAL AND MAXILLOFACIAL PATHOLOGY ANDMICROBIOLOGY

Postgraduates of Bharati Vidyapeeth (Deemed to be University) Dental College must demonstratethe following competencies for Oral and Maxillofacial Pathology by the end of MDS program.	
K	**Domain-Knowledgeand Understanding:**
K.1	Gain a thorough understanding of fundamental aspects, including tooth development physiology,temporomandibular joint, occlusion, and detailed morphology of deciduous and permanent teeth.
K.2	Acquire sufficient knowledge in etiology, pathogenesis, histopathology, laboratory tests, and diagnosis.
K.3	Identify the sign and symptoms of various oral diseases and their important characteristic features.
K.4	Demonstrate knowledge of microbiological concepts relevant to oral health, including the identification of pathogenic microorganisms.
K.5	Evaluate laboratory tests and diagnostic procedures used in oral pathology and microbiology.
K.6	Foster critical thinking to assess and analyze complex clinical cases, applying evidence-based approaches to diagnosis and treatment.
	Domain-Skills:Cognitive,Communication,IT,Numerical,Psychomotor
S.1	Foster an approach towards diagnosing Oral and Maxillofacial lesions, along with a broader perspective on general dentistry.
S.2	Cultivate an interest in research activities.

V	**Domain-Values:Ethics,Professionalism,Affective,Interpersonal,Responsibility**
V.1	Demonstrate a willingness to share knowledge and clinical experience with professional colleagues.
V.2	Develop an attitude to seek opinions from medical and dental specialists when necessary.
V.3	Respect patient rights and privileges, including the right to information and seeking a secondopinion.

7. PEDRIATRIC AND PREVENTIVE DENTISTRY

Postgraduates of Bharati Vidyapeeth (Deemed to be University) Dental College must demonstrate the following competencies for practice of Paediatric and Preventive Dentistry by the end of MDSprogram.	
K	**Domain-Knowledgeand Understanding:**
K.1	Understanding in basic subjects like applied anatomy, physiology, biochemistry, general pathology,microbiology and pharmacology related to the oro-facial tissues.
K.2	Understanding of the common and complex oral and systemic diseases affecting the dental and oral structures, function and management in children.
K.3	Knowledgeofmanagementofmedicalemergencies pertaining to dental and oral care in children.
K.4	Knowledge about the current best evidence pertaining to restorative and surgical management of dental conditions such as dental caries, traumatic dental injuries, developmental defects, etc., inchildren.
K.5	Understanding of various methods for continuous professional development such as attending courses, conferences and seminars relevant to Paediatric and Preventive Dentistry and the self-learning process for lifelong learning.
K.6	Knowledge of interdisciplinary approach for the overall treatment of patient's oral cavity and referral to other specialties of dentistry if needed for the same.
	Domain-Skills:Cognitive,Communication,IT,Numerical,Psychomotor
S.1	Ability to design research study protocol and carry out independent research work.
S.2	Soft skills for academic writing (peer-reviewed journals, books, book chapters) and presentations at national and international level.

8. ORAL MEDICINE AND RADIOLOGY

Postgraduates of Bharati Vidyapeeth (Deemed to be University) Dental College must demonstratethe following competencies for Oral Medicine and Radiology by the end of MDS program.	
K	**Domain- Knowledge and Understanding:**
K.1	Understand the significance of history taking, clinical examination and evaluation of the patient with oral mucosal disorders, temporo mandibular joint disorders and salivary gland disorders.
K.2	Should be able to co relate the oral manifestations of systemic conditions and should know the dental implications of the same.
K.3	Should be aware of the latest development in the field of oral medicine and radiology and the skills required for the practice of oral medicine and radiology.
K.4	Should be able to provisionally diagnose oral mucosal disorders, temporo mandibular joint disorders and salivary gland disorders and select appropriate investigations to aid in the diagnosis,management and prognosis of the same.
K.5	Should understand basic research methodology and biostatistics as applied to clinical dentistry and research.
K.6	Should know all the principles of ethics and jurisprudence when conducting biomedical research on human participants.
K.7	Should be well versed in all dental and maxillo-facial imaging modalities including their indications, advantages and limitations.
K.8	Should have sufficient knowledge to interpret all dental and maxillo-facial imaging modalities like CBCT, CT and MRI (of maxillo-facial region only)
K.9	Should have knowledge of pharmacology of all drugs prescribed in the practice of Oral Medicine.
K.10	Should have knowledge on tobacco and its harmful effects on the oral and systemic health of the individual including various methods of counselling to stop the habit.
K.11	Should have knowledge of age and gender estimation in Forensic Odontology by using dental and maxillo-facial imaging.
K.12	Should be able to refer the patient to a specialist of other fields for further management.
K.13	Should be aware of various treatment modalities for managing various oral mucosal disorders including the implementation of medicinal management.
K.14	Should be able to corelate investigation reports with oral findings of oral pathologies in the oral and maxillo-facial region 9Clinical co relation)
K.15	Should be aware of all the latest guidelines in the field of radiation protection and should be able to correctly select the appropriate imaging modality.

K.16	Should be aware of the latest Atomic Energy Regulatory Board (AERB) norms for starting a diagnostic imaging center in addition to the norms for General Dental practice.
K.17	Should be aware of the various medical emergencies in general dental practice and the practice of oral medicine.
K.18	Should be aware of psychosomatic aspects of oral diseases.
K.19	Should be aware of the current trends in Oral Medicine and Radiology.
	Domain-Skills: Cognitive, Communication, IT, Numerical, Psychomotor
S.1	Demonstrate sound theoretical knowledge and understanding of basic relevant sciences namely, the applied anatomy of the face and oral cavity, the basic physiologic processes, pathologic processes and the basics of pharmacologic applications
S.2	Be proficient in physical examination of the patient, identification of normal and abnormal functioning of the various systems of the body
S.3	Possess ample understanding and skill in the diagnosis and diagnostic methods, ionizing radiation, its applications in dentistry and its limitations.
S.4	Apply high moral and ethical standards while carrying out clinical and radiographic examinations
S.5	Be proficient in detailed physical examination of the oral and paraoral structures, identification of pathologies and techniques involved in conventional and advanced diagnostic radiographicexamination.
S.6	Acquire skill in imaging modalities for various oro-facial diseases
S.7	Be proficient in describing the etiology, pathophysiology, principles of diagnosis and management of common oro facial disorders.
S.8	Apply knowledge to diagnose various pathologies affecting the head and neck region by proper identification of clinical features as well as ordering the proper investigative procedures to strengthen the diagnosis.
S.9	Apply knowledge to medically manage patients with systemic disorders and formulate dental management protocol.
S.10	Be proficient in formulating a differential diagnosis and investigations plan and frame the treatment strategy.
S.11	Student should be an expert/possess skill at synthesizing ideas and rendering a suitable opinion of the problem presented
S.12	Apply skill in recognizing the importance of intra- and extra- oral radiographs in forensic identification and age estimation as well as significance of dental records with respect to law.
V	**Domain-Values: Ethics, Professionalism, Affective, Interpersonal, Responsibility**
V.1	Adopt ethical principles in all aspects of practice and Foster professional honesty and integrity.

V.2	Deliver patient care irrespective of social status, caste, creed or religion of the patient.
V.3	Develop communication skills, to explain various options available and obtain a true informed consent from the patient.
V.4	Apply high moral and ethical standards while carrying out human or animal research.
V.5	Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.
V.6	Clinical and didactic skills in encouraging younger doctors to attain learning objectives.
V.7	The student would develop communication skills and ability to explain the disease process to the patient and to obtain an informed consent from the patient.
V.8	Educate the patient regarding hazardous effects of Tobacco using Audio visual aids
V.9	Counsel the patient to quit the tissue abuse habit to improve oral health
V.10	Apply high moral and ethical standards while carrying out clinical and radiographic examinations.
V.11	Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

REGULATION
PART– I
PRELIMINARY

1. Short title and commencement.

(1) These regulations may be called the Dental Council of India, Master of Dental Surgery Course Regulations, 2017.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Definitions–In these regulations unless the context otherwise requires:-

(a) "Act" means the Dentists Act,1948(16 of 1948)

(b) "The Council" means the Dental Council of India constituted under section 3 of the Act;

(c) "Dentistry" includes.

(i) The performance of any operation on, and the treatment on any disease, deficiency or lesion of, human teeth or jaws, and the performance of radiographic work in connection with human teeth or jaws or the oral cavity;

(ii) The giving of any anesthetic in connection with any such operation or treatment.

(iii) The mechanical construction or the renewal of artificial dentures or restorative dental appliances.

(iv) The performance of any operation on, or the giving of any treatment, adviceor attendance to, any person preparatory to, or for the purpose of, or in connection with, the fitting, inserting, fixing, constructing, repairing or renewing of artificial dentures or restorative dental appliances, and the performance of any such operation and the giving of any such treatment, advice or attendance, as isusually performed or given by dentists;

(d) "NEET" means the National Eligibility-cum-Entrance Test conducted by the NationalBoardof Examinationforadmissiontopost-graduate courses.

(e) "University" means a university established or incorporated by or under a Central Act, a Provincial Ac or a State Act, and includes any such institution as may, in consultation with the university concerned, be recognised by the University Grant Commission in accordance with the regulations made in this behalf under this Act.

PART-II
GENERAL CONDITIONS TO BE OBSERVED BY POST GRADUATE TEACHING INSTITUTIONS

3. GENERAL CONDITIONS.

(1) The institutions recognised by the Central Government and after consultation with the Council shall be eligible for conducting the post-graduate degree or diploma course(s).

(2) The maximum number of students for a post-graduate course, for training for the award of post-graduate degree or diploma by the affiliating university, shall be determined by the facilities available in the department in terms of infrastructure, teaching staff and clinical teaching material. However, to start with, a maximum of three post-graduate students, (one Unit) shall be permitted in a speciality department. The annual intake capacity recommended by the Council and approved by the Central Government for the academicyear shall be final. No institution shall be permitted to increase more than three seats at atime in its annual intake capacity in a particular speciality in a given academic year. Not more than two units consisting of six seats (including increase of seats) shall be granted to any dental institutions for each speciality.

(3) The students undergoing post-graduate courses shall be exposed to the following:-

(i) basics of biostatistics and research methodology;
(ii) basics of human behavior studies.
(iii) basics of pharmaco-economics;
(iv) introduction to the non-linear mathematics.

4. ETHICS IN DENTISTRY._

There is a definite shift from the traditional patient and doctor relationship and delivery of dental care.With the advances in science and technology and the increasing needs of the patient, their families and community, there is a concern for the health of the community as a whole. There is 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 the health care delivery toprepare themselves to deal with these problems.To accomplish this and develop humanvalues, it is desired that all the trainees undergo ethical sensitization by lectures or discussion on ethical issues, discussion of cases with an important ethical component.

5. ELIGIBILITY FOR ADMISSION.

A candidate for admission to the master's in dental surgery course, must possess a recognized degree of Bachelor in Dental Surgery awarded by a university or institute in India and registered with the State Dental Council and has obtained provisional or permanent registration and has undergone compulsory rotator internship of a year in an approved/recognized dental college:

Provided that in the case of a foreign national, the following procedure shall be Followed:-

The Council may, on payment of the prescribed fee for registration, Grant temporary registration for the duration of the post- graduate training restricted to the dental college/institution to which he or she is admitted for the time being exclusively for post-graduate studies:

Provided further that temporary registration to such foreign national shall be subject to the condition that such person is duly registered as medical practitioner in his/her own country from which he /she has obtained his/her basics dental qualification and that his/her degree is recognized by the corresponding state dental council or concerned authority.

6. SELECTION OF CANDIDATE FOR POST-GRADUATE COURSES. There shall be a uniform NEET for admission to the post-graduate dental courses in each academic year conducted in the manner, as prescribed by the National Board of Examination or any other authority appointed by the Central Government in this behalf. The overall superintendence, direction and control of the NEET shall vest with the council.

7. PERIOD OF TRAINING.

(1) The period of training for the award of the MDS course shall be of three years duration for three academic years as full time candidates in an institution including the period of examination:

Provided that the time period required for passing out of the MDS course shall be a maximum of six years from the date of admission in said course:

Provided further that the duration of the post-graduate course for the post-graduate Diploma holders shall be of two years in the respective specialty. The syllabus and curriculum shall be the same as MDS Course in the concerned specialty except that they are not required (i) to undergo study and training in Basic Sciences and (ii) pass the PART-I Examination of MDS Course. However, they have to submit the dissertation work, as part of the post-graduate program

(2) During the period, each student shall take part actively in learning and teaching activities design of training, by the institution or the university. The teaching and learning activities in each specialty, shall be as under:-

(a) LECTURES:

There shall be some didactic lectures in the specialty and in the allied fields. The departments shall encourage guest lectures in the required areas and integrated lectures by multi-disciplinary teams on

selected topics, to strengthen the training programmes.

(b) JOURNAL REVIEW:

The journal review meetings shall be held at least once a week. All trainees, associate and staff associated with the post-graduate programme are expected to participate actively and enter relevant details in the logbook. The trainee shall make presentations from the allotted journals of selected articles. A model checklist for the evaluation of journal review presentation is annexed at Schedule-I of these regulations.

(c) SEMINARS:

The seminars shall be held at least twice a week in each department. All trainees are expected to participate actively and enter relevant details in logbook.

A model check list for the evaluation of seminar presentation is annexed at Schedule-II of these regulations.

(d) SYMPOSIUM:

It is recommended to hold symposium on topics covering multiple disciplines.

(e) CLINICAL POSTINGS:

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases, A model checklist for evaluation of clinical postings is annexed at Schedule- III of these regulations.

(f) CLINICO-PATHOLOGICAL CONFERENCE:

The clinico pathological conference shall be held once a month involving the faculties of Oral Medicine and Radiology, Oral Pathology and allied clinical departments. The trainees shall be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

(g) INTER-DEPARTMENTAL MEETINGS:

To encourage integration among various specialities, there shall be inter-departmental meeting chaired by the Dean with all heads of post- graduate departments at least once a month.

(h) TEACHING SKILLS:

All the trainees shall be encouraged to take part in undergraduate teaching programs either in the form of lectures or group discussions. A model checklist for evaluation of teaching skills is annexed at Schedule- IV of these regulations.

(i) DENTAL EDUCATION PROGRAMS:

Each department shall organise dental education programmes on regular basis involving other institutions. The trainees shall also be encouraged to attend such programmes conducted outside their university or institute.

(j) CONFERENCES/WORKSHOPS/ADVANCED COURSES:

The trainees shall be encouraged to attend conference / workshops advanced courses and also to present at least two scientific papers and two posters at State / national level speciality and allied conferences / conventions during the training period.

(k) ROTATION AND POSTING IN OTHER DEPARTMENTS:

To bring in more integration among the specialities and allied fields, each department shall work out a programme to rotate the trainees in related disciplines.

(l) **DISSERTATION/THESIS**:

The trainees shall prepare a dissertation based on the clinical or experimental work or any other study conducted by them under the supervision of the guide.

A model checklist for evaluation of dissertation presentation and continuous evaluation of dissertation work by guide / co-guide is annexed at Schedule-V of these regulations. A model overall assessment sheet to be filled by all the trainees undergoing post-graduate course is annexed at Schedule- VI of these regulations.

(3) All the students of the speciality departments shall complete the minimum quota for the teaching and learning activities, as follows:-

(a) Journal Clubs :5 in a year
(b) Seminars:5 in a year
(c) Clinical Case Presentations:4 in a year
(d) Lectures taken for under graduates:1 in a year
(e) Scientific Paper / Poster Presentations: 4 papers/posters during three years of training period In State / National Level Conferences / Workshop
(f) Clinico Pathological Conferences:2 presentations during three year of training period
(g) Scientific Publications (optional):one publication in any indexed scientific journal
h) Submission of Synopsis:one synopsis within six months from the date of commencement of thecourse
(i) Submission of Dissertation: one dissertation within Six months before appearing for the university examination
(j) Submission of Library Dissertation: one dissertation within Eighteen months fromthe date of commencement of the course

8. STIPEND. The post-graduate students shall be paid stipend only for duration of three years of the course, as may be fixed by the Central Government / State Government / Union territory Administration or such authority as the respective government/ administration may authorize. Where any dispute arises regarding any such stipend, including, quantum of stipend, it shall be considered and decided by the Central Government / respective State Government / Union territory Administration at its own level and its decision shall be final.

PART – VI

SYLLABUS

The syllabus for post-graduate course includes both Applied Basic Sciences and subjects of concerned specialty. The syllabus in Applied Basic Sciences shall vary according to the particular speciality, similarly the candidates shall also acquire adequate knowledge in other subjects related to their respective speciality.

9. SYLLABUS DISTRIBUTION IN VARIOUS SPECIALITIES:

PROSTHODONTICS AND CROWN & BRIDGE

Part-I

Paper-I: **Applied Basic Sciences:** Applied anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition and Biochemistry, Pathology and Microbiology, virology, Applied pharmacology, Research Methodology and biostatistics. Applied Dental anatomy and histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

Part-II

Paper-I: Removable Prosthodontics and Implant supported prosthesis (Implantology), Geriatric dentistry and Craniofacial Prosthodontics

Paper-II:Fixed Prosthodontics, occlusion, TMJ and esthetics.

Paper-II:Descriptive and analyzing type question

PERIODONTOLOGY

Part-I

Paper-I: **Applied Basic Sciences:** Applied Anatomy, Physiology, and Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology And Biostatistics.

Part-II PaperI:

Normal Periodontal structure, Etiology and Pathogenesis of Perio dontal diseases, epidemiology as related to Periodontics

Paper II: Periodontal diagnosis, therapy and Oral Implantology

Paper III : Descriptive and analysing type question

ORAL & MAXILLOFACIAL SURGERY

Part-I

Paper-I: **Applied Basic Sciences:** Applied Anatomy, Physiology , & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics.

Part-II:

Paper-I: Minor Oral Surgery and Trauma

Paper-II: Maxillo-facial Surgery

Paper-III: Descriptive and analyzing type question

CONSERVATIVE DENTISTRY AND ENDODONTICS

Part-I

Paper-I: **Applied Basic Sciences:** Applied Anatomy, Physiology, Pathology including Oral Microbiology, Pharmacology, Biostatistics and Research Methodology and Applied Dental Materials.

Part-II

Paper-I: Conservative Dentistry

Paper-II: Endodontics

Paper-III: Descriptive and analyzing type question

ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

Part-I

Paper-I:Applied Basic Sciences: Applied anatomy, Physiology, Dental Materials, Genetics, Pathology, Physical Anthropology, Applied Research methodology, Bio- Statistics and Applied Pharmacology.

Part-II

Paper-I**:**

Orthodontic history, Concepts of occlusion and esthetics, Child and Adult Psychology, Etiology and classification of maloclusion, Dento facial Anomalies, Diagnostic procedures and treatment planning in Orthodontics, Practice management in Orthodontics

Paper II: Clinical Orthodontics

Paper III**:** Descriptive and analyzing type question

ORAL AND MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY:

Part-I: Applied Basic Sciences: Applied anatomy, Physiology (General and oral), Cell Biology, General Histology, Biochemistry, General Pathology, General and Systemic Microbiology, Virology, Mycology, Basic Immunology, Oral Biology (oral and dentalhistology), Biostatistics and Research Methodology

Part-II:

Paper-I: Oral pathology, Oral Microbiology and Immunology and Forensic Odontology

Paper-II: Laboratory techniques and Diagnosis and OralOncology

Paper-III: Descriptive and analysing type question

PUBLIC HEALTH DENTISTRY

Part-I: **Applied Basic Sciences:** Applied Anatomy and Histology, Applied Physiology and Biochemistry, Applied Pathology, Microbiology, Oral Pathology, Physical and Social Anthropology, Applied Pharmacology and Research Methodologyand Biostatistics.

Part-II:

Paper-I: PublicHealth

Paper-II : DentalPublicHealth

Paper-III : Descriptive and analysing type question

PEDIATRIC DENTISTRY

Part-I

Paper I**: Applied Basic Sciences:**AppliedAnatomy,Physiology,andBiochemistry, Pathology, Microbiology, Pharmacology, Research Methodology a nd Biostatistics Growth and Development and Dental plaque, Genetics.

Part-II:

Paper-I: Clinical Pedodontics

Paper-II: Preventive And Community Dentistry as applied to pediatric dentistry

Paper-III:Descriptive and analyzing type question

ORAL MEDICINE AND RADIOLOGY

Part-I

Paper I:

Part-II: **Applied Basic Sciences:** Applied Anatomy, Physiology, And Biochemistry, Pathology **Microbiolog, Pharmacology, Research Methodology and Biostatistics**

Paper-I: Oral and Maxillofacial Radiology

Paper-II: Oral Medicine, therapeutics and laboratory investigations

Paper-III : Descriptive and analysing type question

CHAPTER-VII

GOALS AND OBJECTIVES OF THE CURRICULUM

GOALS.

The goals of the post-graduate training in various specialities is to train the graduate in Dental Surgery who will,

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

(ii) Exercise empathy and a caring attitude and maintain high ethical standards;

a. Continue to evince keen interest in professional education in the speciality and allied specialities whether in teaching or practice; willing to share the knowledge and skills with any learner, junior or a colleague

b. To develop the faculty for critical analysis and evaluation of various concepts and views and to adopt the mostrational approach.

OBJECTIVES.

The objective of the post-graduate training is to train a student so as to ensure higher competence in both general and special area of interest and prepare him orher for a career in teaching, research and speciality practice. A student must achieve a high degree of clinical proficiency in the subject and develop competence in research and its methodology in the concerned field.

The objectives to be achieved by the candidate on completion of the coursemay be classified as under:

1. Knowledge (Cognitive domain)
2. Skills (Psychomotor domain)
3. Human values, ethical practice and communication abilities

KNOWLEDGE.

(i) Demonstrate understanding of basic sciences relevant to speciality;

Describe etiology, pathophysiology, principles of diagnosis and management of common problems with in the speciality in adults and children;

(ii) identify social, economic, environmental and emotional determinants in a given case and take the min to account for planned treatment;

(iii) Recognise conditions that may be outside the area of speciality or competence and to refer them to the concerned specialist;

Update knowledge by self-study and by attending courses, conferences and seminars pertaining to speciality;

Undertake audit, use information technology and carry out researchin both basic and clinical with the aim of publishing or presenting the work at various scientific gathering;

SKILLS:

(i) Take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the condition;

(ii) Acquire adequate skills and competence in performing various procedures as required in the specialty.

HUMAN VALUES, ETHICAL PRACTICE AND COMMUNICATION ABILITIES:

(i) Adopt ethical principles in all aspects of practice.

(ii) Foster professional honesty and integrity.

(iii) Deliver patient care irrespective of social status, caste, creed, or religionof the patient.

(iv) Develop communication skills, to explain various options available and obtain a true informed consent from the patient.

(v) Provide leadership and get the best out of his team in a congenial working atmosphere.

(vi) Apply high moral and ethical standards while carrying out human or animal research.

(vii) Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed; respect patient's rights and privileges including patient'sright to information and right to seek a second opinion.

PART-VIII SPECIALITIES

The following specialties for the post-Graduate course to be followed by the university/ institute are detailed as under:

(i) Prosthodontics and Crown & Bridge:

Prosthodontics and Crown & Bridge is a branch of dental art and science pertaining to the restoration and maintenance of oral function, health, comfort and appearance by the replacement of mission or lost natural teeth and associated tissues either by fixed or removable artificial substitutes.

(ii) Periodontology:

Periodontology is the science dealing with the health and diseases of the investing and supporting structures of the teeth and oral mucous membrane.

(iii) Oral & Maxillofacial Surgery:

Oral and Maxillofacial surgery deals with the diagnosis and surgical and adjunctive treatment of diseases, injuries and defects of the human jaws and associated oral and facial structures.

(iv) Conservative Dentistry and Endodontics:

Conservative dentistry deals with prevention and treatment of the diseases and injuries of the hard tissues and the pulp of the tooth and associated periapical lesions, along with restoration of those teeth to normal form function and aesthetics.

(v) Orthodontics and Dentofacial Orthopedics:

Orthodontics and Dentofacial Orthopedics deals with prevention and correction of oral anomalies and malocclusion and the harmonizing of thestructures involved, so that the dental mechanisms function in a normal way.

(vi) Oral & Maxillofacial Pathology and Oral Microbiology

Oral & Maxillofacial Pathology and Oral Microbiology deals with the nature of oral diseases, their causes, processes and effects. It relates the clinical manifestation of oral diseases to the physiologic and anatomic changes associated with these diseases.

(vii) Public Health Dentistry

Public Health Dentistry is the science and art of preventing and controllingdental diseases and promoting dental health through organized community efforts.

(viii) Pediatric and Preventive Dentistry

Pediatric and Preventive Dentistry deals with prevention and treatment oforal and dental ailments that may occur during childhood.

(ix) Oral Medicine and Radiology

Oral Medicine is a specialty of dentistry concerned with the basic diagnostic procedures and techniques useful in recognizing the diseases of the oral tissues of local and constitutional origin and their medical management. Radiology is a science dealing with x- rays and their uses in diagnosis and treatment of diseases in

SCHEDULE– IX

SYALLBUS FOR M.D.S. IN VARIOUS SPECIALTIES

List of MDS Specialities

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

The syllabus for MDS course includes both Applied Basic Sciences and subjects of concerned specialty. The syllabus in Applied Basic Sciences shall vary accordingto the particular specialty; similarly the candidates shall also acquire adequate knowledge in other subjects related to their respective specialty.

PROSTHODONTICS AND CROWN & BRIDGE

AIM:

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

GENERAL OBJECTIVES OF THE COURSE:

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

- To have adequate acquired knowledge and understanding of applied basic and systemic medical sciences, both in general and in particularly of head and neck region.

- The postgraduates should be able to provide Prosthodontic therapy for patients with competence and working knowledge with understanding of applied medical, behavioral and clinical science, that are beyond the treatment skills of the generalBDS graduates and MDS graduates of other specialties,
- To demonstrate evaluative and judgment skills in making appropriate decisions regarding prevention, treatment, after care and referrals to deliver comprehensive care to patients.

KNOWLEDGE:

The candidate should possess knowledge of applied basic and systemic medical sciences.

- On human anatomy, embryology, histology, applied in general and particularly to head and neck, Physiology & Biochemistry, Pathology Microbiology & virology; health and diseases of various systems of the body (systemic) principles in surgery and medicine, pharmacology, nutrition, behavioral science, age changes, genetics, Immunol ogy, Congenital defects & syndromes and Anthropology, Bioengineering, Bio- medical & Biological Principles
- The student shall acquire knowledge of various Dental Materials used in the specialty andbe able to provide appropriate indication, understand the manipulation characteristics, compare with other materials available, be adopted with recent advancements of the same.
- Students shall acquire knowledge and practice of history taking, Diagnosis, treatment planning, prognosis, record maintenance of oral, craniofacial and systemic region.
- Ability for comprehensive rehabilitation concept with preprosthetic treatment plan inclu ding surgical re-evaluation and prosthodontic treatment planning, impressions, jaw relations, utility of face bows, articulators, selection and positioning of teeth, teeth arrangement for retention, stability, esthetics, phonation, psychological comfort, fit and insertion.
- Instructions for patients in after care and preventive Prosthodontics and management of failed restorations shall be possessed by the students.
- Understanding of all the applied aspects of achieving physical, psychological well- being of the patients for control of diseases and / or treatment related syndromes with the patient satisfaction and restoring function of Cranio mandibular system for a quality life of a patient.
- Ability to diagnose and plan treatment for patients requiring Prosthodontic therapy
- Ability to read and interpret radiographs, and other investigations for the purposeof diagnosis and treatment planning.
- The theoretical knowledge and clinical practice shall include principles involved for support retention, stability, esthetics, phonation, mastication, occlusion, behavioral, psychological, preventive and social aspects of Prosthodontics science of Oral and Maxillofacial Prosthodontics and Implantology

- Tooth and tooth surface restorations, Complete denture Prosthodontics, removable partial denture Prosthodontics, fixed Prosthodontics and maxillofacial and Craniofacial P rosthodontics, implants and implant supported Prosthodontics, T.M.J. and occlusion, craniofacial esthetics, and biomaterials, craniofacial disorders, problems of psychogenic origin.
- Should have knowledge of age changes, geriatric psychology, nutritional considerations and prosthodontic therapy in the aged population.
- Should have ability to diagnose failed restoration and provide prosthodontic therapy andafter care.
- Should have essential knowledge on ethics, laws, and Jurisprudence and Forensic Odontology in Prosthodontics.
- Should know general health conditions and emergency as related to Prosthodontics treatment like allergy of various materials and first line management of aspiration of prosthesis
- Should identify social, cultural, economic, environmental, educational and emotional det erminants of the patient and consider them in planning the treatment.
- Should identify cases, which are outside the area of his specialty/ competence, refer them to appropriate specialists and perform interdisciplinary case management.
- To advice regarding case management involving surgical and interim treatment
- Should be competent in specialization of team management in craniofacial prosthesis design.
- To have adequate acquired knowledge, and understanding of applied basic, and systemic medical science knowledge in general and in particular to head and neck regions.
- Should attend continuing education programs, seminars and conferences related to Pro sthodontics, thus updating himself/herself.
- To teach and guide his/her team, colleagues and other students.
- Should be able to use information technology tools and carry out research both in basic and clinical areas, with the aim of publishing his/ her work and presenting

  his/her work at various scientific forums.
- Should have an essential knowledge of personal hygiene, infection control, prevention of cross infection and safe disposal of waste, keeping in view the risk of transmission of potential communicable and transmissible infections like Hepatitis and HIV.
- Should have an ability to plan and establish Prosthodontics clinic/hospital teaching department and practice management.
- Should have a sound knowledge (of the applications in pharmacology, effects of drugs on oral tissues and systems of body and in medically compromised patients.

SKILLS:

- The candidate should be able to examine the patients requiring Prosthodontic

therapy, investigate the patient systemically, analyze the investigation results, radiograph s, diagnose the ailment, plan the treatment, communicate it with the patient and execute it.

- To understand the prevalence and prevention of diseases of craniomandibular system related to prosthetic dentistry.
- The candidate should be able to restore lost functions of stomatognathic system like mastication, speech, appearance and psychological comforts by understanding biolo gical, biomedical, bioengineering principles and systemic conditions of the patients to provide quality health care in the craniofacial regions.
- The candidate should be able to demonstrate good interpersonal, communication skills ***and*** team approach in interdisciplinary care by interacting with other specialties including medical specialty for planned team management of patients for craniofacial ***&*** oral acquired and congenital defects, temporomandibular joint syndromes, esthetics, Implant supported Prosthetics and problems of Psychogenic origins.
- Should be able to demonstrate the clinical competence necessary to carry out appropriate treatment at higher level of knowledge, training and practice skills currently available in their specialty area with a patient centered approach.
- Should be able to interpret various radiographs like IOPA, OPG, CBCT and CT. Should and be able to plan and modify treatment plan based onr adiographic findings
- Should be able to critically appraise articles published and understand various components of different types of articles and be able to gather the weight of evidence from the same
- To identify target diseases and create awareness amongst the population regarding Prosthodontic therapy.
- To perform Clinical and Laboratory procedures with a clear understanding of biomaterials, tissue conditions related to prosthesis and have required dexterity & skill for performing clinical and laboratory all procedures in fixed, removable, implant, maxillofacial, TMJ and esthetics Prosthodontics.
- To carry out necessary adjunctive procedures to prepare the patient before prosthesis like tissue preparation and preprosthetic surgery and to prepare the patient befor e prosthesis/prosthetic procedures
- To understand demographic distribution and target diseases of Cranio mandibular region related to Prosthodontics.

ATTITUDES:

- To adopt ethical principles in Prosthodontic practice, Professional honesty, credibility and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or religion of patient.
- Should be willing to share the knowledge and clinical experience with professional colleagues.
- Should develop an attitude towards quality, excellence, ***non-compromising*** in treatment.
- Should be able to self-evaluate, reflect and improve on their own.
- Should pursue research in a goal to contribute significant, relevant and

useful information, concept or methodology to the scientific fraternity.

- Should be able to demonstrate ***evidence-based*** practice while handling cases
- Should be willing to adopt new methods and techniques in prosthodontics from time to time based on scientific research, which are in patient's best interest.
- Should respect patient's rights and privileges, including patient's right toinformation and right to seek second opinion.

I. MAXILLOFACIAL REHABILITATION:

Scope, terminology, definitions, cross infection control and hospital waste management, work authorization.

Acquired defects of the mandible, acquired defects of hard palate, soft palate, clinicalmanagement of edentulous and partially edentulous maxillectomy patients, Facial defects, Restoration of speech, Velopharyngeal function, cleft lip and palate, cranialimplants, maxillofacial trauma, Lip and cheek support prosthesis, Laryngectomy aids, Obstructive sleep apnoea, Tongue prosthesis, Oesophageal prosthesis, radiation carriers, Burn stents, Nasal stents, Vaginal and anal stents, Auditory inserts, Trismus appliances,mouthcontrolled devices for assisting the handicapped, custom prosthesis, conformers, and orbital prosthesis for ocular and orbital defects.

Osseointegrated supported facial and maxillofacial prosthesis.

II. OCCLUSION EVALUATION, DIAGNOSIS AND TREATMENT OF OCCLUSAL PROBLEMS:

Scope, definition, terminology, optimum oral health, anatomic harmony, functional harmony, occlusal stability, causes of deterioration of dental and oral health. Anatomical, physiological, neuro – muscular, psychological considerations of teeth; muscles of mastication; temporomandibular joint; intra oral and extra oral and facial musculatures and the functions of Craniomandibular system.

Occlusal therapy, the stomatognathic system, centric relation, vertical dimension, the neutral zone, the occlusal plane, differential diagnosis of temporomandibular disorders, understanding and diagnosing intra articular problems, relating treatment todiagnosis of internal derangements of TMJ, Occlusal splints. Selecting instruments for occlusal diagnosis and treatment, mounting casts, Pankey- Mann-Schuyler philosophy of complete occlusal rehabilitation, long centric, anterior guidance, restoring lower anterior teeth, restoring upper anterior teeth determining the type of posterior occlusal contours, methods for determining the plane of occlusion, restoring lower posterior teeth, restoring upper posterior teeth, functionally generated path techniques for recording border intra orally, occlusal equilibration.

Bruxism, Procedural steps in restoring occlusion, requirements for occlusal

stability, solving occlusal problems through programmed treatment planning, splinting, solving – occlusal wear problems, deep overbite problems, anterior overjet problems, anterior open bite problems. Treating – end to end occlusion, splayed anterior

teeth, cross biteproblems, Crowded, irregular, or interlocking anterior bite. Using cephalometric for occlusal analysis, solving severe arch malrelationship problems, transcranial radiography, postoperative care of occlusal therapy.

III. FIXED PROSTHODONTICS

Scope, definitions and terminology, classification and principles, design, mechanicaland biological considerations of components – Retainers, connectors, pontics, work authorization.

- Diagnosis and treatment planning
- Management of Carious teeth–
- Periodontal considerations–
- Biomechanical principles of tooth preparation
- Isolation and fluid control.
- Resins, Gold and gold alloys, Glass Ionomer restorations.
- Restoration of endodontically treated teeth, Stomatognathic Dysfunction and management
- Management of failed restorations

Osseo integrated supported fixed Prosthodontics – Osseo integrated supported and tooth supported fixed Prost hodontics

- CAD– CAM Prosthodontics

IV.ESTHETICS

SCOPE, DEFINITIONS:

Morpho psychology and esthetics, structural esthetic rules – facial components, dental components, gingival components, and physical components. Esthetics and itsrelationship to function – Crown morphology, physiology of occlusion, mastication, occlusal loading and clinical aspect in bio esthetic aspects, Physical and physiologiccharacteristic and muscular activities of facial muscle, perioral anatomy and muscle retaining exercises Smile– classification and smile components ,smile design, esthetic restoration of smile, Esthetic management of the dentogingival unit, intraoral materials for rmanagement of gingival contours, and ridge contours, Periodontal esthetics, Restorations– Tooth colored restorative materials, the clinical and laboratory aspects, marginal fit anatomy ,inclinations, form, size, shape ,color, embrasures & contact point.

Prosthodontic treatment should be practiced by developing skills, by treating various and more number of patients to establish skill to diagnose and treatment and after care with bio-mechanical, biological, bio-esthetics ,bio-phonetics.All treatments should be carried out in more numbers for developing clinical skills.

- Infection control, cross infection barrier clinical & lab; hospital & lab waste management

Teaching/LearningActivities:

The postgraduate is expected to complete the following at the end of:

I YEARM.D.S.

- Theoretical exposure of all applied sciences
- ***Pre-clinical*** exercises involved in prosthodontic therapy for assessment
- Commencement of library assignment within six months
- To carry out short epidemiological study relevant to prosthodontics.
- Acquaintance with books, journals, and referrals.
- Clinical and laboratory practice continued from IInd year.
- Occlusion equilibration procedures – fabrication of stabilizing splint for parafunctional disorders, occlusal disorders and TMJ functions.
- Practice of dental, oral, and facial esthetics
- The clinical practice of all aspects of Prosthodontic therapy for elderly patients.
- Implants Prosthodontics– Rehabilitation of Partial Edentulism, Complete edentulism and cranio facial rehabilitation.
- Failures in all aspects of Prosthodontics and the irmanagement and aftercare.
- Team management for esthetics, TMJ syndrome and Maxillofacial & Craniofacial Prosthodontics
- Management of Prosthodontic emergencies, resuscitation.
- Candidate should complete the course by attending a large variety of patients to master the prosthodontic therapy. This includes the practice management, examinations, treatment planning, communication with patients, clinical and laboratory techniques materials and instrumentation required in different aspects of prosthodontic therapy, Tooth and Tooth surface restoration, Restoration of root treated teeth, splints for periodontal rehabilitation sand fractured jaws, complete dentures, R.P.D's, F.D.P's ,Immediate dentures, over dentures, implant supported prosthesis, maxillofacial and body prosthesis, occlusal rehabilitation.

  Prosthetic management of TMJ syndrome
- Management of failed restorations
- Should complete and submit Main Dissertation assignment 6 months prior toexamination.
- Candidates should acquire complete the theoretical and clinical

knowledge through seminars, symposium, workshops and reading.

- Participation and presentation in seminars, didactic lectures

V. TMJ–Temporomandibular joint dysfunction–
Scope, definitions ,and terminology

Temporomandibular joint and its function, Orofacial pain, and pain from the temporomandibular joint region, temporomandibular joint dysfunction, temporom Joint sounds ,temporomandibular joint disorders, Anatomy related, trauma, disc displacement, Osteoarthrosis/Osteoarthritis, Hyper mobility anddislocation, infectious arthritis, inflammatory diseases, Eagle's syndrome (Styloid – stylohyoidsyndrome),Synovial chondromatosis, Osteochondrosis disease,Ostone crosis, Nerve entrapment process, Growth changes, Tumors, Radiographic imaging

- Etiology, diagnosis and craniomandibular pain, differential diagnosis and management of orofacial pain–pain from teeth, pulp, dentin, muscle pain, TMJ pain
  – psychologic, physiologic – endogenous control, acupuncture analgesia, Placebo effects on analgesia, Trigeminal neuralgia, Temporal arteritis
- Occlusal splint therapy – construction and fitting of occlusal splints, management ofocclusal splints, therapeutic effects of occlusal splints, occlusal splints and generalmuscles performance, TMJ joint uploading and anterior repositioning appliances, use and care of occlusal splints.
- Occlusal adjustment procedures– Reversible– occlusal stabilization splints and physical therapies, jaw exercises, jaw manipulation and other physiotherapy or irreversible therapy– occlusal repositioning appliances, orthodontic treatment,
- Orthognathic surgery fixed and removable prosthodontic treatment and occlusal adjustment, removable prosthodontic treatmentand occlusal adjustment. Indication for occlusal adjustment, special nature of orofacial pain, Psychopathological considerations,occlusal adjustment philosophies, mandibular position, excursive guidance, occlusal contact scheme, goals of occlusal adjustment, significance of a slide in centric, Pre-clinical procedures, clinical procedures for occlusal adjustment.

VI.ESTHETICS

SCOPE, DEFINITIONS:

Morpho psychology and esthetics, structural esthetic rules – facial components, dental components, gingival components, and physical components. Esthetics and itsrelationship to function – Crown morphology, physiology of occlusion, mastication, occlusal loading and clinical aspect in bio esthetic aspects, Physical and physiologiccharacteristic and muscular activities of facial muscle, perioral anatomy and muscle retaining exercises Smile– classification and smile components ,smile design, esthetic restoration

of smile, Esthetic management of the dentogingival unit, intraoral materials for rmanagement of gingival contours, and ridge contours, Periodontal esthetics, Restorations– Tooth colored restorative materials, the clinical and laboratory aspects, marginal fit anatomy ,inclinations, form, size, shape ,color, embrasures & contact point.

Prosthodontic treatment should be practiced by developing skills, by treating various and more number of patients to establish skill to diagnose and treatment and after care with bio-mechanical, biological, bio-esthetics ,bio-phonetics.All treatments should be carried out in more numbers for developing clinical skills.

- Infection control, cross infection barrier clinical & lab; hospital & lab waste management

Teaching/LearningActivities:

The postgraduate is expected to complete the following at the end of:

I YEARM.D.S.

- Theoretical exposure of all applied sciences
- ***Pre-clinical*** exercises involved in prosthodontic therapy for assessment
- Commencement of library assignment within six months
- To carry out short epidemiological study relevant to prosthodontics.
- Acquaintance with books, journals, and referrals.
- Clinical and laboratory practice continued from IInd year.
- Occlusion equilibration procedures – fabrication of stabilizing splint for parafunctional disorders, occlusal disorders and TMJ functions.
- Practice of dental, oral, and facial esthetics
- The clinical practice of all aspects of Prosthodontic therapy for elderly patients.
- Implants Prosthodontics– Rehabilitation of Partial Edentulism, Complete edentulism and cranio facial rehabilitation.
- Failures in all aspects of Prosthodontics and the irmanagement and aftercare.
- Team management for esthetics, TMJ syndrome and Maxillofacial & Craniofacial Prosthodontics
- Management of Prosthodontic emergencies, resuscitation.
- Candidate should complete the course by attending a large variety of patients to master the prosthodontic therapy. This includes the practice management, examinations, treatment planning, communication

with patients, clinical and laboratory techniques materials and instrumentation required in different aspects of prosthodontic therapy, Tooth and Tooth surface restoration, Restoration of root treated teeth, splints for periodontal rehabilitation sand fractured jaws, complete dentures, R.P.D's, F.D.P's ,Immediate dentures, over dentures, implant supported prosthesis, maxillofacial and body prosthesis, occlusal rehabilitation.

Prosthetic management of TMJ syndrome

- Management of failed restorations
- Should complete and submit Main Dissertation assignment 6 months prior to examination.
- Candidates should acquire complete the theoretical and clinical knowledge through seminars, symposium, workshops and reading.
- Participation and presentation in seminars, didactic lecture

COMMUNICATIVE ABILITIES:

- To develop communication skills, in particular ***and*** to explain treatment optionsavailable in the management.
- To provide leadership and get the best out of his / her group in a congenialworking atmosphere.
- Should be able to communicate in simple understandable language with the patient and explain the principles of prosthodontics to the patient. He/She should be able to guide and counsel the patient with regard to various treatment modalities available.
- To develop the ability to communicate with professional colleagues through various media like Internet, e-mails, video conferences etc. to render the best possible treatment. Should demonstrate good explanatory and demonstrating ability as a teacher in order to facilitate learning among students

COURSE CONTENTS:

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

ESSENTIAL KNOWLEDGE:

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

APPLIED BASIC SCIENCES:

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

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

APPLIED ANATOMY OF HEAD AND NECK:

General Human Anatomy: Gross Anatomy, anatomy of Head and Neck in detail: Cranial and facial bones, TMJ and function, muscles of mastication and facial expre ssion, muscles of neck and back including muscles of deglutition and tongue, arterial supply and venous drainage of the head and neck, anatomy of the Paranasal sinuses in relation to the Vth cranial nerve. General considerations of the structure and function of the brain, brief considerations of V, VII, XI, XII, cranial nerves and autonomic nervous system of the head and

neck. The salivary glands, Pharynx, Larynx Trachea, Oesophagus, Functional Anatomy of masticatory muscles, Deglutition, speech, respiration, and circulation, teeth eruption, morphology, occlusion and function. Anatomy of TMJ, its movements and myofacial pain dysfunction syndrome.

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

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

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

Histology

Histology of namel, dentin, Cementum, periodontal ligament and alveolar bone, pulpal anatomy, histology and biological consideration. Salivary glands and Histology of epithelial tissues including glands.
Histology of general and specific connective tissue including bone, , Salivary glands,Histology of skin, oral mucosa, respiratory mucosa, connective tissue, bone, cartilage, cellular elements of blood vessels, blood, lymphatics, nerves, muscles, tongue and tooth

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

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

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

Applied Nutrition – General principles, balanced diet, effect of dietary deficiencies and starvation, Diet, digestion, absorption, transportation and utilization& diet for elderly patients.

APPLIED BIOCHEMISTRY:

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

APPLIED PHARMACOLOGY AND THERAPEUTICS:

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

APPLIED PATHOLOGY:

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

APPLIED MICROBIOLOGY:

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

APPLIED ORAL PATHOLOGY:

Developmental disturbances of oral and Para oral structures, Regressive changes

of teeth, Bacterial, viral and mycotic infections of the oral cavity. Dental caries, diseases of pulp and periapical tissues, Physical and chemical injuries of the oral cavity, oral manifes tations of metabolic and endocrine disturbances, Diseases of the blood and blood forming organism in relation to the oral cavity, Periodontal diseases, Diseases of the skin,nerves and muscles in relation to the Oral cavity.

LABORATORY DETERMINATIONS:

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

BIOSTATISTICS:

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

Introduction to Biostatistics: Scope and need for statistical application to biological data. Definition of selected terms – scale of measurements related tostatistics, Methods of collecting data, presentation of the statistical diagrams and graphs.

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

RESEARCH METHODOLOGY:

Understanding and evaluating dental research, scientific method and the behavior of scientists,understanding to logic–inductive logic– analogy, models, authority, hypothesis and causation,. Measurement and Errors of measurement, presentation of results, Reliability, Sensitivity and specificity diagnosis tests and measurements, Research Strategies, Observation, Correlation, Experimentation and Experimental design. Log ic of statistical in(ter)ferences, balance judgements, judgement under uncertainty, clinical vs., scientific judgement, problems with clinical judgement, forming scientific judgements, the problem of contradictory evidence, citation analysis as a Means of literature evaluation, influencing judgement: Protocol writing for experimental, observational studies, survey including hypothesis, PI CO statement, aim objectives, sample size justification, use of control/ placebo, standardization techniques, bias and its elimination, blinding, evaluation, inclusion and exclusion criteria.

APPLIED RADIOLOGY:

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

ROENTGENOGRAPHIC TECHNIQUES:

Intra oral, extra oral roentgenography, Methods of localization digital radiology and ultrasounds. Normal anatomical landmarks of teeth and jaws in radiograms, temporomandibular joint radiograms, neck radiograms. Use of CT and CBCT in prosthodontics

APPLIED MEDICINE:

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

APPLIED SURGERY & ANESTHESIA:

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

Principles in speech therapy, surgical and radiological craniofacial oncology, applied surgical ENT and ophthalmology.

APPLIED PLASTIC SURGERY:

Applied understanding and assistance in programs of plastic surgery for prosthodontics therapy.

APPLIED DENTAL MATERIALS:

- Students should have understanding of all materials used for treatment of craniofacial disorders – Clinical, treatment, and laboratory materials, associated materials, technical considerations, shelf life, storage, manipulations, sterilization, and waste management.
- Students shall acquire knowledge of testing biological, mechanical and other physical properties of all materials used for the clinical and laboratory procedures in prosthodontic therapy.
- Students shall acquire full knowledge and practice of Equipments, instruments, materials, and laboratory procedures at a higher level of competence with accepted methods.

All clinical practices shall involve personal and social obligation of cross

infection control, sterilization and waste management.

ORAL AND MAXILLOFACIAL PROSTHODONTICS AND IMPLANTOLOGY:

NON-SURGICAL AND SURGICAL METHOD OF PROSTHODONTICS AND IMPLANTOLOGY

a. Prosthodontic treatment for completely edentulous patients – Complete dentures, immediate complete dentures,single complete dentures, Tooth supported complete dentures
   & Implant supported Prosthesis for Completely edentulous patients for typical and atypical cases
b. Prosthodontic treatment for partially edentulous patients: - Clasp retained acrylic and cast partial dentures, transitional dentures, immediate dentures,
   Intracoronal and extracoronal precision attachments retained partial dentures & maxillofacial prosthesis for typical and atypical cases

Prosthodontic treatment for edentulous patients

Complete Dentures and Implant supported Prosthesis.

Complete Denture Prosthesis– Definitions, terminologies, G.P.T., Boucher's clinical dental terminology

Scope of Prosthodontics– The CranioMandibular system and its functions, the reasons for loss of teeth, consequences of loss of teeth and treatment modality with various restorations and replacements

a) **Edentulous Predicament**, Biomechanics of the edentulous state, Support mechanism for the natural dentition and complete dentures, Biological considerations, Functional and Parafunctional considerations, Esthetic, behavioral and adaptive re sponses, Temporomandibular joints changes.
b) **Effects of aging of edentulous patients**– aging population, distribution and edentulism in old age, impact of age on edentulous mouth– Mucosa,Bone,saliva, jaw movements in old age, taste and smell, nutrition, aging, skin and teeth, concern for personal appearance in old age
c) **Sequelae caused by wearing complete denture**– the denture in the oral environment – Mucosal reactions, altered taste perception, burning mouth syndrome, gagging, residual ridge (reduction) resorption, denture stomatitis, flabby ridge, denture irritation hyperplasia, traumatic Ulcers, Oral cancer in denture wearers, nutritional deficiencies, masticatory ability and performance, nutritional status and masticatory functions.
d) **Temporomandibular disorders in edentulous patients** – Epidemiology, etiology and management, Pharmacotherapy, Physicalmodalities, and Bio- behavioral modalities

e) **Nutrition Care for the denture wearing patient** –Impact of dental status onfoodintake, Gastrointestinal functions, nutritional needs and status of older adults, Calcium and bonehealth, vitamin and herbal supplementation, dietary counseling and risk factor for malnutrition inpatients with dentures and when teeth are extracted.

f) **Preparing patient for complete denture patients**– Diagnosis and treatment planning for edentulous and partially edentulous patients – familiarity with patients, principles of perception, health questionnaires and identification data, problem identification, prognosis and treatment identification data, problem identification, prognosis and treatment planning–contributing history –patient's history, social information, medical status–

systemic status with special reference to debilitating diseases, diseases of the joints, cardiovascular disorders, diseases of the skin, neurological disorders, oral malignancies, climacteric, use of drugs, mental health– mental attitude, psychological changes, adaptability, geriatric changes – physiologic, pathological, pathological and intra oral changes. Intra oral health – mucus membrane, alveolar ridges, palate and vestibular sulcus and dental health.

Data collection and recording,visual observation, radiography, palpation, measurement of sulci or fossae, extra oral measurement, the vertical dimension of occlusion, diagnostic casts.

Specific observations – existing dentures, soft tissue health, hard tissue health –teeth, bone Biomechanical considerations – jaw relations, border tissues, saliva, muscular development–muscle tone, neuromuscular co-ordination, tongue, cheek and lips. Interpreting diagnostic findings and treatment planning.

g) **Preprosthetic surgery** – Improving the patients denture bearing areas and ridge relations.

h) **Nonsurgical methods** – Rest for the denture supporting tissues, occlusal correction of the old prosthesis, good nutrition, conditioning of the patients musculature,

i) **Surgical methods**– Correction of conditions, that preclude optimal Prosthetic function–hyperplastic ridge– epulis fissuratum and papillomatosis, frenular

Immediate Denture – Advantages, Disadvantages, Contraindications, Diagnosis, treatment planning and Prognosis, Explanation to the patient, Oral examinations, Examination of existing prosthesis, Tooth modification, Prognosis, Referrals / adjunctive care, oral prophylaxis and other treatment needs.

First visit, preliminary impressions and diagnostic casts, management

of loose teeth, custom trays, final impressions and master casts, two tray or sectionalcustom impression tray, location of posterior limit and jaw relationrecords, setting of the posterior denture teeth / verifying jaw relations and the patient try in.

Laboratory phase, setting of anterior teeth, Wax contouring, flasking and boil out, processing and finishing, surgical templates, surgery and immediate denture i nsertion, post operative care and patient instructions, subsequent service forthe patient on the immediate denture.

j) **Over dentures** (tooth supported complete dentures)–indications and treatmentplanning, advantages and disadvantages, selection of abutment teeth, loss of abutment teeth, tooth supported complete dentures. Non-coping abutments, abutment with copings, abutments with attachments, submerged vital roots, preparations of the retained teeth.

k) **Single Dentures:** Single Mandibular denture to oppose natural maxillary teeth, single complete maxillary denture to oppose natural Mandibular teeth to oppose a partially edentulous Mandibular archwith fixed prosthesis, partially edentulous Mandibular arch with removable partial dentures. Opposing existing complete dentures, preservation of the residual alveolar ridge, necessity for retaining maxillary teeth and preventing mental trauma.

l) **Art of communication in the management of the edentulous predicament** –Communication–scope, a model of communication, why communication is important? What are the elements of effective communication ? special significance of doctor / patient communication, doctor behavior, The iatro sedative (doctor & act of making calm)

Recognizing and acknowledging the problem, exploring and identifying the problem,

interpreting and explaining the problem, offering a solution to the problem for mobilizing their resources to operate in a most efficient way, recognizing and acknowledging the problem, interpreting and explaining the problem, offering a solution to the problem.

m) **Materials prescribed in the management of edentulous patients-** Denture base materials, General requirements of biomaterials for edentulous patients, requirement of an ideal denture base, chemical composition of denture base resins, materia lsused in the fabrication of prosthetic denture teeth,requirement of prosthetic denture teeth denture lining materials and tissue conditioners, cast metal alloys as denture bases. Base metal alloys.

n) **Articulators**– **Evolution of concepts,** Classification, selection, limitations, precision, accuracy and sensitivity, and Functions of the articulator and their uses. Recent advancements including virtual articulator

o) **Fabrication of complete dentures** –complete denture impressions–

muscles of facial expressions and anatomical land marks, support, retention, stability, aims and objectives of preservation, support, stability, aesthetics, and retention. Impression materials and techniques – need of 2 impressions the preliminary impression and final impressions.

p) Developing an analogue / substitute for the maxillary denture bearing area– anatomy of supporting structures–mucous membrane, hard palate, residual ridge, shape of the supporting structure and factors that influence the form and size of the supporting bones, incisive foramen, maxillary tuberosity, sharp spiny process, torus palatinus, Anatomy of peripheral or limiting structures, labial vestibule, Buccal vestibule, vibrating lines. Preliminary and final impressions, im pression making, custom tray and refining the custom tray, preparing the tray to secure the final impression, making the final impression, boxing impression and making the casts

Developing an analogue / substitute for the Mandibular denture bearing area- anatomy of supporting structure, crest of the residual ridge, buccal shelf, shape of

Supporting structure, mylohyoid ridge, mental foramen, genial tbercles, torus mandibularis, Anatomy of peripheral or limiting structure – labial vestibule, Buccal vestibule, lingual border, mylohyoid muscle, retro mylohyoid fossa, sublingual gland region, alveolingual sulcus, Mandibular impressions– preliminary impressions, custom tray, refining, preparing the tray \ , final Impressions.

q) **Mandibular movements, Maxillomandibular relations and concepts of occlusion –** Gnathology, identification of shape and location of arch form– Mandibular and maxillary occlusion rims, level of occlusal plane and recording of trail denture base, tests to determine vertical dimension of occlusion, interocclusal & centric relation records. Biological and clinical considerations in making jaw relation records and transferring records from the patients to the articulator, Recording of Mandibular movements–influence of opposing tooth contacts, temporomandibular joint, muscular involvements, neuromuscular regulation of Mandibular motion, the envelope of motion, rest position.

Maxillo – Mandibular relations – the centric, eccentric, physiologic rest position, vertica dimension, occlusion, recording methods– mechanical, physiological, Determining the horizontal jaw relation– Functional graphics, tactile or interocclusal check record method, Orientation/ sagittal relation records, Arbitrary / Hinge axis and face bow record, significance and requirement, principles andbiologicalconsiderations and securing onarticulators.

r) **Selecting and arranging artificial teeth and occlusion for the edentulous patient–** anterior tooth selection, posterior tooth selection, and principles in arrangement of teeth, and factors governing the position of teeth – horizontal& vertical relations. The inclinations and arrangement of teeth for aesthetics, phonetics and mechanics–to concept of occlusion.

s) **The Try in** – verifying vertical dimension, centric relation,

establishment of posterior palatal seal, creating a facial and functional harmony with anterior teeth, harmony of spaces of individual teeth position, harmony with sex, personality and age of the patient, co-relating aesthetics and incisal guidance.

t) **Speech considerations with complete dentures & speech production** –structural and functional demands, neuropsychological background, speech production and the roll of teeth and other oral structures – bilabial sounds, labio dental (s) sounds, linguo dental sounds, linguo alveolar sound, articulatoric characteristics, acoustic characteristics, auditory characteristics, linguopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.

u) **Waxing contouring and processing the dentures their fit and insertion and aftercare** –laboratory procedure–wax contouring, flasking and processing, laboratory remount procedures, ***selective grinding***, finishing and polishing.

Critiquing the finished prosthesis – doctors evaluation, patients evaluation, friends evaluation, elimination of basal surface errors, errors in occlusion, interocclusal records for remounting procedures – verifying centric relation,eliminating occlusal errors.

Special instructions to the patient– appearance with new denture,

Mastication with new dentures, speaking with new entures, oral hygiene with dentures, preservation of residual ridges and educational material for patients, maintaining the comfort and health of the oral cavity in the rehabilitated edentulous patients. Twenty- four hours oral examination and treatment and (preventive) Prosthodontic

Periodontic recall for oral examination 3 to 4 month intervals and yearly intervals.

v) **Implant supported Prosthesis for partially edentulous patients** – Science of Osseo integration, clinical protocol ***(diagnostic, surgical and prosthetic***)for treatment with implant supported over dentures, managing problems and complications. Implant Prosthodontics for edentulous patients: current and future directions.

Implant supported prosthesis for partially edentulous patients– Clinical and laboratory protocol:Implant supported prosthesis, managing problems and complications

a. Introduction and Historical Review
b. Biological, clinical and surgical aspects of oral implants
c. Diagnosis and treatment planning
d. Radiological interpretation for selection of fixtures
e. Splints for guidance for surgical placement of fixtures
f. ***Surgical and*** Intraoral plastic surgery,if any
g. Guided bone and Tissue regeneration consideration for implants fixture.
h. Implant supported prosthesis for complete edentulism and partial edentulism
i. Occlusion for implant supported prosthesis.
j. Peri-implant tissue and Management of peri-implantitis

k. Maintenance and after care
l. Management of failed restoration.
m. Work authorization for implant supported prosthesis – definitive instructions, legal aspects, delineation of responsibility.

Prosthodontic treatment for partially edentulous patients – Removable partial Prosthodontics–

a. **Scope, definition** and terminology, Classification of partially edentulous arches - requirements of an acceptable method of classification, Kennedy's classification,
Applegate's rules for applying the Kennedy classification

b. Components of RPD –

i) Major connector–mandibular and maxillary

ii) Minor connectors, design, functions & form and location of major andminor connectors, tissue stops, finishing lines, reaction of tissue to metallic coverage

iii) Rest and rest seats – form of the Occlusal rest and rest seat, interproximal Occlusal rest seats, nternal Occlusal rests, possible movements of partial dentures, support for rests, lingual rests on canines and incisor teeth,incisal restand rest seat.

iv) Direct retainers- Internal attachments & extra coronal direct retainers. Relative uniformity of retention, flexibility of clasp arms, stabilizing reciprocal clasp, criteria for selecting a given clasp design, the basic principles of clasp design, circu mferential clasp,bar clasp, combination clasp and other type of retainers.

v) Indirect Retainers– denture rotation about an axis, factors influencing effectiveness of indirectretainers, forms of indirect retainers, auxiliary Occlusal rest, canine extensions from Occlusal rests, canine rests, continuous bar retainers and linguo plates, modification areas, rugae support, direct– indirect retention.

(vi) Teeth and denture bases – types, materials, advantages and disadvantages,indications and contraindications and clinicaluse. Principles of removable partial Denture design– Biomechanical considerations, and the factors influencing after mouth preparations – Occlusal relationship of remaining teeth, orientation of Occlusal plane, available space for restoration, arch integrity, tooth morphology, response of oral structure to previous stress, periodontal conditions, abutment support, tooth supported andtooth and tissue supported, need for indirect retention, clasp design, need forrebasing, secondary impression, need for abutment tooth modification, type ofmajor connector, type of teeth selection, patients past experience, method of replacing single teeth or missing anterior teeth.

Difference between tooth supported and tissue supported partial

dentures. Essentials of partial denture design, components of partial denture design, tooth support, tissue support, stabilizing components, guiding planes, use of splint bar for denture support, internal clip attachments, overlay abutment as support for a denture base, use of a component partially to gain support.

Education of patient Diagnosis and treatment planning

Design, treatment sequencing and mouth preparation

Surveying– Description of dental surveyor, purposes of surveying, Aims and objectives in surveying of diagnostic cast and master cast, Final path of insertion, factors that determine path of insertion and removal, Recording relation of cast to surveyor,measuring amount of retentive area Blocking of master cast – paralleled blockout, shaped blockout, arbitrary block out and relief.

Diagnosis and treatment planning – Infection control and crossinfection barriers – clinical and laboratory and hospital waste management, Objectives of prosthodontic treatment, Records, systemic evaluation, Oral examination, preparation of diagnostic cast, interpretation of examination data, radiographic interpretation, periodontal considerations, caries activity,prospective surgical preparation, endodontic treatment, analysis of occlusal factors, fixed restorations, orthodontic treatment, need for determining the design of components, impression procedures and occlusion, need for reshaping remaining teeth, reduction of unfavorable tooth contours, differential diagnosis: fixed or removable partial dentures, choice between complete denture and removable partial dentures, choice of materials.

Preparation of Mouth for removable partial dentures –Oral surgical preparation, conditioning of abused and irritated tissues,periodontal preparation–objectives of periodontal therapy, periodontal diagnosis, control therapy, periodontal surgery.

Preparation of Abutment teeth –Classification of abutment teeth, Sequence of abutment preparations on sound enamel or existing restorations,conservative restorations using crowns, splinting abutment teeth, utilization, temporary crowns to be used as abutment.

Impression Materials and Procedures for Removable Partial Dentures

Rigid materials, thermoplastic materials, Elastic materials, Impressions of the partially edentulous arch,Tooth supported, tooth tissue supported, Individual impression trays.

Support for the Distal Extension Denture Base –Distal extension removable partial denture, Factors influencing the support of distal extension base, Methods of obtaining functional support for the distal extension base.

a. **Laboratory Procedures** –Duplicating a stone cast, Waxing the partial denture frame work, Anatomic replica patterns, Spruing, investing, burnout, casting and finishing of the partial denture

framework, making record bases, occlusion rims, making a stone occlusal template from a functional occlusal record, arranging posterior teeth to an opposing cast or template, arrangement of anterior teeth, waxing and investing the partial denture before processing acrylic resin bases, processing the denture, remounting and occlusal correction to an occlusal template, polishing the denture.

b. **Initial placement, adjustment and servicing of there movable partial denture** Adjustments to bearing surfaces of denture framework, adjustment of occlusion in harmony with natural and artificial dentition, instructions to the patient, follow–up services

c. **Relining and Rebasing the removable partial denture**– Relining tooth supported dentures bases, relining distal extension denture bases, methods of reestablishing occlusion on partial denture.

d. **Repairs and additions to removable partial dentures**– Broken clasp arms,fractured occlusal rests, distortion or breakage of other components – major and minor connectors, loss of a tooth or teeth not involved in the support or retention of therestoration, loss of an abutment tooth necessitating itsreplacement and making a new direct retainer,Other types of repairs & repair by soldering.

e. **Removable partial denture considerations in maxillofacial prosthetics**–

Maxillofacial prosthetics, intraoral prosthesis, design considerations, maxillary prosthesis, Obturators, speech aids, palatal lifts, palatal augmentations, mandibular prosthesis, treatment planning, framework design,

class I resection, ClassII resection, mandibular flange prosthesis, jaw relation

records.

f. **Management of failed restorations and work authorization details.**

Communication Skills:

Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular surgical problem and obtain a true informed consent from them for the most appropriate treatment available at that point of time

- Develop the ability to communicate with professional colleagues.
- Developability to teach undergraduates.

COURSE CONTENT:

The speciality of Oral & Maxillofacial Surgery deals with the diagnosis and management of the diseases of stomatognathic system, jaw bones, cranio-maxillofacial region, salivaryglands and temporomandibular joints etc. Within this framework it also supports many vital organs like eye, oropharynx, nasopharynx and majorblood vessels and nerves. The traumatic injuries of maxillofacial skeleton are independently managed by Oral

& Maxillofacial Surgeons. Whenever there are orbital injuries the ophthalmologists are trained only to tackle injuries of the eye ball (globe) but if there are associated injuries of the orbital skeleton, the Maxillofacial Surgeon is involved in its re-construction. Similarly, nasal bone fracture may be managed by ENT surgeons. Most of the time nasal bone fractures are associated with fractures of the maxilla, mandible and zygomatic bones which are being managed by Oral &Maxillofacial Surgeons. The maxillofacial facial injuries at times are associated with head injuries also. The Oral & maxillofacial Surgeon is involved in the management of cleft lip &cleft palate, orthognathic surgery, micro vascular surgery, reconstructive and oncological surgical procedures of maxillofacial region. The speciality of Oral & Maxillofacial Surgery is a multi disciplinary speciality and needs close working in co-ordination with Neurosurgeons, Oncosurgeons, Opthalmologists, ENT Surgeons and Plastic Surgeons. The Oral & Maxillofacial Surgeons, Ophthalmologist, ENT Surgeons, Plastic Surgeons, Neuro- Surgeons and Oncologists complement each other by performing Surgical Procedures with the irrespective expertise and knowledge there by benefiting the patients and students of the respective specialities.

The program outline addresses both the knowledge needed in Oral and Maxillofacial Surgery and allied medical specialties in its scope. A minimum of three years of for mal training through a graded system of education as specified will equip the trainee with skill and knowledge at its completion to be able to practice basic oral and Maxillofacial surgery competently and have the ability to intelligently pursue further apprenticeship towards advanced Maxillofacial surgery.

The topics are considered as under:-

A) Applied Basic sciences
B) Oral and Maxillofacial surgery
C) Allied specialties

A) Applied Basic Sciences:

Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology, Pharmacology and Knowledge in Basic Statistics.

Applied Anatomy:

1. Surgical anatomy of the scalp, temple and face
2. Anatomy of the triangles of neck and deep structures of the neck
3. Cranial and facial bones and its surrounding soft tissues with its applied aspects in maxilla facial injuries.
4. Muscles of head and neck, chest , lower and upper extremities (in consideration to grafts / flaps)
5. Arterial supply, venous drainage and lymphatics of head and neck.
6. Congenital abnormalities of the head and neck
7. Surgical anatomy of the cranial nerves
8. Anatomy of the tongue and its applied aspects
9. Surgical anatomy of the temporal and infratemporal regions
10. Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea, esophagus
11. Tooth eruption, morphology, and occlusion.
12. Surgical anatomy of the nose.
13. The structure and function of the brain including surgical anatomy of intra cranial venous sinuses.
14. Autonomous nervous system of head and neck
15. Functional anatomy of mastication, deglutition, speech, respiration and circulation
16. Development of face, paranasal sinuses and associated structures and Their anomalies
17. TMJ: surgical anatomy and function

Physiology:

1. **Nervous system**
   - Physiology of nerve conduction, painpathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature
2. **Blood**
   - Composition
   - Haemostasis, various blood dyscrasias and management of patients with the same
   - Hemorrhage and its control
   - Capillary and lymphatic circulation.
   - Blood grouping, transfusing procedures.
3. **Digestive system**
   - Saliva- composition and functions of saliva
   - Mastication, deglutition, digestion, assimilation
   - Urine formation, normal and abnormal constituents
4. **Respiration**
   - Control of ventilation, anoxia, asphyxia, artificial respiration
   - Hypoxia – types and management
5. **CardioVascular System**
   - Cardiac cycle,
   - Shock
   - Heart sounds,
   - Blood pressure,
   - Hypertension:
6. **Endocrinology**
   - General endocrinal activity and disorder relating to thyroid gland,
   - Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads:
   - Metabolism of calcium

7. **Nutrition**
   - General principles of a balanced diet, effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus.
   - Fluid and Electrolytic balance in maintaining haemostasis and significance in minor and major surgical procedures.

biochemistry:

- General principles governing the various biological activities of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc.
- General composition of the body
- Intermediary metabolism
- Carbohydrates, proteins, lipids, and their metabolism
- Nucleoproteins, nucleic acid and nucleotides and their metabolism
- Enzymes, vitamins and minerals
- Hormones
- Body and other fluids.
- Metabolism of inorganic elements.
- Detoxification in the body.
- Antimetabolites.

Pathology:

1. **Inflammation –**
   - Repair and regeneration, necrosis and gangrene
   - Role of component system in acute inflammation,
   - Role of arachidonic acid and its metabolites in acute inflammation,
   - Growthfactors in acute inflammation
   - Role of molecular events in cell growth and intercellular signaling cell surface receptors
   - Role of NSAIDs in inflammation,
   - Cellular changes in radiation injury and its manifestation:
2. **Haemostasis**
   - Role of endothelium in thrombogenesis,
   - Arterial and venous thrombi,
   - Disseminated Intravascular coagulation
3. **Shock:**
   - Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock
   - Circulatory disturbances, ischemia, hyperemia, venous congestion, edema, infarction
4. **Chromosomal abnormalities:**
   - Marfans Syndrome, Ehler's Danlos Syndrome, FragileX-Syndrome
5. **Hypersensitivity:**
   - Anaphylaxis, type2 hypersensitivity, type3 hypersensitivity and cell mediated reaction and its clinical importance, systemic lupusery the matosus.
   - Infection and infective granulomas.
6. **Neoplasia:**
   - Classification of tumors.
   - Carcinogenesis and carcinogens - chemical, viral and microbial

- Grading and staging of cancers, tumor Angiogenesis, Paraneoplastic syndrome, spread of tumors
- Characteristics of benign and malignant tumors

7. **Others:**

- Sex linked a gamma globulinemia.
- AIDS
- Management of immuneodeficiency patients requiring surgical procedures
- De George Syndrome
- Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis

Oral Pathology:

- Developmental disturbances of oral and Paraoral structures
- Regressive changes of teeth.
- Bacterial, viral and mycotic infections of oral cavity
- Dental caries, diseases of pulp and periapical tissues
- Physical and chemical injuries of the oral cavity
- Oral manifestations of metabolic and endocrinal disturbances
- Diseases of jaw bones and TMJ
- Diseases of blood and blood forming organs in relation to oral cavity
- Cysts of the oral cavity
- Salivary gland diseases
- Role of laboratory investigations in oral surgery

Microbiology:

- Immunity
- Knowledge of organisms commonly associated with diseases of oral cavity.
- Morphology cultural characteristics of strepto, staphylo, pneumo, gono, meningo,clostridium group of organisms, spirochetes, organisms of TB, leprosy, diphtheria, actinomycosis and moniliasis
- Hepatitis B and its prophylaxis
- Culture and sensitivity test
- Laboratory determinations
- Bloodgroups , blood matching, RBC and WBC count
- Bleeding and clotting time etc, smears and cultures,
- Urine analysis and cultures.

Applied Pharmacology and Therapeutics:

1. Definition of terminologies used
2. Dosage and mode of administration of drugs.
3. Action and fate of drugs in the body
4. Drug addiction, tolerance and hypersensitivity reactions.

5. Drugs acting on the CNS
6. General and local anesthetics, hypnotics, analeptics, and tranquilizers.
7. Chemotherapeutics and antibiotics
8. Analgesics and antipyretics
9. Antitubercular and antisyphilitic drugs.
10. Antiseptics, sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics
13. Vitamins A,B-complex,C,D,E, K

B) Oral and Maxillofacial Surgery:

- Evolution of Maxillofacial surgery.
- Diagnosis, history taking, clinical examination, investigations.
- Informed consent / medico-legal issues.
- Concept of essential drugs and rational use of drugs.
- Communication skills with patients- understanding, clarity in communication, compassionate explanations and giving emotional support at the time of suffering and be reavement
- Principles of surgical audit – understanding the audit of process and outcome. Methods adopted for the same. Basic statistics.
- Principles of evidence based surgery – understanding journal based literature study; the value of textbook, reference book articles, value of review articles; original articles and their critical assessment, understanding the value of retrospective, prospective, randomized control and blinded studies, understanding the principles and the meaning of various Bio-statistical tests applied in these studies.
- Principles of surgery – developing a surgical diagnosis, basic necessities for surgery, aseptic technique, incisions, flap designs, tissue handling, hemostasis, dead space management, decontamination and debridement, suturing, edemacontrol, patient general health and nutrition.
- Medical emergencies – Prevention and management of altered consciousness, hyper sensitivity reaction, chest discomfort, respiratory difficulty.
- Preoperative work up – Concept of fitness for surgery; basic medical work up; work up in special situation like diabetes, renal failure, cardiac and respiratory illness; risk stratification
- Surgical sutures, drains
- Postoperative care – concept to recovery room care, Airway management, Assessment of Wakefulness, management of cardio vascular instability in this period, Criteria for shifting to the ward, pain management
- Wound management - Wound healing, factors influencing healing, basic surgical techniques, Properties of suture materials, appropriate use of sutures.
- Surgical Infections – Asepsis and antisepsis, Microbiological principles,

Rational use of antibiotics, special infections like Synergistic Gangrene and Diabetic foot infection, Hepatitis and HIV infection and crossinfection.

- Airway obstruction / management– Anatomy of the airway, principles of keeping the airway patent, mouth to mouth resuscit ation, Oropharyngeal airway, endotracheal intubation, Cricothyroidectomy, Tracheostomy.
- Anesthesia – stages of Anesthesia, pharmacology of inhalation, intravenous and regional anesthetics, muscle relaxants.
- Facialpain; Facial palsy and nerve injuries.
- Pain control–acute and chronic pain, cancer and non - cancer pain, patien tcontrolled analgesia
- General patient management – competence in physical assessment of patients of surgery, competence in evaluation of patients presenting with acute injury, particularly to maxillofacial region. Competence in the evaluation of managementof patients for Anesthesia
- Clinical oral surgery – all aspects of dento alveolar surgery
- Pre-prosthetic surgery– A wide range of surgical reconstructive procedures involving their hard and soft tissues of the edentulous jaws.
- Temporomandibular joint disorders – TMJ disorders and their sequelae need expert evaluation, assessment and management. It is preferable to be familiar with diagnostic and therapeutic arthroscopic surgery procedures.
- Tissue grafting – Understanding of the biological mechanisms involved in autogenous and heterogeneous tissue grafting.
- Reconstructive oral and maxillofacial surgery – hard tissue and soft tissue reconstruction.
- Cyst and tumors of head and neck region and their management – including principles of tumor surgery, giant cell lesion of jaw bones, fibroosseous lesions of jaw.
- Neurological disorders of maxillofacial region- diagnosis and management of Trigeminal Neuralgia, MPDS, Bellspalsy, Frey's Syndrome, Nerveinjuries
- Maxillofacial trauma – basic principles of treatment, primary care, diagnosis and management of hard and soft tissue injuries, Comprehensive management including polytrauma patients
- Assessmen to ftrauma - multiple injuries patient, closed abdominal and chest injuries, penetrating injuries, pelvic fractures, urological injuries, vascular injuries.
- Orthognathic surgery – The trainee must be familiar with the assessment and correcting of jaw deformities
- Laser surgery – The application of laser technology in the surgical treatment of lesions amenable to such therapy
- Distraction osteogenesis in maxillofacial region.
- Cryo surgeries – Principles, the application of cryosurgery in the surgical management of lesions amenable to such surgeries.

- Cleft lip and palate surgery- detailed knowledge of the development of the face, head and neck, diagnosis and treatment planning, Current concepts in the management of cleft lip and palate deformity, knowledge of nasal endoscopy and other diagnostic techniques in the evaluation of speech and hearing, concept of multi disciplinary team management.
- Aesthetic facial surgery – detailed knowledge of structures of face & neck including skin and underlying soft tissues, diagnosis and treatment planning of deformities and conditions affecting facial skin, underlying facial muscles, bone, eyelids, external ear etc., surgical management of post acne scaring, face lift, blepharoplasty, otoplasty, facial bone recountouring etc.
- Craniofacial surgery – basic knowledge of developmental anomalies of face, head and neck, basics concept in the diagnosis and planning of various head and neck anomalies including facial cleft, craniosynostosis, syndromes, etc., Current concepts in the management of cranio facial anomalies.
- Head and neck oncology– understanding of the principles of management of head and neck oncology including various pre cancerous lesions, Experiencein the surgical techniques of reconstruction following ablative surgery.
- Micro vascular surgery.
- Implantology– principles, surgical procedures for insertion of various types of implants.
- Maxillofacial radiology / radio diagnosis
- Other diagnostic methods and imaging techniques

C) Allied Specialties:

- General medicine : General assessment of the patient including children with special emphasis on cardiovascular diseases, endocrinal, metabolic respiratory and renal diseases, Blood dyscrasias
- General surgery : Principles of general surgery, exposure to common general surgical procedures.
- Neuro – surgery: Evaluation of a patient with head injury, knowledge & exposure of various Neuro – surgical procedures
- ENT / Ophthalmology: Examination of ear, nose, throat, exposure to ENT surgical procedures, ophthalmic examination and evaluation, exposure to ophthalmics urgical procedures.
- Orthopedic: basic principles of orthopedic surgery, bone diseases and trauma as relevant to Maxillo facial surgery, interpretation of radiographs, CT, MRI and ultrasound
- Anesthesiology: Evaluation of patients for GA technique, general anesthetic drugs use and complications, management of emergencies, various IV sedation techniques.
- Plastic Surgery- Basic Principles

TEACHING/LEARNINGACTIVITIES:

The postgraduate is expected to complete the following at the end of:

I Year

Study of applied basic sciences including practicals (wherever necessary), basic computer sciences, exodontia, seminars on basic topics, selection of dissertation topic, library assignment topic, attending O.T, wardrounds, Medical Record keeping, Pre-clinical exercises, preparation of synops is and its submission within the six months after admission to the university as per calendar of events.

Rotationand postings in other departments:

General medicine	-1month
General surgery	-1month
Ophthalmology	-15days
Neuro Surgery	-15days
ENT	-15days
Orthopedic	-15days
Plastic Surgery	-15days
Casualty	-15days
Anesthesia(ICU)	-15days
Radiology(CT,MRI, USG)	-15days

II Year

- Minor oral surgery and higher surgical training
- Submission of library assignment
- Oncologyposting– 1month

III Year

- Maxillofacia lsurgery
- Submission of dissertation to the university, six months before the final examination.
- It is desirable to enter general surgical skills and operative procedures that are observed, assisted or performed in the log book in the format as given below:-

Sl.No	Procedure	Category	Number
1	Injection I.M. and I.V.	PI	50,20
2	Minor suturing and Removal of sutures	PI	N,A
3	Incision & drainage of An abscess	PI	10
4	Surgical extraction	PI	15
5	Impacted teeth	PI,A	30,20

6	Pre prosthetic surgery- corrective procedures ridge extension Ridge reconstruction	PI, A	10 3 3
7	O A F closure	PI,A	3,2
8	Cyst enuleation	PI,A	5,5
9	Mandibular fractures	PI,A	10,10
10	Peri-apical surgery	PI,A	5
11	Infection management	PI,A	3,3
12	Biopsy procedures	PI,A	10,3
13	Removal of salivary calculi	A	3
14	Benign tumors	A	3,3
15	Midface fractures	PI,A	3,5
16	Implants	PI,A	5,5
17	Tracheotomy	A	2
18	Skin grafts	PI,A	2,2
19	Orthognathic surgery	A,O	3,5
20	Harvesting bone & cartilage grafts Iliac CrestRib Calvarial Fibula	A,O A,O A,O A,O	3,5 3,3 2,2 2,2
21	T.M. Joint surgery	A	3
22	Jaw resections	A,O	3,5
23	Oncosurgery	A,O	3,3
24	Micro vascular anastomosis	A,O	2,2
25	Cleft lip & palate	A,O	3,5
26	Distraction osteogenesis	A,O	2,3
27	Rhinoplasty	A,O	2,3
28	Access osteotomies and baseof skull surgeries	A,O	1,3
29	Emergency Management for OMFS Patients in Casualty / Accident & Emergency	PI,O	5,5

PI:-Performed Independently
A:-Assisted
O:-Observed

Monitoring Learning Progress:

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be done by the staff of the department based on participation of students in various teaching / learning activities.It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

Paper wise distribution of syllabus:

PART-I:

Applied Basic Sciences

PART-II:

Paper– I: Minor Oral Surgery and Maxillofacial Trauma Minor Oral Surgery:

- **Principles of Surgery**: Developing A Surgical Diagnosis, Basic Necessities For Surgery, Aseptic Technique, Incisions, Flap Design Tissue Handling, Haemostasis , Dead Space Management, Decontamination And Debridement, Suturing, Oedema Control, Patient General Health And Nutrition.
- **Medical Emergencies**: Prevention and management of altered consciousness (syncope, orthostatic hypotension, seizures, diabetesmellitus ,adrenal insufficiency), hypersensitivity reactions, chest discomfort, and respiratory difficulty.
- **Examination and Diagnosis**: Clinical history, physical and radiographic, clinical and laboratory diagnosis, oral manifestations of systemic diseases, implications of systemic diseases in surgical patients.
- **Haemorrhage and Shock**: Applied physiology, clinical abnormalities of coagulation , extra vascular hemorrhage, and hemorrhagic lesions, management of secondary hemorrhage, shock.
- **Exodontia**: Principles of extraction, indications and contraindications, types of extraction, complications and their management, principles of elevators and elevators used in oral surgery.
- **Impaction:** Surgical anatomy, classification, indications and contraindications, diagnosis, procedures, complications and their management.
- **Surgical aids to eruption of teeth**: Surgical exposure of unerupted teeth, surgical repositioning of partially erupted teeth.
- **Transplantation of teeth**
- **Surgical Endodontics:** Indications and contraindications, diagnosis, procedures of periradicular surgery
- **Preprosthetic Surgery:** Requirements, types (alvoloplasty, tuberosity

reduction, mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibul oplasty)

- **Procedures to Improve Alveolar Soft Tissues**: Hypermobile tissues- operative / sclerosing method, epulis fissuratum, frenectomy and frenotomy
- **Infections of Head and Neck:** Odontogenic and non Odontogenic infections, factors affecting spread of infection, diagnosis and differential diagnosis, management of facial s pace infections, Ludwig angina, cavernous sinus thrombosis.
- **Chronic infections of the jaws:** Osteomyelitis (types, etiology, pathogenesis, management) osteoradionecrosis
- **Maxillary Sinus:** Maxillary sinusitiss – types, pathology, treatment, closure of Oro –antral fistula, Caldwell- lucoperation
- **Cysts of the Orofacial Region:** Classification, diagnosis, management of OKC, dentigerous, radicular, non Odontogenic, ranula
- **Neurological disorders of the Maxillofacial Region:** Diagnosis and management of trigeminal neuralgia, MPDS, bell's palsy, Frey's syndrome, nerve injuries.
- **Implantology**: Definition, classification, indications and contraindications, advantagesand disadvantages,surgical procedure.

Anesthesia

LocalAnesthesia**:**

Classification of local anesthetic drugs, mode of action, indications and contraindications, advantages and disadvantages, techniques, complications and their management.

GeneralAnesthesia: Classification, stages of GA, mechanism of action, indications, and contraindications, advantages and disadvantages, post anesthetic complications and emergencies, anesthetic for dental procedures in children, premedication, conscious sedation, legal aspects for GA

Maxillo facial Trauma:

- Surgical Anatomy of Head and Neck.
- Etiology of Injury.
- Basic Principles of Treatment
- Primary Care: resuscitation, establishment of airway, management of hemorrhage, management of head injuries and admission to hospital.
- Diagnosis: clinical, radiological
- Soft Tissue Injury of Face and Scalp : classification and management of soft tissue wounds, injuries to structure requiring special treatment.
- Dento Alveolar Fractures: examination and diagnosis, classification, treatment, prevention.
- Mandibular Fractures: classification, examination and diagnosis,

general principles of treatment, complications and their management

- Fracture of Zygomatic Complex : classification, examination and diagnosis, general principles of treatment, complications and their management.
- Orbital Fractures : blow out fractures
- Nasal Fractures
- Fractures of Middle Third of the Facial Skeleton: emergency care, fracture of maxilla, and treatment of le fort I, II, III, fractures of Naso orbito ethmoidal region.
- Opthalmic Injuries: minor injuries, non-perforating injuries, perforating injuries, retrobulbarhemorrhage, and traumatic opticneuropathy.
- Traumatic Injuries To Frontal Sinus: diagnosis, classification, treatment
- Maxillofacial Injuries in Geriatric and Pediatric Patients.
- Gun Shot Wounds and War Injuries
- Osseointegration in Maxillofacial Reconstruction
- Metabolic Response to Trauma: neuro endocrine responses, inflammatory mediators, clinical implications
- Healing of Traumatic Injuries: soft tissues, bone, cartilage, response of peripheral nerveto injury
- Nutritional consideration following Trauma.
- Tracheostomy: indications and contraindications, procedure, complications and their management.

Paper–II: Maxillofacial Surgery

a) Salivary gland

- Sialography
- Salivary fistula and management
- Diseases of salivary gland – developmental disturbances, cysts, inflammation and sialolithiasis
- Mucocele and Ranula
- Tumors of salivary gland and their management
- Staging of salivary gland tumors
- Parotidectomy

b) Temporomandibular Joint

- Etiology, history signs, symptoms, examination and diagnosis of temporomandibular joint disorders
- Ankylosis and management of the same with different treatment modalities
- MPDS and management
- Condylectomy – different procedures
- Various approaches to TMJ
- Recurrent dislocations – Etiology and Management

c) Oncology

- Biopsy
- Management of pre-malignant tumors of head and neck region
- Benign and Malignant tumors of Head and Neck region
- Staging of oral cancer and tumor markers
- Management of oral cancer
- Radical Neck dissection
- Modes of spread of tumors
- Diagnosis and management of tumors of nasal, paranasal, neck, tongue, cheek, maxilla and mandible
- Radiation therapy in maxilla facial regions
- Lateral neck swellings

d) Orthognathic surgery

- Diagnosis and treatment planning
- Cephalometric analysis
- Model surgery
- Maxillary and mandibular repositioning procedures
- Segmental osteotomies
- Management of apertognathia
- Genioplasty
- Distraction osteogenesis

e) Cysts and tumors of orofacialregion

- Odontogenic and non-Odontogenic tumors and their management
- Giant Celllesions of jaw bone
- Fibroosseous lesions of jaw bone
- Cysts of jaw

f) Laser surgery

- The application of laser technology in surgical treatment of lesions

g) Cryosurgery

- Principles, applications of cryosurgery in surgical management

h) Cleft lip and palates urgery

- Detailed knowledge of the development of the face, head and neck
- Diagnosis and treatment planning
- Current concepts in the management of cleft lip and palate deformity
- Knowledge of Naso endoscopy and other diagnostic techniques in the evaluation of speech and hearing
- Concept of multidisciplinary team management

i) Aesthetic facial surgery

- Detailed knowledge of the structures of the face and neck including skin and underlying soft tissue
- Diagnosis and treatment planning of deformities and conditions affecting facial skin
- Underlying facial muscles, bone, Eyelids, externalear
- Surgical management of post acne scarring, facelift, blepharoplasty, otoplasty,facial bone recontouring, etc

j) Cranio facial surgery

- Basic knowledge of developmental anomalies of the face, head and neck
- Basic concepts in the diagnosis and planning of various head and neck anomalies including facial clefts, craniosynostosis, syndromes, etc.
- Current concept in the management of Cranio facial anomalies

Paper–III: Essays (descriptive and analyzing type questions) **Scheme of Examination:**

A. Theory: Part-I: Basic SciencesPaper - **100Marks**
Part- II: Paper-I, Paper-II&Paper-III - **300 Marks**
(100Marksfor each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours durationand should be conducted at the end of First year of MDS course. Part-II Examination willbe conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each

and five questions carrying10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers.
Distribution of topics for each paper will be as follows:*

PART-I:Applied Basic Sciences : Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics.
Paper–I: Minor Oral Surgery and Maxillofacial Trauma **Paper–II:**MaxillofacialSurgery
Paper–III: Essays(descriptive andanalyzing type questions)
**The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics*.

B. Practical/ ClinicalExamination - 200Marks

1. Minor Oral Surgery - 100 Marks

Each candidate is required to perform the minor oral surgical procedures under local anaesthesia. The minor surgical cases may include removal of impacted lower third molar, cyste enucleation, any similar procedure where students can exhibit their professional skills in raising the flap, removing the bone and suturing the wound.

2. Case presentation and discussion: 100 Marks
(a) Onelong case - 60Marks
(b) Twoshortcases - 40Marks (20markseach)

C. VivaVoce - 100 Marks
i. Viva-Voce examination: *80 Marks*

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii.Pedagogy: *20 Marks*

A topic be given to each candidate in the beginning of clinical examination. He / she is asked to make a presentation on the topic for 8-10 minutes.

ADDITION (REVISED SYLLABUS)

128: 515 M.D.S. (ORAL & MAXILLOFACIAL SURGERY)

Digital planning for Orthognathic (OGN) Surgeries : PG students should be trained in procuring the digital data and plan the OGN surgeries on the software.
Also, this would be helpful to print the surgical cutting guides and splints that increase the accuracy.
Facial Esthetics : Including various facial esthetic procedures like Botox, Fillers and Hair Transplant into the curriculum
Stem Cell Therapy: Brief introduction to stem cell sciences, laboratory procedures and their application in maxillofacial disorders.
Customization of Total Joint Replacement (TJR) of TMJ : Acquiring the CT Scan data and planning TJR components digitally customizing as per individual requirements.
Obstructive Sleep Apnoea Syndrome (OSAS) :Various assessment protocols and tailoring the surgical treatment modality as per the stage of the OSAS.
Navigational surgeries : The navigational surgeries can be used in cases of dental implants, orthognathic surgeries and distraction oseogenesis which will help in attaining accuracy compared to the manual procedures.

C	Complex amalgam restorations	05
D	Composite inlay+ veneers (direct and indirect)	10
E	Ceramic jacket crowns	05
F	Post and core for anterior teeth	10
G	Bleaching vital	05
	Nonvital	05
H	RCT Anterior	20
I	Endosurgery–observation and assisting	05

Presentation of:

- Seminars – 5 seminars by each student – should include topics in dental materials, conservative dentistry and endodontics
- Journal clubs–5 by each student
- Submission of synopsis at the end of 6 months
- Library assignment work
- Internal assessment–theory and clinicals.

Second Year
Case discussion5

1	Ceramic jacket crowns	10

2	Post and core for anterior teeth	10
3	Post and core for posterior teeth	05
4	Composite restoration	15
5	Full crown for posterior teeth	15
6	Cast gold inlay	05
7	Other special types of work such as splinting - Reattachment of fractured teeth etc.	10
8	Anterior RCT	30
9	Posterior RCT	40
10	Endosurgery performed independently	05
11	Management of endo–Perio problems	05
12	Angle buildup composite	05
13	Diastema closure	05
14	Composite Veneers	05

- Under graduate teaching program as allotted by the HOD
- Seminars–5 by each student
- Journal club–5 by each student
- Dissertation work
- Prepare scientific paper/ poster and present in conference and clinical meeting
- Library assignment to be submitted 18 months after starting of the course
- Internal assessment–theory and clinical

Third Year

Dissertation work to be submitted 6 months before final examination.

Clinical work

- Cast gold inlay-Onlay, cuspal restoration 10
- Post and core 20
- Molar endodontics 50
- Endosurgery 05
- Diastema Closure 05
- Angle Build up 05
- All other types of surgeries including crown lengthening, perioesthetics, hemisectioning, splinting, replantation.

Presentation of:

- Seminars–5 by each student
- Journal club–5 by each student
- Under graduate teaching programs allotted by the HOD
- Internal assessment–theory and clinical

Monitoring Learning Progress:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching/ learning activities. It may be structured and assessment be done using checklists that assess various aspects.
Check lists are given in Section IV.

Scheme of Examination:

A. Theory: Part-I: Basic Sciences Paper - **100 Marks**
Part-II: Paper-I, Paper-II & Paper-III - **300Marks**
(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper- III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any oral the papers. Distribution of topics for each paper will be as follows:*

PART-I: Applied Basic Sciences: Applied Anatomy, Physiology, Pathology including Oral Microbiology, Pharmacology, Biostatistics and Research Methodology and

AppliedDental Materials.

PART-II

Paper-I : Conservative Dentistry
Paper-II : Endodontics
Paper-III : Essays (descriptive and analyzing type questions)

**The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping ofthe topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical/ Clinical Examination : 200Marks

The duration of Clinical and Viva Voce examination will be 2 days for a batch of four students. If the number of candidates exceeds 4, the programme can be extended to 3rdday.

Day1

Clinical Exercise I –Random case discussion–(2) - 10+10Marks

(Diagnosis, Treatment, Planning & Discussion)

Cast core preparation

(i) Tooth Preparation	-	20marks
(ii) Direct Wax Pattern	-	10marks
(iii) Casting	-	10marks
(iv) Cementation	-	05marks
(v) Retraction & Elastomeric Impression	-	05marks

Clinical Exercise II - 30 Marks (Inlay Exercise)

(i) Tooth preparation for Class II Inlay(Gold or Esthetic)	-	20marks
(ii) Fabrication of Indirect Pattern	-	10marks

Day2

Clinical Exercise III - 100 Marks (Molar Endodontics)

(i) Local Anesthesia and Rubber Damapplication		20marks

(ii) Access Cavity	-	20marks
(iii) Working length determination	-	20marks
(iv) Canal Preparation	-	20marks
(v) Master cone selection	-	20marks

C. Viva Voce : 100 Marks

i. Viva-Voice examination : 80marks

All examiners will conduct viva-voice conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise : 20marks

a topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

ADDITION (REVISED SYLLABUS)

131: 515 M.D.S. (CONSERVATIVE DENTISTRY AND ENDODONTICS)

Regenerative Endodontics. Mechanism and clinical procedures related to regenerative endodontics, Advantages and limitations of revascularisation procedures over apexification procedures for necrotic immature permanent tooth with open apex, Protocol for revascularisation, Clinical measures for assessment of Endodontic revascularisation treatment outcome.

Laser interaction with biologic tissue, Types of Lasers, Mechanism & applications of lasers in Conservative Dentistry & Endodontics,

Introduction and application of Nanotechnology in Conservative Dentistry & Endodontics Smile design, Introduction to smile analysis, Understanding smiles, Facial aesthetics, Dentofacial composition, Porcelain laminates.

1. ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

OBJECTIVES:

The training programme in Orthodontics is to structure and achieve the following four objectives

Knowledge:

1. The dynamic interaction of biologic processes and mechanical forces acting on the stomatognathic system during orthodontic treatment
2. The etiology, pathophysiology, diagnosis and treatment planning of various common

Orthodontic problems

3. Various treatment modalities in Orthodontics–preventive, interceptive and corrective.
4. Basic sciences relevant to the practice of Orthodontics
5. Interaction of social, cultural, economic, genetic and environmental factors and their relevance to management of oro–facial deformities
6. Factors affecting the long-range stability of orthodontic correction and their management
7. Personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste, keeping in view the high prevalence of Hepatitis and HIV and other highly contagious diseases.

Skills:

1. To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures, and interpret them and arrive at a reasonable diagnosis about the Dento-facial deformities.
2. To be competent to fabricate and manage the most appropriate appliance – intra or extraoral, removable or fixed, mechanical or functional, and active or passive–for the treatment of any orthodontic problem to be treated singly or as a part of multidisciplinary treatment of oro-facial deformities.

Attitude:

1. Develop an attitude to adopt ethical principles in all aspects of Orthodontic practice.
2. Professional honesty and integrity are to be fostered
3. Treatment care is to be delivered irrespective of the social status, cast, creed and religion of the patients.
4. Willingness to share the knowledge and clinical experience with professional colleagues
5. Willingness to adopt, after a critical assessment, new methods and techniques of orthodontic management developed from time to time based on scientific research, which are in the best interest of the patient
6. Respect patients' rights and privileges, including patients right to information and right to seek a second opinion
7. Develop attitude to seek opinion from allied medical and dental specialists as and when required

Communication Skills:

1. Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular Dento-facial problem and to obtain a true informed consent from them for the most appropriate treatment available at that point of time.
2. Develop the ability to communicate with professional colleagues, in Orthodontics or other specialties through various media like correspondence, Internet, e-video, conference, etc. to render the best possible treatment.

COURSECONTENT:

The program outlined, addresses both the knowledge needed in Orthodontics and allied Medical specialties in its scope.

Spread of the Curriculum:

PART-I:

A. Applied Basic Sciences:

Applied Anatomy:

a. Prenatal growth of head:
   Stages of embryonic development, origin of head, origin of face, origin of teeth.
b. Postnatal growth of head:
   Bones of skull, the oral cavity, development of chin, the hyoid bone, general growth of head, growth of the face.
c. Bone growth:
   Origin of bone, composition of bone, units of bone structure, schedule of Ossification, mechanical properties of bone, roentgengraphic appearance of bone
d. Assessment of growth and development:
   Growth prediction, growth spurts, the concept of normality and growth increments of growth, differential growth, gradient of growth, methods of gathering growth data. Theories of growth and recent advances, factors affecting physical growth.
e. Muscles of mastication:
   Development of muscles, muscle change during growth, muscle function and facial development, muscle function and malocclusion
f. Development of dentition and occlusion:
   Dental development periods, order of tooth eruption, chronology of permanent tooth formation, periods of occlusal development, pattern of occlusion.
g. Assessment of skeletal age.

Physiology:

a. Endocrinology and its disorders: Growth hormone, thyroid hormone, parathyroid hormone, ACTH.
b. Calcium and its metabolism:
c. Nutrition-metabolism and their disorders:
   Proteins, carbohydrates, fats, vitamins and minerals
d. Muscle physiology:
e. Craniofacial Biology:

Adhesion molecules and mechanism of adhesion

f. Bleeding disorders in orthodontics: Hemophilia

Dental Materials:

a. Gypsum products:
   Dental plaster, dental stone and their properties, setting reaction etc.
b. Impression materials: Impression materials in general and particularly of alginate impression material.
c. Acrylics: Chemistry, composition
   physical properties
d. Composites:
   Composition types, properties, setting reaction
e. Banding and bonding cements:
f. Wrought metal alloys: Deformation, strain hardening, annealing, recovery, recrystallization, grain growth, properties of metal alloys
g. Orthodontic arch wires
h. Elastics:
   Latex and non-latex elastics.
i. Applied physics, Bioengineering and metallurgy:
j. Specification and tests methods used for materials used in Orthodontics:
k. Survey of all contemporary literature and recent advances in above mentioned materials:

Genetics:

a. Cell structure, DNA, RNA, protein synthesis, cell division
b. Chromosomal abnormalities
c. Principles of orofacial genetics
d. Genetics in malocclusion
e. Molecular basis of genetics
f. Studies related to malocclusion
g. Recent advances in genetics related to malocclusion
h. Genetic counseling
i. Bioethics and relationship to Orthodontic management of patients.

Physical Anthropology:

a. Evolutionary development of dentition
b. Evolutionary development of jaws.

Pathology:

a. Inflammation
b. Necrosis

Biostatistics:

a. Statistical principles

- Data Collection
  - Method of presentation
  - Method of Summarizing
  - Methods of analysis–different tests/errors

b. Sampling and Sampling technique
c. Experimental models, design and interpretation
d. Development of skills for preparing clear concise and cogent scientific abstracts and publication

Applied Research Methodology In Orthodontics:

a. Experimental design
b. Animal experimental protocol
c. Principles in the development, execution and interpretation of methodologies in Orthodontics
d. Critical Scientific appraisal of literature.

Applied Pharmacology

Definitions & terminologies used – Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics, analeptics and tranquilizers. Local anesthetics, Chemotherapeutics and antibiotics. Vitamins: A, D, B – Complex group, C&Ketc.

PART-II:

Paper-I: Basic Orthodontics

Orthodontic History:

a. Historical perspective,
b. Evolution of orthodontic appliances,
c. Pencil sketch history of Orthodontic peers
d. History of Orthodontics in India

Concepts of Occlusion and Esthetics:

a. Structure and function of all anatomic components of occlusion,
b. Mechanics of articulation,
c. Recording of masticatory function,
d. Diagnosis of Occlusal dysfunction,
e. Relationship of TMJ anatomy and pathology and related neuromuscular physiology.

Etiology and Classification of Malocclusion:

a. A comprehensive review of the local and systemic factors in the causation of malocclusion

b. Various classifications of malocclusion

Dentofacial Anomalies:

a. Anatomical, physiological and pathological characteristics of major groups of developmental defects of the orofacial structures.

Diagnostic Procedures and Treatment Planning in Orthodontics:

a. Emphasis on the process of data gathering, synthesis and translating it into a treatment plan
b. Problem cases–analysis of cases and its management
c. Adult cases, handicapped and mentally retarded cases and their special problems
d. Critique of treated cases.

Cephalometrics

a. Instrumentation
b. Image processing
c. Tracing and analysis of errors and applications
d. Radiation hazards
e. Advanced Cephalometrics techniques including digital cephalometrics
f. Comprehensive review of literature
g. Video imaging principles and application.

Practice Management in Orthodontics:

a. Economics and dynamics of solo and group practices
b. Personal management
c. Materials management
d. Public relations
e. Professional relationship
f. Dental ethics and jurisprudence
g. Office sterilization procedures
h. Community based Orthodontics.

Paper-II: Clinical Orthodontics

Myofunctional Orthodontics:

a. Basic principles
b. Contemporary appliances–design, manipulation and management
c. Case selection and evaluation of the treatment results
d. Review of the current literature.

Dentofacial Orthopedics :

a. Principles
b. Biomechanics

c. Appliance design and manipulation
d. Review of contemporary literature

Cleft lip and palate rehabilitation:

a. Diagnosis and treatment planning
b. Mechanotherapy
c. Special growth problems of cleft cases
d. Speech physiology, pathology and elements of therapy as applied to orthodontics
e. Team rehabilitative procedures.

Biology of tooth movement:

a. Principles of tooth movement-review
b. Review of contemporary literature
c. Applied histophysiology of bone, periodontal ligament
d. Molecular and ultra cellular consideration in tooth movement

Orthodontic/ Orthognathic surgery:

a. Orthodontist's role in conjoint diagnosis and treatment planning
b. Pre and post-surgical Orthodontics
c. Participation in actual clinical cases, progress evaluation and post retention study
d. Review of current literature

Ortho/ Perio/ Prostho/Endointer relationship:

a. Principles of interdisciplinary patient treatment
b. Common problems and their management

Basic principles of mechanotherapy include removable appliances and fixed appliances:

a. Design
b. Construction
c. Fabrication
d. Management
e. Review of current literature on treatment methods and results

Applied preventive aspects in Orthodontics:

a. Caries and periodontal disease prevention
b. Oral hygiene measures
c. Clinical procedures

Interceptive Orthodontics:

a. Principles
b. Growth guidance
c. Diagnosis and treatment planning
d. Therapy emphasis on:
    - Dento-facial problems

- Tooth material discrepancies
- Minor surgery for Orthodontics

Evidence Based Orthodontics:

Different types of fixed Mechanotherapy:

Orthodontic Management of TMJ problems, sleep-apnoea etc.:

Retention and relapse:

a. Mechanotherapy–special reference to stability of results with various procedures
b. Post retention analysis
c. Review of contemporary literature

Recent Advances:

a. Use of implants
b. Lasers
c. Application of F.E.M.
d. Distraction Osteogenesis
e. Invisible Orthodontics
f. 3-D imaging Digital Orthodontics, Virtual Treatment Planning
g. CAD-CAM bracket Customization
h. Robotic Wire Bending
i. Accelerated Orthodontics
   - Surgical
   - Device assisted or mechanical stimulation
   - Biochemical Mediators
j. Lingual Orthodontics

Paper-III: Essays (descriptive and analyzing type questions)

PRE–CLINICAL EXERCISES
(Should be completed within 3 months)

A general outline of the type of exercises is given here:

1. General Wire bending exercises to develop the manual dexterity.
2. Clasps, Bows and springs used in the removable appliances.
3. Soldering and welding exercises.
4. Fabrication of removable, habit breaking, mechanical and functional appliances, also all types of space maintainers and space regainers.
5. Bonwill Hawley Ideal arch preparation.
6. Construction of orthodontic models trimmed and polished.
7. Cephalometric tracing and various Analyses, also superimposition methods–
8. Fixed appliance typodont exercises.

a) Training shall be imparted in one basic technique i.e. Standard Edgewise / Begg technique or its derivative / Straight wire etc., with adequate exposure toother techniques.

b) Typodont exercise
   - Band making
   - Bracket positioning and placement
   - Different stages in treatment appropriate to technique taught

9. Clinical photography
10. Computerized imaging
11. Preparation of surgical splints, and splints for TMJ problems. 12. Handling of equipment like vacuum forming appliances and hydrosolder etc.

Basic Pre-Clinical Exercise Work for the MDS Students:

1. Clasps:

Sl.No	Exercise	No.
1	¾ Clasps	1
2.	Triangular Clasps	1
3.	Adam's clasp	2
4.	Modification of Adam's –With Helix	2
5.	Southend Clasp	1

2. Labial Bows:

Sl.No.	Exercise	No.
1	Short labial bow (upper & lower)	1
2	Long labial bow (upper & lower)	1
3.	Split high labial bow	1

3. Springs:

Sl.No.	Exercise	No.
1	Double cantilever spring	1
2	Coffin spring	1
3	T spring	1

4. Appliances:

Sl.No.	Exercise	No.
1.	Hawley's retention appliance with anterior bite plane	1
2.	Upper Hawley's appliance with posterior bite plane	1
3.	Upper expansion appliance with expansion screw	1
4.	Habit breaking appliance with tongue crib	1

5.	Oral screen and double oral screen	1

6.	Lip bumper	1
7.	Splint for Bruxism	1
8.	Catalans appliance	1
9.	Activator	1
10.	Bionator	1
11.	Frankel-FR1&2 appliance	2
12.	Twin block	1
13.	Lingual arch	1
14.	TPA	1
15.	Quad helix	1
16.	Utility arches	1
17.	Pendulum appliance	1
18.	Canine Retractor**(Marcotte&PGSpring)**	1

5. Soldering exercises:

Sl.No.	Exercise	No.
1	Star/Comb/Christmas tree	1

6. Study model preparation:

7. Model analysis–Mixed and permanent Dentition:

8. Cephalometrics:

Sl.No.	Exercise
1	Lateral cephalogram to be traced in different colors and superimposed to see the accuracy of tracing
2	Vertical and Anterio-Posterior Cephalometric analysis
3	Soft tissue analysis– Holdaway and Burstone
4	Various superimposition methods

9. Basics of Clinical Photography including Digital Photography:

10. Typodont exercises: Beggor P.E.A. method/ Basic Edgewise:

Sl.No	Exercise
1	Teeth setting in Class-II division I malocclusion with maxillary anterior Proclination and mandibular anterior crowding
2	Band pinching, welding brackets and buccal tubes to the bands
3	Different Stages dependent on the applied technique

CLINICAL WORK:

Once the basic pre-clinical work is completed in three months, the students can take up clinical cases and the clinical training.

Each post graduate student should start with a minimum of 50 fixed orthodontics cases and 20 removable including myofunctional cases of his/her own. Additionally he/ she should handle a minimum of 25 transferred cases.

The type of cases can be as follows:

- Removable active appliances
- Class-I malocclusion with Crowding
- Class-I malocclusion with bi-maxillary protrusion
- Class-II division– 1
- Class-II division– 2
- Class-III (Orthopedic,Surgical,Orthodontic cases)
- Interdisciplinary cases
- Removable functional appliance cases like activator, Bionator, functional regulator, twin block and new developments
- Fixed functional appliances –Herbst appliance, jasper jumper etc
- Dento-facial orthopedic appliances like head gears, rapid maxillary expansion, NiTi expander etc.,
- Appliance for arch development such as molar distalization

- Fixed mechanotherapy cases(Begg, PEA, Tipedge, Edgewise, lingual)
- Retention procedures of above treated cases.

Scheme of examination:

A. Theory: Part-I: Basic Sciences Paper - **100 Marks**
Part-II: Paper-I, Paper-II & Paper-III - **300 Marks**
(100Marksfor each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any oral the papers. Distribution of topics for each paper will be as follows:*

PART-I: Applied Basic Sciences :Applied anatomy, Physiology, Dental Materials, Genetics, Pathology, Physical Anthropology, Applied

Research methodology, Bio-Statistics and Applied Pharmacology.

PART-II

Paper I: Orthodontic history, Concepts of occlusion and esthetics, Child and Adult Psychology, Etiology and classification of malocclusion, Dentofacial Anomalies, Diagnostic procedures and treatment planning in Orthodontics, Practice management in Orthodontics

Paper II: Clinical Orthodontics

Paper III: Essays (descriptive and analyzing type questions)

**The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics*.

B. Practical/ Clinical Examination : 200

Marks Exercise No: 1 50 Marks

Functional Case:

Selection of case for functional appliance and recording of construction bite. Fabrication and delivery of the appliance the next day.

Exercise No: 2 : 50 Marks

1. III stage with auxiliary springs/Wire bending of any stage of fixed orthodontics(OR)
2. Bonding of SWA brackets and construction of suitable arch wire.

ExerciseNo.3 75 Marks

Display of records of the treated cases (Minimum of 5 cases)

Exercise No: 4 25 Marks

Long case discussions

Time allotted for each exercise:

No	Exercise	Marks allotted	Approximate Time
1	Functional appliance	50	1 hour (each day)
2	III stage mechanics/ Bonding and arch wire fabrication	50	1 hr 30min
3	Display of case records (a minimum of 5 cases to be presented along with all the patients and records)	75	1 hour
4	Long cases	25	2 hours

Note: The complete records of all the cases should be displayed (including transferred cases)

C. Viva Voce : 100 Marks

i. Viva-Voce examination: *80 marks*

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, and expression, interpretation of data andcommunication skills.
It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: *20 marks*

A topic be given to each candidate in the beginning of clinical examination. He/ she is asked to make a presentation on the topic for 8-10 minutes.

ADDITIONS (REVISED SYLLABUS)

129. 515 ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS

1. Newer approaches to surgical orthodontics i.e Surgery first approach, (SFA) Surgically assisted rapid palatal expansion and miniscrew assisted RME

2. Temporary Anchorage devices and its applications in clinical orthodontics (Buccal shelf /IZC etc)

3. Clear Aligner treatment including material used, biomechanics and recent development for use in orthodontics

4. Application of CBCT in day to day orthodontic practice

5. Digital marketing in orthodontics

6. ORAL & MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY

Objectives:

- To train a post graduate dental surgeon so as to ensure higher competence in both general and special pathology dealing with the nature of oral diseases, their causes, processes and effects.
- An oral pathologist is expected to perform routine histopathological evaluation of specimens relating to oral and perioral tissues, to carry out routine diagnostic procedures including hematological, cytological, microbiological, Immunological and ultra structural investigations.
- He/she is expected to have an understanding of current research methodology, collection and interpretation of data, ability to carry out research projects on clinical and

or epidemiological aspects, a working knowledge on current databases, automated data retrieval systems, referencing and skill in writing scientific papers.

- He/ she is expected to present scientific data pertaining to the field, in conferences both as poster and verbal presentations and to take part in group discussions.

Teaching/ Learning Activities:

Broad Outline of Theoretical, Clinical and Practical Courses

IMDS:

1. ***Biostatistics and Research Methodology*:**

- Basic principles of biostatistics and study as applied to dentistry and research
- Collection/ organization of data/ measurement scales / presentation of data and analysis
- Measures of central tendency
- Measures of variability
- Sampling and planning of health survey
- Probability, normal distribution & indicative statistics
- Estimating population values
- Tests of significance (parametric/ non-parametric qualitative methods)
- Analysis of variance
- Association, correlation and regression

Approach:

- Didactic Lectures

2. **Applied Gross Anatomy of head and neck, histology and genetics:**

- Temporo-mandibular joint
- Trigeminal nerve and facial nerve
- Muscles of mastication
- Tongue
- Salivary glands
- Nerve supply, blood supply, lymphatic drainage & venous drainage of oro-dental tissues
- Development of face, palate, mandible, maxilla, tongue and applied aspects of the same
- Development of teeth & dental tissues and developmental defects of oral and maxilla-facial region & abnormalities of teeth
- Maxillary sinus
- Jaw muscles and facial muscles

- Introduction to genetics
- Modes of inheritance
- Chromosomal anomalies of oral tissues & single gene disorders

Approach:

- Didactic Lectures
- Postings in the Department of Anatomy for dissection of Head, Face and Neck

3. ***Physiology (General & Oral)*:**

- Saliva
- Pain
- Mastication
- Taste
- Deglutition
- Wound healing
- Vitamins (influence on growth, development and structure of oral soft and hard tissues & para oral tissues)
- Calcium metabolism
- Theories of mineralization
- Tooth eruption and shedding
- Blood and its constituents
- Hormones (influence on growth, development and structure of oral soft and hard tissues & paraoral tissues)

Approach:

- Didactic Lectures

4. ***Cell Biology*:**

- Cell structure and function (ultrastructural & molecular aspects)
- Intercellular junctions
- Cell cycle and division
- Cell cycle regulators
- Cell–cell & cell-extracellular matrix interactions
- Detailed molecular aspects of DNA,RNA and intracellular organelles, transcription and translation and molecular biology techniques

Approach:

- Seminars & Didactic Lectures

5. ***General Histology*:**

- Light & electron microscopy considerations of epithelial tissues and glands, bone.
- Light & electron microscopy considerations of hemopoetic system, lymphatic system, muscle, neural tissue, endocrinal system(thyroid, pituitary, parathyroid)

Approach:

- Didactic Lectures
- Postings in the Department of Anatomy & Histology for slide discussion
- Record book to be maintained

6. **Biochemistry:**

- Chemistry of carbohydrates, lipids and proteins
- Methods of identification and purification
- Metabolism of carbohydrates, lipids and proteins
- Biological oxidation
- Various techniques-cell fractionation and ultra filtration, centrifugation, electrophoresis, spectrophotometry and radioactive techniques

Approach:

- Didactic Lectures
- Postings in the Department of Biochemistry to familiarize with various techniques
- Record book to be maintained

7. ***General Pathology:***

- Inflammation and chemical mediator
- Thrombosis
- Embolism
- Necrosis
- Repair
- Degeneration
- Shock
- Hemorrhage
- Pathogenic mechanisms at molecular level
- Blood dyscrasias
- Carcinogenesis and neoplasia

Approach:

- Didactic Lectures & Seminars

8. ***General Microbiology****:*

- Definitions of various types of infections
- Routes of infection and spread
- Sterilization, disinfection and antiseptics
- Bacterial genetics
- Physiology, growth of microorganisms

Approach:

- Didactic Lectures & Seminars

9. ***Basic Immunology:***

- Basic principles of immunity, antigen and antibody reaction
- Cell mediated and humoral immunity
- Immunology of hypersensitivity
- Immunological basis of auto immune phenomena
- Immunodeficiency with relevance to opportunistic infections
- Basic principles of transplantation and tumor immunity

Approach:

- Didactic Lectures & Seminars

10. Systemic Microbiology/ Applied Microbiology:

Morphology, classification, pathogenicity, mode of transmission, methods of prevention, collection and transport of specimen for laboratory diagnosis, stainingmethods, common culture media, interpretation of laboratory reports and antibiotic sensitivity tests.

- Staphylococci
- Streptococci
- Corynebacterium diphtheria
- Mycobacteria
- Clostridia, bacteroids & fusobacteria
- Actinomycetales
- Spirochetes
- General structure, broad classification of viruses, pathogenesis, pathology of viral infections
- Herpes virus
- Hepatitis virus
- HIV
- General properties of fungi
- Superficial, subcutaneous, deep opportunistic infections
- General principles of fungal infections, method of collection of samples, diagnosis and examination of fungi

Approach:

- Didactic Lectures & Seminars
- Postings in the Department of Microbiology to familiarize with relevant diagnostic methods
- Record book to be maintained

***11.* Oral biology (Oral and Dental Histology):**

- Study of morphology of permanent and deciduous teeth
- Structure and function of oral, dental and paraoral tissues including the in ultrastructure, molecular and biochemical aspects

Approach:

- Didactic Lectures & Seminars
- Slide discussion on histological appearance of normal oral tissues
- Record book to be maintained

12. **Basic Histo-Techniques and Microscopy:**

- Routine hematological tests and clinical significance of the same
- Biopsy procedures for oral lesions
- Tissue processing
- Microtome and principles of microtomy
- Various stains used in histopathology and their applications
- Microscope, principles and theories of microscopy
- Light microscopy and various other types including electron microscopy
- Fixation and fixatives
- Ground sections and decalcified sections
- Cytological smears

Approach:

- Didactic Lectures & Seminars
- Postings in Clinical Pathology and Microbiology for relevant training
- Preparation of Ground and decalcified sections, tissue processing, sectioning and staining
- Tooth Carving (Permanent Dentition)
- Record book to be maintained

II MDS:

1. ***Oral and Dental Pathology:***

- Developmental disorders of oral and paraoral structures
- Potentially malignant disorders
- Benign and malignant tumors of the oral cavity
- Odontogenic cysts and tumors
- Pathology of salivary glands
- Regressive alterations of teeth
- Bacterial, fungal, viral and protozoal infections of the oral cavity
- Dental caries
- Diseases of pulp and periapical region
- Spread of oral infection
- Healing of oral wounds
- Physical and chemical injuries of oral cavity
- Oral aspects of metabolic diseases
- Diseases of bones and joints
- Diseases of skin and mucous membrane
- Diseases of periodontia
- Diseases of blood and blood forming organs

- Diseases of nerves and muscles
- Oro-facial pain
- Immunological diseases of oral cavity including tumor immunology
- Molecular pathology
- Oral Microbiology

Approach:

- Didactic Lectures & Seminars
- Postings in the Department of Dermatology of a Medical College
- Postings in a Cancer Centre

2. ***Basic histo-techniques and microscopy:***

- Enzyme histochemistry
- Principles, techniques and applications of immunofluorescence
- Principles, techniques and applications of immunohistochemistry
- Preparation of frozen sections
- Museum set up
- Quality control
- Animal models

Approach:

- Didactic Lectures & Seminars
- Training to be imparted in the Department or in other institutions having the facility
- Visit to the centre of animal experimentation to be familiarize with laboratory techniques, up keep and care of animals
- Record book to be maintained

3. **Recent Molecular Techniques:**

- Basic principles, techniques and applications of –
  - PCR
  - BLOTS
  - Hybridization
  - Recombinant DNA technology
  - Microarray
  - DNA sequencing
  - Cell culture and cloning

Approach:

- Didactic Lectures & Seminars
- Training to be imparted in the Department or in other institutions having the facility
- Record book to be maintained

4. **Recording of Case History and Clinico-Pathological Discussions: Approach:**

- Postings in the Department of Oral Medicine, Diagnosis & Radiology
- Record of minimum 10 case histories to be maintained

5. **Histopathology–Slide discussion:**

- Record book to be maintained

III MDS:

- Forensic odontology
- Giant cell lesions
- Clear cell lesions
- Round cell lesions
- Spindle cell lesions
- Pigmented lesions
- Fibro-osseous lesions
- Mechanism of formation and expansion of cysts of orofacial region
- Mechanism of growth and metastasis of tumors
- Lab diagnosis of bacterial infections
- Lab diagnosis of viral infections
- Lab diagnosis of fungal infections
- Hamartomas
- Phakomatoses
- Vascular tumors of oro-facial region
- Genodermatoses
- Tumor markers
- Histogenesis of salivary gland tumors
- Tumor angiogenesis
- Concept of premalignancy
- Blue cell lesions
- Molecular basics of oral squamous cell carcinoma
- Matrix remodelling in pathological condition
- Etiopathogenesis of developmental defects of teeth
- Viral oncogenesis
- Lesions associated with impacted and missing teeth
- Syndromes affecting oro-facial region
- Hereditary oral defects
- Techniques to assess the prognosis of neoplastic lesions
- Vesiculo-bullous lesions
- Lymphoreticular malignancy
- Haemopoietic malignancy
- Micro nutrients
- Oral aspects of metabolic disorders
- Hormones and oro-maxillofacial lesions
- Matrix metalloproteinases
- Current concepts in HIV related oral diseases
- Current concepts in OSMF

- Epithelial–connective tissue interaction
- Stem cell research

Approach:

- Didactic Lectures & Seminars
- Postings in the Department of Forensic Medicine/ Sciences
- Record book to be maintained

Monitoring Learning Progress:

It is essential to monitor the learning progress of each candidate through continuous appraisal andregular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring should be done by the staff of the departmentbased on participation of students in various teaching / learning activities. It may be structured and assessment is done using checklists that assess various aspects. Checklists are given in Section IV.

Scheme of Examination:

A. Theory: Part-I: Basic Sciences Paper - **100Marks**
Part-II: Paper-I, Paper-II & Paper-III - **300 Marks**
(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10marks each. Paper-III will be on Essays. Three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances maybe asked in any or all the papers. Distribution of topics for each paper will be as follows:*

PART-I: Applied Basic Sciences: Applied Anatomy, Physiology (General and oral), and Cell Biology, General Histology, Biochemistry, General Pathology, General Pharmacology specially related to drug induced oral mucosal lesions, General and systemic Microbiology, Virology, Mycology, Basic Immunology, Oral Biology (Oral and Dental Histology), Biostatistics and Research Methodology

PART-II

Paper-I : Oral pathology, Oral Microbiology & Immunology and Forensic Odontology
Paper-II : Laboratory techniques & Diagnosis and Oral Oncology

Paper-III: Essays (descriptive and analyzing type questions)

**The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlappingtopics.*

B. Practical/Clinical Examination – 200 Marks

1. **Case Presentation**
   a) Long case – 20 marks
   b) Short case – 10 marks
2. **Clinical Hematology** (any two investigations) – 20Marks
   Hb%, bleeding time, clotting time, Total WBC count, Differential WBC count and ESR

3. **Smear Presentation** – 20
   Marks Cytology or microbial smear and staining

4. **Paraffin sectioning and H & E Staining** – 30Marks

5. **Histopathology slide discussion** – 100Marks

C. Viva Voce – 100 Marks

i. **Viva-Voce examination** – 80marks
All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents.

ii. **Pedagogy Exercise** – 20 marks
a topic be given to each candidate in the beginning of clinical examination. He/ she is asked to make a presentation on the topic for 8-10minutes.

ADDITION (REVISED SYLLABUS)

130: 515 M.D.S. (ORAL AND MAXILLOFACIAL PATHOLOGY AND MICROBIOLOGY)

1) Emphasize the integration of technology, such as advanced diagnostic tools, digital pathology, and bioinformatics, into the curriculum.
2) Explore opportunities to integrate interdisciplinary approaches, connecting oral pathology and microbiology with other relevant disciplines. such as genetics, immunology, and molecular biology

7. PUBLICHEALTHDENTISTRY

OBJECTIVES:

At the end of 3 years of training the candidate should be able to:

Knowledge:

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

Skills:

The candidate should be able to

1. Take history, conduct clinical examination including all diagnostic procedures to arrive at diagnosis at the individual level and conduct survey of the community at state and national level of all conditions related to oral health to arrive at community diagnosis.
2. Plan and perform all necessary treatment, prevention and promotion of Oral Health at the individual and community level.
3. Plan appropriate Community Oral Health Program, conduct the program and evaluate, at the community level.
4. Ability to make use of knowledge of epidemiology to identify causes and plan appropriate preventive and control measures.
5. Develop appropriate person power at various levels and their effective utilization.
6. Conduct survey and use appropriate methods to impart Oral Health Education.
7. Develop ways of helping the community towards easy payment plan, and followed by evaluation for their oral health care needs.
8. Develop the planning, implementation, evaluation and administrative skills to carry out successful community Oral Health Programs.

Values:

1. Adopt ethical principles in all aspects of Community Oral Health Activities.
2. To apply ethical and moral standards while carrying out epidemiological researches.
3. Develop communication skills, in particular to explain the causes and prevention of oral diseases to the patient.
4. Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed and promote team work approach.
5. Respect patient's rights and privileges including patient's right to information and right

to seek a second opinion.

COURSE CONTENTS:

A) Applied Basic Sciences:

Applied Anatomy and Histology:

a) Applied Anatomy in relation to:

- Development of face
- Brachial arches
- Muscles of facial expression
- Muscles of mastication
- TMJ
- Salivary gland
- Tongue
- Hard and soft palate
- Infra temporal fossa
- Paranasal air sinuses
- Pharynx and larynx
- Cranial and spinal nerves- with emphasis on trigeminal, facial, glosso pharyngeal and hypoglossal nerve
- Osteology of maxilla and mandible
- Blood supply, venous and lymphatic drainage of head and neck
- Lymph nodes of head and neck
- Structure and relations of alveolar process and edentulous mouth
- Genetics-fundamentals

b) Oral Histology:

- Development of dentition, Innervations of dentin and pulp
- Periodontium-development, histology, blood supply, nerve supply and lymphatic drainage
- Oral mucous membrane
- Pulp-periodontal complex

Applied Physiology and Biochemistry:

- Cell
- Mastication and deglutition
- Food and nutrition
- Metabolism of carbohydrates, proteins and fats
- Vitamins and minerals
- Saliva and Oral health
- Fluid and electrolyte balance
- Pain pathway and mechanism- types, properties
- Blood composition and functions, clotting mechanism and erythropoiesis,

Blood groups and transfusions, Pulse and blood pressure,

- Dynamics of blood flow
- Cardiovascular homeostasis-heart sounds
- Respiratory system: Normal physiology and variations in health and diseases, Asphyxia and artificial respiration
- Endocrinology: thyroid, parathyroid, adrenals, pituitary, sex hormones and pregnancy, Endocrine regulation of blood sugar.

Applied Pathology:

- Pathogenic mechanism of molecular level
- Cellular changes following injury
- Inflammation and chemical mediators
- Oedema, thrombosis and embolism
- Hemorrhage and shock
- Neoplasia and metastasis
- Blood disorders
- Histopathology and pathogenesis of dental caries, periodontal disease, oral mucosal lesions, and malignancies
- HIV
- Propagation of dental infection

Microbiology:

- Microbial flora of oral cavity
- Bacteriology of dental caries and periodontal disease
- Methods of sterilization
- Infection control in dental office/ camps
- Virology of HIV, herpes, hepatitis
- Parasitology
- Basic immunology– basic concepts of immune system in human body
  - Cellular and humoral immunity
  - Antigen and antibody system
  - Hypersensitivity
  - Autoimmune diseases

Oral Pathology:

- Detailed description of diseases affecting the oral mucosa, teeth, supporting tissues and jaws.

Physical and Social Anthropology:

Anthropology is a part of Social Sciences, which also constitutes behavioral sciences i.e., Psychology and Sociology. Behavioral Sciences has been mentioned in Public Health.

- Introduction and definition
- Appreciation of the biological basis of health and disease

- Evolution of human race, various studies of different races by anthropological methods

Applied Pharmacology:

- Definition, scope and relations to other branches of medicine, mode of action, bio assay, standardization, pharmacodyanamics, pharmacokinetics.
- Chemotherapy of bacterial infections and viral infections– sulphonamides and antibiotics.
- Local anesthesia
- Analgesics and anti-inflammatory drugs
- Hypnotics, tranquilizers and antipyretics
- Important hormones-ACTH, cortisone, insulin and oral antidiabetics.
- Drug addiction and tolerance
- Important pharmacological agents in connection with autonomic nervous system- adrenaline, noradrenaline, atropine
- Brief mention of antihypertensive drugs
- Emergency drugs in dental practice
- Vitamins and haemopoietic drug
- Effect of drugs on oral health

Research Methodology and Biostatistics:

Health Informatics– basic understanding of computers and its components, operating software (Windows), Microsoft office, preparation of teaching materials like slides, project, multimedia knowledge. Operative skills in analyzing the data.

Research Methodology – definitions, types of research, designing written protocol for research, objectivity in methodology, quantification, records and analysis.

Biostatistics – introduction, applications, uses and limitations of bio – statistics in Public Health dentistry, collection of data, presentation of data, measures of centraltendency, measures of dispersion, methods of summarizing, parametric and non parametric tests of significance, correlation and regression, multivariate analysis, sampling and sampling techniques–types, errors, bias, trial and calibration

B) Public Health Public Health:

- Definition, concepts and philosophy of dental health
- History of public health in India and at international level
- Terminologies used in public health

Health:

- Definition, concepts and philosophy of health
- Health indicators
- Health determinants

- Community and its characteristics and relation to health

Disease:

- Definition, concepts
- Multifactorial causation, natural history, risk factors
- Disease control and eradication, evaluation and causation, infection of specific diseases
- Vaccines and immunization

General Epidemiology:

- Definition and aims, general principles
- Multifactorial causation, natural history, risk factors
- Methods in epidemiology, descriptive, analytical, experimental and classic epidemiology of specific diseases, uses of epidemiology
- Duties of epidemiologist
- General idea of method of investigating chronic diseases, mostly non- infectious nature, epidemic, endemic, and pandemic.
- Ethical conversation in any study requirement
- New knowledge regarding ethical subjects
- Screening of diseases and standard procedures used

Environmental Health:

- Impact of important components of the environment of health
- Principles and methods of identification, evaluation and control of such health hazards
- Pollution of air, water, soil, noise, food
- Water purification, international standards of water
- Domestic and industrial toxins, ionizing radiation
- Occupational hazards
- Water disposal-various methods and sanitation

Public Health Education:

- Definition, aims, principles of health education
- Health education, methods, models, contents, planning health education programs

Public Health Practice and Administration System in India.

Ethics and Jurisprudence:

- Basic principles of law
- Contract laws-dentist–patient relationships & Legal forms of practice
- Dental malpractice
- Person identification through dentistry
- Legal protection for practicing dentist
- Consumer protection act

Behavioral Sciences:

- Definition and introduction
- Sociology: social class, social group, family types, communities and social relationships, culture, its effect on oral health.
- Psychology: definition, development of child psychology, anxiety, fear and phobia, intelligence, learning, motivation, personalities, fear, dentist-patient relationship, modeling and experience

Hospital Administration:

- Departmental maintenance, organizational structures
- Types of practices
- Biomedical waste management

Health Care Delivery System:

- International oral healthcare delivery systems–Review
- Central and state system in general and oral health care delivery system if any
- National and health policy
- National health programmes
- Health Planning and Evaluation
- Primary health care – concepts, oral health in PHC and its implications
- National and international health organizations
- Dentists Act 1928,Dental council of India ,Ethics ,Indian Dental Association
- Role of W.H.O. and Voluntary organizations in Health Care for the Community

Oral Biology and Genetics:

- A detailed study of cell structure
- Introduction to Genetics, Gene structure, DNA,RNA
- Genetic counseling, gene typing
- Genetic approaches in the study of oral disorders Genetic Engineering-Answer to current health problems

Demography &Family Planning:

Demographic trends, family planning methods, milestones in population control in India.

Health Economics: Health benefit analysis and Cost effective analysis

C) Dental Public Health:

Dental Public Health:

- History
- Definition and concepts of dental public health
- Differences between clinical and community dentistry
- Critical review of current practice
- Dental problems of specific population groups such as chronically ill, handicapped and institutionalized group

Epidemiology of Oral Diseases and Conditions:

- Dental caries, gingival, periodontal disease malocclusion, dental Fluorosis, oral cancer, TMJ disorders and other oral health related problems.

Oral Survey Procedures:

- Planning
- Implementation
- WHO basic oral health methods 1997
- Indices for dental diseases and conditions
- Evaluation

Delivery of Dental Care:

- Dental person power–dental auxiliaries
- Dentist –population ratios,
- Public dental care programs
- School dental health programs –Incremental and comprehensive care
- Private practice and group practice
- Oral health policy –National and international policy

Payment for Dental Care:

- Prepayment
- Post-payment
- Reimbursement plans
- Voluntary agencies
- Health insurance

Evaluation of Quality of Dental Care:

Problems in public and private oral health care system program

- Evaluation of quality of services, governmental control

Preventive Dentistry:

- Levels of prevention
- Preventive oral health programs screening, health education and motivation
- Prevention of all dental diseases-dental caries, periodontal diseases, oral cancer, malocclusion and Dentofacial anomalies
- Role of dentist in prevention of oral diseases at individual and community level.
  - Fluoride History
  - Mechanism of action
  - Metabolism
  - Fluoride toxicity
  - Fluorosis
  - Systemic and topical preparations
  - Advantages and disadvantages of each
  - Update regarding Fluorosis
  - Epidemiological studies
  - Methods of fluoride supplements
  - Defluoridation techniques
  - Antifluoridation lobby
- Plaque control measures-
  - Health Education
  - Personal oral hygiene
  - Tooth brushing technique
  - Dentifrices ,mouth rinses
- Pit and fissure sealant, ART, Preventive resin restoration
- Preventive oral healthcare for medically compromised individual
- Update on recent preventive modalities
- Caries vaccines
- Dietary counseling

Practice Management:

- Definition
- Principles of management of dental practice and types
- Organization and administration of dental practice
- Ethical and legal issues in dental practice
- Current trends
- Infection control in dental practice

Tobacco Counseling:

- Health Consequences
- Tobacco dependence
- Benefits of intervention
- Tobacco cessation
- Role of dentist

Health Man Power Planning:

Structured Training Schedule:

FIRST YEAR

Seminars:

- 5 seminars in basic sciences subject,
- To conduct10journal clubs
- Library assignment on assigned topics –2
- Submission of synopsis for dissertation-within 6months
- Periodic review of dissertation at two monthly intervals

Clinical Training:

1. Clinical assessment of patient Learning different criteria and instruments used in various oral indices assessing oral hygiene, periodontal disease, wasting disease, flourosis and malocclusion– 5cases each
   - Oral Hygiene Index–Greene and Vermillion
   - Oral Hygiene Index–Simplified
   - DMF–DMF(T),DMF(S)
   - deft/s
   - Fluorosis Indices – Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
   - Community Periodontal Index(CPI)
   - Plaque Index-Silness and Loe,gingival index –Loe and Silness
   - Russels periodontal disease index
   - WHO Oral Health Assessment Form –1997
   - Carrying out treatment(under comprehensive oral health care) of 10 patients
   - Maintaining complete records.

Field Programme:

- Carrying out preventive programs and health education for school children of the adopted school.
- School based preventive programs-

- Topical Fluoride application-Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes ,Fluoride mouth rinses
- Pit and Fissure Sealant–chemically cured (GIC),light cured
- Minimal Invasive Treatment-Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment(ART)
- Organizing and carrying out dental camps in both urban and rural areas.

2. Visit to slum, water treatment plant, sewage treatment plant, and Milk dairy, Public Health Institute, Anti-Tobacco Cell, Primary Health Center and submitting reports.
3. In additions the postgraduate shall assist and guide the under graduate students in their clinical and field programs.

SECONDYEAR

Seminars:

- Seminars in Public Health and Dental Public Health topics
- Conducting journal clubs
- Short term research project on assigned topics–2
- Periodic review of dissertation at monthly reviews

Clinical Training-Continuation of the Clinical Training:

Clinical assessment of patient

1. Learning different criteria and instruments used in various oral indices assessing oral hygiene, periodontal disease, wasting disease, flourosis and malocclusion – 5each
   - Oral Hygiene Index–Greene and Vermillion
   - Oral Hygiene Index–Simplified
   - DMF –DMF(T),DMF(S)
   - deft/s
   - Fluorosis Indices – Dean's Fluorosis Index, Tooth Surface Index for Fluorosis,Thylstrupand Fejerskov Index
   - Community Periodontal Index(CPI)
   - Plaque Index-Silness and Loe, gingival index –Loe and Silness
   - Russels periodontal disease index WHO Oral Health Assessment Form – 1987
   - Carrying out treatment (under comprehensive oral health care) of 10 patients –maintaining complete records

Field Program–Continuation of Field Program:

- Carrying out school dental health education
- School based preventive programs-
  - Topical Fluoride application-Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes, Fluoride mouth rinses
  - Pit and Fissure Sealant–chemically cured (GIC), light cured
  - Minimal Invasive Treatment-Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment(ART)
  - Organizing and carrying out dental camps in both urban and rural areas.
- Assessing oral health status of various target groups like School children, Expectant mothers Handicapped, Underprivileged, and geriatric populations. Planning dental man power and financing dental health care for the above group**.**
- Application of the following preventive measures in clinic – 10 Cases each.
  - Topical Fluoride application – Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes.
  - Pit and Fissure Sealant

- Planning total health care for school children in an adopted school:
  - Periodic surveying of school children
  - Incremental dental care
  - Comprehensive dental care
- Organizing and conducting community oral health surveys for all oral conditions-3 surveys
- In addition the post graduate shall assist and guide the under graduate students in their clinical and field programs
- To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic.

THIRDYEAR:

Seminars:

- Seminars on recent advances in Preventive Dentistry and Dental Public Health
- Critical evaluation of scientific articles –10 articles
- Completion and submission of dissertation

Clinical Training:

- Clinical assessment of patient
- Learning different criteria and instruments used in various oral indices assessing oral hygiene, periodontal disease, wasting disease, flourosis and malocclusion –5 each
  - Oral Hygiene Index–Greene and Vermillion
  - Oral Hygiene Index– Simplified
  - DMF – DMF(T), DMF(S)
  - deft/s
  - Fluorosis Indices– Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
  - Community Periodontal Index (CPI)
  - Plaque Index- Silness and Loe, gingival index– Loe and Silness
  - Russels periodontal l disease index
  - WHO Oral Health Assessment Form – 1987
  - Carrying out treatment (under comprehensive oral health care) of 10 patients – maintaining complete records
- Carrying out school dental health education
- School based preventive programs-
  - Topical Fluoride application – Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes.
  - Pit and Fissure Sealant
  - Minimal Invasive Techniques – Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment(ART)
- To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assignedtopic
- Exercise on solving community health problems –10 problems

- Application of the following preventive measures in clinic –10 cases each.
  - Topical Fluoride application – Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations
  - Pit and Fissure sealants
- Dental – health education training of school teachers ,social workers, health workers,
- Posting at dental satellite centers /nodal centers
- In addition the postgraduate shall assist and guide the undergraduate students in their clinical and field programs.

Monitoring Learning Process:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching/ learning activities. It may be structured and assessment be done using checklists that assess various aspects.
Checklists are given in Section IV.

Scheme of Examination

A. Theory: Part-I: Basic Sciences Paper	-	**100 Marks**
Part-II: Paper-I, Paper-II & Paper-III (100 Marks for each Paper)	-	**300 Marks**

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows:*

PART-I: Applied Basic Sciences: Applied Anatomy and Histology, Applied Physiology and Biochemistry, Applied Pathology, Microbiology, Oral Pathology, Physicaland Social Anthropology, Applied Pharmacology and Research Methodology and Biostatistics.

PART-II:

Paper-I: Public Health
Paper-II: Dental Public Health
Paper-III: Essays (descriptive and analyzing type questions)

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlappingof topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical / Clinical Examination :200Marks

1. Clinical examination of at least 2 patients representing the community – includes history, main complaints, examination and recording of the findings, usingindices for the assessment of oral health and presentation of the observation including diagnosis, comprehensive treatment planning. (50 Marks–1½Hrs)

2. Performing (50Marks–1½Hrs)
   a. One of the treatment procedures as per treatment plan.(Restorative, surgical, rehabilitation)
   b. Preventive oral health care procedure.
   c. One of the procedures specified in the curriculum

3. Critical evaluation of a given research article published in an international journal Marks–1Hour)

Problem solving – a hypothetical oral health situation existing in a community isgiven with sufficient data. The student as a specialist in community dentistry is expected to suggest practical solutions to the existing oral health situation of the given community. (50Marks–1½Hours)

C. Viva Voce : 100Marks

i. Viva- Voce examination *: 80 marks*

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise *: 20 marks*

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

PEDIATRIC AND PREVENTIVE DENTISTRY

OBJECTIVES:

At the end of 3 years of training the candidate should be able to

1. Create not only a good oral health in the child but also a good citizen tomorrow.
2. Instill a positive attitude and behavior in children
3. Understand the principles of prevention and preventive dentistry right from birth to adolescence
4. Guide and counsel the parents in regards to various treatment modalities including different facets of preventive dentistry
5. Prevent and intercept developing malocclusion

Skills:

1. Obtain proper clinical history, methodological examination of the child patient, perform essential diagnostic procedures and interpret them and arrive at a reasonable diagnosis and treat appropriately
2. Be competent to treat dental diseases which are occurring in child patient.
3. Manage to repair and restore the lost / tooth structure to maintain harmony between both hard and soft tissues of the oral cavity.
4. Manage the disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions.
5. To acquire skills in managing efficiently life threatening conditions with emphasis on basic life support measures.

Attitudes:

1. Develop an attitude to adopt ethical principles in all aspects of Pedodontic practice.
2. Professional honesty and integrity are to be fostered
3. Treatment care is to be delivered irrespective of the social status, cast, creed, and religion of the patients.
4. Willingness to share the knowledge and clinical experience with professional colleagues.
5. Willingness to adopt, after a critical assessment, new methods and techniques of Pedodontic management developed from time to time, based on scientific research ,which are in the best interest of the child patient.
6. Respect child patient's rights and privileges, including child patients right to information and right to seek a second opinion.
7. Develop an attitude to seek opinion from allied medical and dental specialities, as and when required

COURSE CONTENTS:

A) Applied Basic Sciences: Applied

Anatomy of Head and Neck:

- Anatomy of the scalp, temple and face Anatomy of the triangles of neck and deep structures of the neck
- Cranial and facial bones and its surroundings of tissues with its applied aspects
- Muscles of head and neck
- Arterial supply ,venous drainage and lymphatics of head and neck
- Congenital abnormalities of the head and neck
- Anatomy of the cranial nerves Anatomy of the tongue and its applied aspects
- Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea, esophagus
- Autonomous nervous system of head and neck
- Functional anatomy of mastication ,deglutition ,speech, respiration and circulation
- TMJ: anatomy and function

Applied Physiology:

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

Applied Pathology:

Inflammation and chemical mediators, Thrombosis, Embolism, Necrosis, Repair ,Degeneration , Shock, Hemorrhage , Blood dyscrasias, Pathogenesis of Dental Caries, Periodontal diseases, tumors, oral mucosal lesions etc .in children

Applied Microbiology:

Microbiology & Immunology as related to Oral Diseases in Children: Basic concepts, immune system in human body, Auto Immune diseases and Immunology of Dental caries.

Applied Nutrition & Dietics:

- General principles, balanced diet, effect of dietary deficiencies and starvation, protein energy, malnutrition, Kwashiorkor, Marasmus.
- Fluid and Electrolytic balance in maintaining haemostasis

- Diet , digestion ,absorption, transportation and utilization

Genetics:

- Introduction to genetics
- Cell structure , DNA , RNA, protein synthesis, cell division
- Modes of inheritance
- Chromosomal anomalies of oral tissues &single gene disorders

Growth & Development:

Prenatal and Postnatal development of cranium, face, jaws, teeth and supporting structures.

Chronology of dental development and development of occlusion. Dimensional changes in dental arches. Cephalometric evaluation of growth.

B) Pediatric Dentistry:

- Child Psychology:

  Development & Classification of behavior, personality, intelligence in children, theories of child psychology, stages of psychological child development, fear, anxiety, apprehension & its management.

- Behavior Management: Non- pharmacological & Pharmacological methods.
- Child Abuse & Dental Neglect:
- Conscious Sedation:
- Deep Sedation & General Anesthesia in Pediatric Dentistry: (Including Other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children

Preventive Pedodontics:

Concepts, chair side preventive measures for dental diseases, high-risk caries including rampant & extensive caries – Recognition, Features & Preventive Management, Pit and Fissures Sealants, Oral Hygiene measures, Correlation of brushing with dental caries and periodontal diseases. Diet & Nutrition as related to dental caries. Diet Counseling

Dental Plaque: Definition, Initiation, Pathogenesis, Biochemistry, and Morphology & Metabolism.

Gingival & Periodontal diseases in Children:

- Normal Gingiva & Periodontium in children.
- Gingival & Periodontal diseases – Etiology, Pathogenesis, Prevention & Management

Pediatric Operative Dentistry:

- Principle of Operative Dentistry along with modifications of materials/ past, current & latest including tooth colored materials.

- Modifications required for cavity preparation in primary and young permanent teeth.
- Various Isolation Techniques
- Restorations of decayed primary, young permanent and permanent teeth in children using various restorative material like Glass Ionomer, Composites, Silver, Amalgam & latest material (gallium)
- Stainless steel, Polycarbonate & Resin Crowns/Veneers & fibre post systems.

Pediatric Endodontics:

- Primary Dentition:- Diagnosis of pulpal diseases and their management– Pulp capping, Pulpotomy, Pulpectomy (Materials & Methods), Controversies & recent concepts.
- Young permanent teeth and permanent teeth, Pulp capping, Pulpotomy, Apexogenesis, Apexification, Concepts, Techniques and Materials used for different procedures.
- Recent advances in Pediatric diagnosis and Endodontics. Prosthetic consideration in Pediatric Dentistry.

Traumatic Injuries in Children:

- Classifications & Importance.
- Sequelae & reaction of teeth to trauma.
- Management of Traumatized teeth with latest concepts.
- Management of jaw fractures in children.

Interceptive Orthodontics:

- Concepts of occlusion and esthetics: Structure and function of all anatomic components of occlusion, mechanics of articulations, recording of masticatory function, diagnosis of Occlusal dysfunction, relationship of TMJ anatomy and pathology and related neuromuscular physiology.
- A comprehensive review of the local and systemic factors in the causation of malocclusion.
- Recognition and management of normal and abnormal developmental occlusions in primary, mixed and permanent dentitions in children (Occlusal Guidance).
- Biology of tooth movement: A comprehensive review of the principles of teeth movement. Review of contemporary literature. Histopathology of bone and Periodontal ligament, Molecular and ultracellular consideration in tooth movement.
- Myofunctional appliances: Basic principles, contemporary appliances: Design & Fabrication
- Removable appliances: Basic principles, contemporary appliances: Design & Fabrication
- Case selection & diagnosis in interceptive Orthodontics (Cephalometrics, Image processing, Tracing, Radiation hygiene, Video imaging & advance Cephalometric techniques).
- Space Management: Etiology, Diagnosis of space problems, analysis, Biomechanics, Planned extraction in interceptive orthodontics.

Oral Habits in Children:

- Definition, Etiology & Classification
- Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits.
- Management of oral habits in children

Dental care of Children with special needs: Definition, Etiology, Classification, Behavioral, Clinical features & Management of children with:

- Physically handicapped conditions
- Mentally compromising conditions
- Medically compromising conditions
- Genetic disorders

Oral manifestations of Systemic Conditions in Children & their Management of Minor Oral Surgical Procedures in Children Dental Radiology as related to Pediatric Dentistry

Cariology:

- Historical background
- Definition, Aeitology & Pathogenesis
- Caries pattern in primary, young permanent and permanent teeth in children.
- Rampant caries, early childhood caries and extensive caries. Definition, aeitology, Pathogenesis, Clinical features, Complications & Management.
- Role of diet and nutrition in Dental Caries
- Dietary modifications & Diet counseling.
- Subjective & objective methods of Caries detection with emphasis on Caries Activity tests, Caries prediction, Caries susceptibility & their clinical Applications

Pediatric Oral Medicine & Clinical Pathology: Recognition & Management of developmental dental anomalies, teething disorders, stomatological conditions, mucosal lesions, viral infections etc. Congenital Abnormalities in Children: Definition, Classification, Clinical features & Management.

Dental Emergencies in Children and their Management. Dental Materials used in Pediatric Dentistry.

B) Preventive Dentistry:

- Definition
- Principles & Scope
- Types of prevention
- Different preventive measures used in Pediatric Dentistry including fissure sealants and caries vaccine.

Dental Health Education & School Dental Health Programmes:

Dental health concepts, Effects of civilization and environment, Dental Health delivery system, Public Health measures related to children along with principles

of Pediatric Preventive Dentistry

Fluorides:

- Historical background
- Systemic & Topical fluorides
- Mechanism of action
- Toxicity & Management.
- Defluoridation techniques.

Medico legal aspects in Pediatric Dentistry with emphasis on informed concert. Counseling in Pediatric Dentistry
Case History Recording: Outline of principles of examination, diagnosis & treatment planning.

Epidemiology:

Concepts, Methods of recording & evaluation of various oral diseases. Various national & global trends of epidemiology of oral diseases. Comprehensive Infant Oral Health Care.Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography
Comprehensive cleft care management with emphasis on counseling, feeding,

nasoalveolar bone remodeling, speech rehabilitation.

Setting up of Pediatric Dentistry Clinic.

Emerging concepts in Pediatric Dentistry of scope of lasers / minimum invasive procedures in Pediatric Dentistry.

Preclinical Work

(Duration – first 6 Months of First Year MDS) (One on Each Exercise)

1. Carving of all deciduous teeth
2. Basic wire bending exercises(Clasps, Bows, Retractors and Springs, etc., on patient models)
3. Basics for Spot welding exercises
4. Fabrication of
   a. Maxillary biteplate/Hawley's'
   b. Maxillary expansion screw appliance
   c. Canine retractor appliance
   d. All habit breaking appliances
      - Removable type
      - Fixed type
      - Partially fixed and removable

e. Myofunctional appliances– Twinblock, Activator, Lipbumper, Oral Screen
f. Making of inclined plane appliance
g. Feeding appliances

5. Basic soldering exercises – making of a lamp post of stainless steel wire piecesof different gauges soldered on either side of heavy gauge main post.
6. Fabrication of space maintainers
   a. Removable type-
      - Unilateral Non –Functional space maintainer
      - Bilateral Non-Functional space maintainer
   b. Spacer gainers–
      - Gerberor Open coil space re-gainer
   c. Fixed Space maintainers
      - Band & loop space maintainer
      - Trans palatal arch space maintainer
      - Nance Palatal holding arch
      - Distal shoe appliance
7. Basics for spot welding exercise
8. Collection of extracted deciduous and permanent teeth
   a. Sectioning of the teeth at various levels and planes
   b. Drawing of section and shapes of pulp
   c. Phantom Head Exercises : Performing ideal cavity preparation for various restorative materials for both Deciduous and permanent teeth
   d. Performing pulpotomy, root canal treatment and Apexification procedure
      i) Tooth preparation and fabrication of various temporary and permanent restorations on fractured anterior teeth.
      ii) Preparation of teeth for various types of crowns
      iii) Laminates/veneers
      iv) Bonding & banding exercise
9. Performing of behavioral rating and IQ tests for children.
10. Computation of:-
    a. Caries index and performing various caries activity tests.
    b. Oral Hygiene Index
    c. Fluorosis Index
11. Surgical Exercises:
    a. Fabrication of splints
    b. Type of Wiring
    c. Suturing
12. a. Taking of periapical, occlusal, bitewing radiographs of children
    b. Developing and processing of films, thus obtained
    c. Tracing of soft tissue dental and skeletal landmarks as observed on Cephalometric radiographs and drawing of various planes and angles, further interpretation Of Cephalometric radiographs.
    d. Mixed dentition cast analysis
13. Library assignment
14. Synopsis

Clinical work Requirements from 7 to 36 months

The following is the minimum requirement to be completed before the candidate can be considered eligible to appear in the final M.D.S Examinations:

S.	Clinical Work	Total	7 To 12 Months	13 To 24 Months	25 To 36 Months
1.	Behavior Management of different Age groups children with complete records.	17	2	10	5
2.	Detailed Case evaluation with complete records, treatment planning and presentation of cases with chair side And discussion	17	2	10	5
3.	Step-by- step chair side preventive dentistry scheduled for high risk children with gingival And periodontal diseases & Dental Caries	11	1	5	5
4.	Practical application of Preventive dentistry concepts in a class of 35- 50 children & Dental Health Education & Motivation.	7	1	4	2
5.	Pediatric Operative Dentistry With application of recent concepts. (a).Management of Dental Caries				
	(I) Class I	50	30	10	10
	(II) Class II	100	40	50	10
	(III) Other Restorations	100	20	50	30
	(c) Management of traumatized anterior teeth	15	04	06	05
	(d) Aesthetic Restorations	25	05	10	10
	(e) Pediatric Endodontic Procedures Deciduous teeth Pulpotomy/ Pulpectomy Permanent Molars Permanent Incisor Apexification & Apexogenesis	 150 20 15 20	 30 3 2 02	 50 7 3 08	 70 10 10 10
6.	Stainless Steel Crowns	50	10	20	20
7.	Other Crowns	05	01	02	02
8.	Fixed : Space Maintainers Habit breaking	30	08	12	10

	appliances				
9.	Removable : Space Maintainers Habit breaking appliances	20	05	07	08
10.	Functional Appliances	05	01	02	02
11.	Preventive measures like Fluoride applications & Pit & Fissure Sealants applications with complete follow-up and diet counseling	20	08	08	04
12.	Special Assignments i. School Dental Health Programmes	03	01	01	01
	ii. Camps etc.,	02	01	01	-
13.	Library usage				
14.	Laboratory usage				
15.	Continuing Dental Health Programmes				

Monitoring Learning Progress:

It is essential to monitor the learning progress of each can did are through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring is to be done by the staff of the department based on participation of students in various teaching/learning activities .It maybe structured and assessment be done using check lists that assess various aspects. Check lists are given in Section IV

Scheme of Examination:

A. Theory: Part-I: Basic Sciences Paper - **100 Marks**

Part-II: Paper-I, Paper-II & Paper-III - **300 Marks**

(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student hasto answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any oral the papers. Distribution of topics for each paper will be as follows:*

Part-I: Applied Basic Sciences – Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics Growth & Development and Dental plaque, Genetics.

Part-II:

Paper-I: **Clinical Pedodontics**

1. Conscious sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry
2. Gingival & Periodontal Diseases in Children
3. Pediatric Operative Dentistry
4. Pediatric Endodontics
5. Traumatic Injuries in Children
6. Interceptive Orthodontics
7. Oral Habits in children
8. Dental Care of Children with special needs

9. Oral Manifestations of Systemic Conditions in Children & their Management
10. Management of Minor Oral Surgical Procedures in Children
11. Dental Radiology as Related to Pediatric Dentistry
12. Pediatric Oral Medicine & Clinical Pathology
13. Congenital Abnormalities in Children
14. Dental Emergencies in Children & Their Management
15. Dental Materials Used in Pediatric Dentistry
16. Case History Recording
17. Setting up of Pedodontic & Preventive Dentistry Clinic

Paper-II: Preventive and Community Dentistry as applied to Pediatric Dentistry

1. Child Psychology
2. Behavior Management
3. Child Abuse & Dental Neglect
4. Preventive Pedodontics
5. Cariology
6. Preventive Dentistry
7. Dental Health Education & School Dental Health Programmes:
8. Fluorides
9. Epidemiology
10. Comprehensive Infant Oral Health Care/Comprehensive cleft care
11. Principles of Bio-Statistics & Research Methodology & Understanding of Computersand Photography

Paper-III: Essays (descriptive and analyzing type questions)

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlappingof topics is inevitable. Students should be prepared to answer over lapping topics.*

B. <u>Practical / Clinical Examination</u> : 200 Marks

The Clinical/Practical and Viva-Voce Examinations are conducted for a minimum oftwodays.

First Day:

1. **Case Discussion, Pulp Therapy i.e. Pulpectomy on a Primary Molar.**

Case Discussion	:	20 marks
Rubber Dam application	:	10marks
Working length X-ray	:	20marks
Obturation	:	
		20marks
Total		70marks

2. **Case Discussion, Crown preparation on a Primary Molar for Stainless steelcrown and cementation of the same.**

Case discussion	:	10marks
Crown Preparation	:	20marks
Crown selection and Cementation	:	20marks
Total		50marks

3. **Case Discussion, band adaptation for fixed type of space maintainer and impression making**.

Case discussion	:	20marks
Band adaptation	:	20marks
Impression	:	20marks
Total		60marks

Second Day:

1. **Evaluation of Fixed Space Maintainer and Cementation** : 20 marks

C. <u>Viva Voce</u> : 100Marks

i. Viva-Voce examination *: 80 marks*

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, and expression, interpretation of data and

communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise *: 20 marks*

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

ADDITION (REVISED SYLLABUS)

133 :515 M.D.S. (PEDIATRIC AND PREVENTIVE DENTISTRY)

- Advanced lesion sterilization and tissue repair techniques in pedodontics. .
- Mechanism and clinical procedures related to minimally invasive dentistry regenerative endodontics, Advantages and limitations of revascularisation procedures over apexification procedures for necrotic immature permanent tooth with open apex, Protocol for revascularisation,
- Clinical measures for assessment of Endodontic revascularisation treatment outcome.
- Laser interaction with biologic tissue, Types of Lasers, Mechanism & applications of lasers inPedodontics & Preventive dentistry.
- Pharmacological chair side behaviour management techniques like conscious sedation, advances,drugs, safety protocols, and combination therapy.
- Practice management: Individual/ Group/ Hospital Based set up, Principles and Ethics in PracticeManagement, Modern tools of practice Management.

9. ORALMEDICINEANDRADIOLOGY

OBJECTIVES:

At the end of 3 years of training the candidate should be able to acquire adequateknowledge of the discipline.

Knowledge:

Theoretical, Clinical and practical knowledge of all oral mucosal lesions, skeletal involvement of maxillofacial region, diagnostic procedures pertaining to them and latestinformation of imaging modules.

Skills: Three important skills need to be imparted in

maxillofacial diseases

1. Diagnostics killin recognition of oral diseases with radiographic diagnosis and their management
2. Research skills in handling scientific problems pertaining to oral treatment
3. Clinical and Didactic skills in encouraging younger doctors to attain learning objectives

Attitudes:

The positive mental attitude and the persistence of continued learning need to be inculcated

COURSECONTENTS:

A) Applied Basic Sciences:

Applied Anatomy:

1. Gross anatomy of the face:
   a. Muscles of Facial Expression and Muscles of Mastication
   b. Facial nerve
   c. Facial artery
   d. Facial vein
   e. Parotid gland and its relations
   f. Submandibular salivary gland and its relations
2. Neck region:
   a. Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures
   b. Facial spaces
   c. Carotid system of arteries, Vertebral Artery, and Sub clavian arteries
   d. Jugular system Internal jugular External jugular
   e. Lymphatic drainage
   f. Cervical plane
   g. Muscles derived from Pharyngeal arches
   h. Infratemporal fossa in detail and temporomandibular joint
   i. Endocrine glands
      - Pituitary
      - Thyroid
      - Parathyroid
   j. Exocrine glands
      - Parotid
      - Thyroid

- Parathyroid

k. Sympathetic chain
l. Cranial nerves- V, VII, IX, XI, & XII

3. Oral Cavity:

   a. Vestibule and oral cavity proper
   b. Tongue and teeth
   c. Palate –soft and hard
4. Nasal Cavity
   a. Nasal septum
   b. Lateral wall of nasal cavity
   c. Paranasal air sinuses
5. Pharynx:
6. Gross salient features of brain and spinal cord with references to attachmentof cranial nerves to the brain stem
   Detailed study of the cranial nerve nuclei of V, VII, IX, X, XI, XII
7. Osteology:
   a) Comparative study of fetal and adult skull
   b) Mandible: Development, ossification, age changes and evaluation of mandiblein detail

Embryology:

1. Development of face, palate, nasal septum and nasal cavity, paranasal air sinuses
2. Pharyngeal apparatus in detail including the floor of the primitive pharynx
3. Development of tooth in detail and the age changes
4. Development of salivary glands
5. Congenital anomalies of face must be dealt in detail.

Histology:

1. Study of epithelium of oral cavity and the respiratory tract
2. Connective tissue
3. Muscular tissue
4. Nervous tissue
5. Blood vessels
6. Cartilage
7. Bone and tooth
8. Tongue
9. Salivary glands
10. Tonsil, thymus, lymph nodes

Physiology:

1. General Physiology:
    a. Cell
    b. Body Fluid Compartments
    c. Classification

    d. Composition
    e. Cellular transport
    f. RMP and action potential

2. Muscle Nerve Physiology:
    a. Structure of a neuron and properties of nerve fibers
    b. Structure of muscle fibers and properties of muscle fibers
    c. Neuromuscular transmission
    d. Mechanism of muscle contraction

3. Blood:

    a. RBC and Hb
    b. WBC–Structure and functions
    c. Platelets–functions and applied aspects
    d. Plasma proteins
    e. Blood Coagulation with applied aspects
    f. Blood groups
    g. Lymph and applied aspects

4. Respiratory System:
    a. Air passages, composition of air, dead space, mechanics of respirationwith pressure and volume changes
    b. Lung volumes and capacities and applied aspects
    c. Oxygen and carbon dioxide transport
    d. Neural regulation of respiration
    e. Chemical regulation of respiration
    f. Hypoxia, effects of increased barometric pressure and decreased barometric pressure
5. Cardio-Vascular System:
    a. Cardiac Cycle
    b. Regulation of heart rate/ Stroke volume/cardiac output/ blood flow
    c. Regulation of blood pressure
    d. Shock, hypertension, cardiac failure

6. Excretory System:
    a. Renal function tests

7. Gastro–intestinal tract:
    a. Composition, functions and regulation of:
        - Saliva
        - Gastric juice
        - Pancreatic juice
        - Bile and intestinal juice
        - Mastication and deglutition

8. Endocrine System:
    a. Hormones–classification and mechanism of action
    b. Hypothalamic and pituitary hormones
    c. Thyroid hormones
    d. Parathyroid hormones and calcium homeostasis
    e. Pancreatic hormones
    f. Adrenal hormones

9. Central Nervous System:
    a. Ascending tract with special references to pain pathway

10. Special Senses:
    a. Gestation and Olfaction

Biochemistry:

1. Carbohydrates–Disaccharides specifically maltose, lactose, sucrose
    a. Digestion of starch/absorption of glucose
    b. Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis
    c. Blood sugar regulation
    d. Glycogen storage regulation
    e. Glycogen storage diseases
    f. Galactosemia and fructosemia

2. Lipids
    a. Fatty acids- Essential/ non essential
    b. Metabolism of fatty acids- oxidation, ketone body formation, utilization ketosis
    c. Outline of cholesterol metabolism synthesis and products formed from

cholesterol

3. Protein
    a. Amino acids- essential/ non-essential, complete/ incomplete proteins
    b. Transamination/ Deamination (Definition with examples)
    c. Urea cycle
    d. Tyrosine- Hormones synthesized from tyrosine
    e. Inborn errors of amino acid metabolism
    f. Methionine and trans methylation

4. Nucleic Acids
    a. Purines/ Pyrimidines
    b. Purine analogs in medicine
    c. DNA/RNA– Outline of structure
    d. Transcription/ translation
    e. Steps of protein synthesis
    f. Inhibitors of protein synthesis
    g. Regulation of gene function

5. Minerals
    a. Calcium/ Phosphorus metabolism specifically regulation of serum calcium levels
    b. Iron metabolism
    c. Iodine metabolism
    d. Trace elements in nutrition

6. Energy Metabolism
    a. Basal metabolic rate
    b. Specific dynamic action (SDA)of foods

7. Vitamins
    a. Mainly these vitamins and their metabolic role- specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

Pathology:

1. Inflammation:
    a. Repair and regeneration, necrosis and gangrene
    b. Role of complement system in acute inflammation
    c. Role of arachnidonic acid and its metabolites in acute inflammation

BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY), PUNE

Faculty of Dentistry
MDS
Old Syllabus

MDS COURSE REGULATIONS
Year 2007

BHARATI VIDYAPEETH DEEMED TO BE UNIVERSITY
DENTAL COLLEGE AND HOSPITAL, PUNE.

- Bharati Vidyapeeth was established in Pune in 1964by the eminent educationist and visionary
- Hon'ble Dr. Patangrao Kadam with the objective of bringing about intellectual awakening and all-round development of people of our country through education.

VISION: To be a World Class University "Transformation through Dynamic Education

- The mission that Bharati Vidyapeeth has defined for itself is to bring about intellectual awakening of people through the spread of education and to prepare human resources needed for all round development, particularly economic, of the country.

Office:

- The corporate office of Bharati Vidyapeeth is located in the prestigious area of Deccan Gymkhana in the city of Pune. Its 10 storied building, once the tallest in Pune, is a landmark of the city.

Deemed University Status:

- April 26, 1996 was the moment of crowning glory in the life of Bharati Vidyapeeth, as well as, of Dr. Patangrao Kadam. It was the day on which a cherished dream came true for Dr. Patangrao Kadam. It was the day the Government of India, on the recommendation of the University Grants Commission, granted the status of "Deemed University" to a cluster of 12 institutions of Bharati Vidyapeeth in appreciation of their academic excellence. Thus, Bharati Vidyapeeth University came into existence on that day.

Achievements of Bharati Vidyapeeth (Deemed to be University):

- Accredited & Re-Accredited with 'A' Grade by NAAC in 2004 & 2011.
- Re-Accredited again with A+ by 'NAAC' in 2017
- 54th Rank among universities by NIRF-2017
- The Ministry of Human Resource Development, Government of India has accorded "A" grade status to the University
- The University Grants Commission has conferred 12(B) status on the University, which makes it eligible to enter into collaborations with universities abroad.
- The University has been among the Top 10 Universities preferred by Overseas Students for Higher Education in India.

Salient Features:

- University is recognized by Government of India
- All the programmes are approved by UGC and respective statutory councils
- It is a Member of Association of Indian Universities (AIU) & Association of Commonwealth Universities (ACU)
- There are 29 Constituent Institutions including 3 Research Institutes
- It has 8 Campuses

- Students come from all over India and 48 countries
- The institutions of Bharati Vidyapeeth (BV) was accorded Deemed University status in
- 1996 for its academic excellence.
- The Bharati Vidyapeeth(Deemed to be University) has established academic excellence and Offers programmes in innovative and emerging areas.
- It is multi-campus and multi-disciplinary and is catering to the needs of urban and ruralstudents.
- It has significant achievements in research.
- It has world-class infrastructure and facilities, launched several innovative academic programmes, best teaching-learning processes and has entered into National, as well as, International collaborations.

Website:
www.bvuniversity.edu.in

SYLLABUS DISTRIBUTION AMONG 4 PAPERS IN VARIOUS SPECIALITIES:

Prosthodontics and Crown & Bridge

Paper-I	–	Applied Anatomy, physiology, pathology and Dental Materials
Paper-II	–	Removable Prosthodontics and Oral Implantology
Paper-III	–	Fixed Prosthodontics
Paper-IV	–	Essay

Periodontology

Paper-I	–	Applied Anatomy, Physiology, Biochemistry, Pathology and pharmacology
Paper-II	–	Etiopathogenesis
Paper-III	–	Clinical Periodontology and Oral Implantology
Paper-IV	–	Essay

Oral & Maxillofacial Surgery

Paper-I	–	Applied Anatomy, Physiology and Pathology
Paper-II	–	Minor oral Surgery and Trauma
Paper-III	–	Maxillofacial Surgery and Oral Implantology
Paper-IV	–	Essay

Conservative and Endodontics

Paper-I	–	Applied Anatomy, Physiology, Pathology and dental materials
Paper-II	–	Conservative dentistry & Aesthetic Dentistry
Paper-III	–	Endodontics
Paper-IV	–	Essay

Orthodontics & Dentofacial Orthopaedics

Paper-I	–	Applied anatomy, physiology, pathology, genetics physical anthropology & dental material
Paper-II	–	Diagnosis and treatment planning.
Paper-III	–	Clinical Orthodontics and Mechanotherapy
Paper-IV	–	Essay

Oral Pathology & Microbiology and Forensic Odontology

Paper-I	–	Applied Anatomy, Physiology, Pathology and Research Methodology
Paper-II	–	Oral pathology, Microbiology and Oncology
Paper-III	–	Laboratory Techniques and Diagnosis
Paper-IV	–	Essay

Public Health Dentistry

Paper-I	–	Applied anatomy, physiology, pathology & research methodology
Paper-II	–	Public Health
Paper-III	–	Dental Public Health
Paper-IV	–	Essay

Paediatric & Preventive Dentistry

Paper-I	–	Applied Anatomy, Physiology, Pathology, Microbiology, Nutrition and Dietics
Paper-II	–	Clinical pediatric dentistry
Paper-III	–	Preventive and community dentistry as applied to pediatric dentistry
Paper-IV	–	Essay

Oral Medicine and Radiology

Paper-I	–	Applied anatomy, physiology, pathology and pharmacology.
Paper-II	–	Diagnosis, diagnostic methods and imageology and Applied Oral Pathology
Paper-III	–	Oral medicine, therapeutics and laboratory investigations
Paper-IV	–	Essay

SECTION-II

GOALS & OBJECTIVES OF THE CURRICULUM

GOALS:

The goals of postgraduate training in various specialities is to train B.D.S. graduate who will –

- Practice respective speciality efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing professional education in the speciality and allied specialities irrespective of whether in teaching or practice.
- Willing to share the knowledge and skills with any learner, junior or a colleague.
- To develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

OBJECTIVES:

The objective is to train a candidate so as to ensure higher competence in both general and special area of interest and prepare him for a career in teaching, research and speciality practice. A

candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course. The objectives may be considered as under:–

1. Knowledge (Cognitive domain)
2. Skills (Psycho motor domain)
3. Human values, ethical practice and communication abilities

KNOWLEDGE:

- Demonstrate understanding of basic sciences relevant to speciality.
- Describe etiology, pathophysiology, principles of diagnosis and management of common problems within the speciality in adults and children.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning treatment.
- Recognise conditions that may be outside the area of speciality/competence and to refer them to an appropriate specialist.
- Update knowledge by self study and by attending courses, conferences and seminars relevant to speciality.
- Undertake audit, use information technology and carryout research both basic and clinical with the aim of publishing or presenting the work at various scientific gatherings.

SKILLS:

- Take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and inter prêt them to come to a reasonable diagnosis about the condition.
- Acquire adequate skills and competence in performing various procedures as required in the speciality.

HUMAN VALUES, ETHICAL PRACTICE AND COMMUNICATION ABILITIES:

- Adopt ethical principles in all aspects of practice.
- Professional honesty and integrity are to be fostered.
- Patient care is to be delivered irrespective of social status, caste, creed or religion of the patient.
- Develop communication skills, in particular and skill to explain various options available in management and to obtain a true informed consent from the patient.
- Provide leadership and get the best out of his team in a congenial working atmosphere.
- Apply high moral and ethical standards while carrying out human or animal research.
- Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed.
- Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

SPECIALITIES FOR THE MDS DEGREE:

i) Prosthodontics and Crown & Bridge
ii) Periodontology
iii) Oral & Maxillofacial Surgery
iv) Conservative Dentistry and Endodontics
v) Orthodontics & Dentofacial Orthopedics
vi) Oral Pathology & Microbiology
vii) Public Health Dentistry
viii) Paedodontics & Preventive Dentistry
ix) Oral Medicine & Radiology

DEFINITIONS OF VARIOUS SPECIALITIES:

1. Prosthodontics and Crown & Bridge

Prosthodontics and Crown & Bridge and Oral Implantology is that branch of Dental art and science pertaining to the restoration and maintenance of oral function, health, comfort and appearance by the replacement of mission or lost natural teeth and associated tissues either by fixed or removable artificial substitutes.

2. Periodontology

Periodotology and Oral Implantology is the science dealing with the health and diseases of the investing and supporting structures of the teeth and oral mucous membrane.

3. Oral & Maxillofacial Surgery

Oral and Maxillofacial surgery and Implantology deals with the diagnosis and surgical and adjunctive treatment of diseases, injuries and defects of the human jaws and associated oral and facial structures.

4. Conservative Dentistry and Endodontics

Conservative dentistry deals with prevention and treatment of the diseases and injuries of the hard tissues and the pulp of the tooth and associated periapical lesions.

5. Orthodontics and Dentofacial Orthopedics

Deals with prevention and correction of oral anomalies and malocclusion and the harmonizing of the structures involved, so that the dental mechanisms will function in a normal way.

6. Oral Pathology & Microbiology

Oral Pathology deals with the nature of oral diseases, their causes, processes and effects. It relates the clinical manifestation of oral diseases to the physiologic and anatomic changes associated with these diseases.

7. Public Health Dentistry

Community Dentistry is the science and art of preventing and controlling Dental diseases and promoting Dental b health through organized community efforts.

8. Paedodontics and Preventive Dentistry

Deals with prevention and treatment of oral and Dental ailments that may occur during childhood.

9. Oral Medicine and Radiology

Oral Medicine is that speciality of dentistry concerned with the basic diagnostic procedures and techniques useful in recognizing the diseases of the oral tissues of local and constitutional origin and their medical management.

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

SECTION-III

TEACHING AND LEARNING ACTIVITIES

All the candidates registered for MDS course in various specialities shall pursue the course for a period of three years as fulltime students. During this period each student shall take part actively in learning and teaching activities designed by the institution / university. The council desires the following teaching and learning activities in each speciality.

1. LECTURES:

There shall be some didactic lectures in the speciality and in the allied fields. The postgraduate departments should encourage the guest lectures in the required areas to strengthen the training programmes. It is also desirable to have certain integrated lectures by multidisciplinary teams on selected topics.

2. JOURNAL CLUB:

The journal review meetings shall be held at least once a week. All trainees are expected to participate actively and enter relevant details in logbook. The trainee should make presentations from the allotted journals of selected articles at least 5 times in a year.

3. SEMINARS:

The seminars shall be held at least twice a week in each postgraduate department. All trainees are expected to participate actively and enter relevant details in logbook. Each trainee shall make at least 5-seminar presentation in each year.

4. SYMPOSIUM:

It is recommended to hold symposium on topics covering multiple disciplines.

5. CLINICAL POSTINGS:

Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist.

6. CLINICO PATHOLOGICAL CONFERENCE:

The clinico pathological conferences should be held once in a month involving the faculties of oral medicine and radiology, oral pathology and concerned clinical department. The trainees should be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.

7. INTERDEPARTMENTAL MEETINGS:

To bring in more integration among various specialities there shall be interdepartmental meeting chaired by the dean with all heads of postgraduate departments at least once a month.

8. TEACHING SKILLS:

All the trainees shall be encouraged to take part in undergraduate teaching programmes either in the form of lectures or group discussions.

9. CONTINUING DENTAL EDUCATION PROGRAMMES:

Each postgraduate department shall organize these programmes on regular basis involving the other institutions. The trainees shall also be encouraged to attend such programmes conducted elsewhere.

10. CONFERENCES / WORKSHOPS / ADVANCED COURSES:

The trainees shall be encouraged not only to attend conference/workshops/advance courses but also to present at least two papers at state/national speciality meetings during their training period.

11. ROTATION & POSTING IN OTHER DEPARTMENTS:

To bring in more integration between the speciality and allied fields each postgraduate department shall workout a programme to rotate the trainees in related disciplines.

12. DISSERTATION/THESIS:

SYALLBUS FOR M.D.S. IN VARIOUS SPECIALTIES

APPLIED BASIC SCIENCES:

The MDS Course in Applied Basic Sciences shall vary according to the particular speciality, similarly the candidates shall also acquire adequate knowledge in other subjects related to their respective speciality.

Applied Basic Sciences optional subjects:

(i) Applied Anatomy
(ii) Applied Physiology
(iii) Applied Pathology

Subjects related to different specialities:

1. Bio-statistics
2. Nutrition and Dietetics
3. Teaching and Testing Methodology
4. Research Methodology
5. Psychology and Practice Management
6. Comparative Anatomy
7. Genetics Growth and Development
8. Applied Chemistry including Metallurgy, Dental Materials.

1. PROSTHODONTICS AND CROWN & BRIDGE

AIM:

To train dental graduates so as to ensure higher competence in both general and special areas of Prosthodontics and prepare a candidate for teaching, research and clinical abilities, including prevention and after care in prosthodontics including crown and bridge and implantology.

GENERAL OBJECTIVES OF THE COURSE:

- Training programme in Prosthetic dentistry including Crown & Bridge & Implantology is structured to achieve knowledge and skill in theoretical and clinical laboratory, attitude, communicative skills and ability to research with understanding of social, cultural, educational and environmental background of the society.
- To have acquired adequate knowledge and understanding of applied basic and systemic medical science, knowledge in general and particularly of head and neck.
- The postgraduates will be able to provide Prosthodontic therapy for patients with competence and working knowledge with understanding of applied medical, behavioral and clinical science, that are beyond the treatment skills of the general BDS graduate and MDS graduate of other specialities, to demonstrate evaluative and judgment skills in making appropriate decisions regarding prevention, treatment, after care and referral to deliver comprehensive care to patients.

KNOWLEDGE:

The candidate should possess knowledge of applied basic and systemic medical sciences.

- On human anatomy, embryology, histology, applied in general and particularly to head and neck, Physiology & Biochemistry, Pathology and Microbiology, virology, health and diseases of various systems of the body (systemic) principles in surgery and medicine, pharmacology, nutrition, behavioral science, age changes, genetics, Immunology, Congenital defects and syndrome and Anthropology, Bioengineering, Bio-medical and Biological Principle and applications to Dental material science.
- Ability to diagnose and planned treatment for patients requiring a Prosthodontic therapy
- Ability to read and interpret a radiograph and other investigations for the purpose of diagnosis and treatment plan.
  Tooth and tooth surface restorations, Complete denture Prosthodontics, removable partial denture Prosthodontics, fixed prosthodontics and maxillofacial and Craniofacial Prosthodontics, implants and implant supported Prosthodontics, T.M.J. and occlusion, craniofacial esthetic, and biomaterials, craniofacial disorders, problems of psychogenic origin.
- Age changes and Prosthodontic Therapy for the aged.
- Ability to diagnose failed restoration and provide Prosthodontic therapy and after care.
- Should have essential knowledge on ethics, laws and Jurisprudence and forensic odontology in Prosthodontics.
- General health conditions and emergency as related to prosthodontics treatment.
- Identify social, cultural, economic, environmental, educational and emotional determinants of the patieht and consider them in planning the treatment.
- Identify cases, which are outside the area of his speciality/ competence and refer them to appropriate specialists.
- Advice regarding case management involving surgical, interim treatment etc.
- Competent specialization in team management of craniofacial design.
- To have acquired adequate knowledge and understanding of applied basic and systematic medical science knowledge in general and particular to head and neck.
- Should attend continuing education programmes, seminars and conferences related to Prosthodontics, thus updating himself.
- Teach and guide his/her team, colleague and other students.
- Should be able to use information technology tools and carry out research both basic and clinical, with the aims of publishing his/ her work and presenting his/her work at various scientific forums.

- Should have essential knowledge of personal hygiene, infection control, prevention of cross infection and safe disposal of waste, keeping in view the risks of transmission of Hepatitis and HIV.
- Should have an ability to plan to establish Prosthodontics clinic/hospital teaching department and practice management.
- Should have a sound knowledge for the application of pharmacology. Effects of drugs on oral tissue and systems of a body and for medically compromised patients.
- The postgraduates will be able to provide Prosthodontic therapy for patients with competence and working knowledge with understanding of applied medical behavioral and clinical science that are beyond the treatment skills of the general BDS graduate and MDS graduate of other specialities to demonstrate, evaluative and judgment skills in making appropriate decisions regarding prevention, treatment after care and referral to deliver comprehensive care to patients.

SKILLS:

- The candidate should be able to examine the patients requiring Prosthodontics therapy, investigate the patient systemically, analyze the investigation results, radiography, diagnose the ailment, plan a treatment, communicate it with the patient and execute it.
- Understand the prevalence and prevention of diseases of craniomandibular system related to Prosthetic dentistry.
- The candidate should be able to restore lost functions of stomatognathic system namely mastication, speech, appearance and psychological comforts. By understanding biological, biomedical, bioengineering principles and systemic condition of the patient to provide a quality health care of the craniofacial region.
- The candidate should be able to interact with other speciality including medical speciality for a planned team management of patients for a craniofacial and oral acquired and congenital defects, temporomandibular joint syndromes, esthetics, Implant supported Prosthetics and problems of Psychogenic origin,
- Should be able to demonstrate the clinical competence necessary to carry out appropriate treatment at higher level of knowledge, training and practice skills currently available in their specialty area.
- Identify target diseases and awareness amongst the population for Prosthodontic therapy.
- Perform clinical and Laboratory procedure with understanding of biomaterials, tissue conditions related to prosthesis and have competent dexterity and skill for performing clinical and laboratory procedures in fixed, removable, implant, maxillofacial, TMJ and esthetics Prosthodontics.
- Laboratory technique management based on skills and knowledge of Dental Materials and dental equipment and instrument management.
- To understand demographic distribution and target diseases of Cranio mandibular region related to Prosthodontics.

ATTITUDES:

- Adopt ethical principles in all Prosthodontic practice. Professional honesty and integrity are to be fostered. Treatment to be delivered irrespective of social status, caste, creed or religion of patient.
- Willing to share the knowledge and clinical experience with professional colleagues.
- Willing to adopt new methods and techniques in prosthodontics from time to time based on scientific research, which is in patient's best interest.
- Respect patient's rights and privileges including patients right to information and right to seek second opinion.

COMMUNICATIVE ABILITIES:

- Develop communication skills, in particular, to explain treatment option available in management.
- Provide leadership and get the best out of his group in a congenial working atmosphere.

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

COURSE CONTENTS:

The candidates shall under go training for 3 academic years with satisfactory attendance of 80% for each year.

- The course includes epidemiology and demographic studies, research and teaching skills.
- Ability to prevent, diagnose and treat with after care for all patients for control of diseases and / or treatment related syndromes with patient satisfaction for restoring functions of Stomatognathic system by Prosthodontic therapy

The program out line addresses the knowledge, procedural and operative skills needed in Masters Degree in Prosthodontics. A minimum of 3 years of formal training through a graded system of education as specified will enable the trainee to achieve Masters Degree in Prosthodontics including Crown & Bridge and Implantology, competently and have the necessary skills/ knowledge to update themselves with advancements in the field. The course content has been identified and categorized as Essential knowledge as given below.

ESSENTIAL KNOWLEDGE:

The topics to be considered are: Basic Sciences, Prosthodontics including Crown and Bridge Implantology and Material Science.

APPLIED BASIC SCIENCES:

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

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

APPLIED ANATOMY OF HEAD AND NECK:

General Human Anatomy – Gross Anatomy, anatomy of Head and Neck in detail. Cranial and facial bones, TMJ and function, muscles of mastication and facial expression, muscles of neck and back including muscles of deglutition and tongue, arterial supply and venous drainage of the head and neck, anatomy of the Para nasal sinuses with relation to the Vth cranial nerve. General consideration of the structure and function of the brain. Brief considerations of V, VII, XI, XII, cranial nerves and autonomic nervous system of the head and neck. The salivary glands, Pharynx, Larynx Trachea, Esophagus, Functional Anatomy of mastication, Deglutition, speech, respiration, and circulation, teeth eruption, morphology, occlusion and function. Anatomy of TMJ, its movements and myofacial pain dysfunction syndrome

Embryology – Development of the face, tongue, jaws, TMJ, Paranasal sinuses, pharynx, larynx, trachea, esophagus, Salivary glands, Development of oral and Para oral tissue including detailed aspects of tooth and dental hard tissue formation

Growth & Development – Facial form and Facial growth and development overview of Dentofacial growth process and physiology from fetal period to maturity and old age, comprehensive study of craniofacial biology. General physical growth, functional and anatomical aspects of the head, changes in craniofacial skeletal, relationship between development of the dentition and facial growth.

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

Histology – histology of enamel, dentin, Cementum, periodontal ligament and alveolar bone, pulpal anatomy, histology and biological consideration. Salivary glands and Histology of epithelial tissues including glands.
Histology of general and specific connective tissue including bone, hematopoietic system, lymphoid etc.

Muscle and neural tissues, Endocrinal system including thyroid, Salivary glands, Histology of skin, oral mucosa, respiratory mucosa, connective tissue, bone, cartilage, cellular elements of blood vessels, blood, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.

Anthropology & Evolution – Comparative study of tooth, joints, jaws, muscles of mastication and facial expression, tongue, palate, facial profile and facial skeletal system. Comparative anatomy of skull, bone, brain, musculo – skeletal system, neuromuscular coordination, posture and gait – planti gradee and ortho gradee posture.

Applied Genetics and Heredity – Principles of orofacial genetics, molecular basis of genetics, genetic risks, counseling, bioethics and relationship to Orthodontic management. Dentofacial anomalies, Anatomical, psychological and pathological characteristic of major groups of developmental defects of the orofacial structures

Cell biology – Detailed study of the structure and function of the mammalian cell with special emphasis on ultra structural features and molecular aspects. Detailed consideration of Inter cellular junctions. Cell cycle and division, cell-to-cell and cell- extra cellular matrix interactions.

APPLIED PHYSIOLOGY AND NUTRITION :

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

ENDOCRINES:

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

APPLIED NUTRITION:

General principles, balanced diet, effect of dietary deficiencies and starvation, Diet, digestion, absorption, transportation and utilization, diet for elderly patients.

APPLIED BIOCHEMISTRY:

General principles governing the various biological activities of the body, such as osmotic pressure, electrolytic dissociation, oxidation-reduction, etc. general composition of the body, intermediary metabolism, Carbohydrates, proteins, liquids and their metabolism, Enzymes, Vitamins, and minerals, Hormones, Blood and other body fluids, Metabolism of inorganic elements, Detoxication in the body, Anti metabolites

APPLIED PHARMACOLOGY AND THERAPEUTICS:

Definition of terminologies used – Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics. Analeptics and tranquilizers, Local anesthetics, Chemotherapeutics and antibiotics, Antitubercular and anti syphilitic drugs, Analgesics and antipyretics, Antiseptics, styptics, Sialogogues and antisialogogues, Haematinics, Cortisone, ACTH, insulin and other antidiabetics vitamins: A, D, B – complex group C and K etc. Chemotherapy and Radiotherapy

APPLIED PATHOLOGY :

Inflammation, repair and degeneration, Necrosis and gangrene, Circulatory disturbances, Ischemia, hyperemia, chronic venous congestion, edema, thrombosis, embolism and infarction. Infection and infective granulomas, Allergy and hypersensitive reaction, Neoplasm; Classification of tumors, Carcinogenesis, characteristics of benign and malignant tumors, spread of tumors. Applied histo pathology and clinical pathology.

APPLIED MICROBIOLOGY:

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

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

b) **Laboratory determinations:**
Blood groups, blood matching, R.B.C. and W.B.C. count, Bleeding and clotting time, Smears and cultures – urine analysis and culture

BIOSTATISTICS:

Study of Biostatistics as applied to dentistry and research. Definition, aim characteristics and limitations of statistics, planning of statistical experiments, sampling, collection, classification and presentation of data (Tables, graphs, pictograms etc) Analysis of data

INTRODUCTION TO BIOSTATISTICS:

Scope and need for statistical application to biological data. Definition of selected terms – scale of measurements related to statistics, Methods of collecting data, presentation of the statistical diagrams and graphs.
Frequency curves, mean, mode of median, Standard deviation and co-efficient of variation, Correlation – Co-efficient and its significance, Binominal distributions normal distribution and Poisson distribution, Tests of significance

RESEARCH METHODOLOGY:

Understanding and evaluating dental research, scientific method and the behavior of scientists, understanding to logic – inductive logic – analogy, models, authority, hypothesis and causation, Quacks, Cranks, Abuses of Logic, Measurement and Errors of measurement, presentation of results, Reliability, Sensitivity and specificity diagnosis test and measurement, Research Strategies, Observation, Correlation, Experimentation and Experimental design. Logic of statistical interference balance judgements, judgement under uncertainty, clinical vs., scientific judgement, problem with clinical judgement, forming scientific judgements, the problem of contradictory evidence, citation analysis as a Means of literature evaluation, influencing judgement : Lower forms of Rhetorical life, Denigration, Terminal, Inexactitude.

APPLIED RADIOLOGY:

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

ROENTGENOGRAPHIC TECHNIQUES:

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

APPLIED MEDICINE:

Systemic diseases and its influence on general health and oral and dental health. Medical emergencies in the dental offices – Prevention, preparation, medico legal consideration, unconsciousness, respiratory distress, altered consciousness, seizures, drug related emergencies, chest pain, cardiac arrest, premedication, and management of ambulatory patients, resuscitation, applied psychiatry, child, adult and senior citizens. Assessment of case, premaliation, inhibition, monitoring, extubalin, complication assist in O.T. for anesthesia.

APPLIED SURGERY & ANESTHESIA:

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

Principles in speech therapy, surgical and radiological craniofacial oncology, applied surgical ENT and ophthalmology.

PLASTIC SURGERY:

Applied understanding and assistance in programmes of plastic surgery for prosthodontics therapy.

APPLIED DENTAL MATERIAL:

- All materials used for treatment of craniofacial disorders – Clinical, treatment, and laboratory materials, Associated materials, Technical consideration, shelf life, storage, manipulations, sterilization, and waste management.
- Students shall be trained and practiced for all clinical procedures with an advanced knowledge of theory of principles, concepts and techniques of various honorably accepted methods and materials for Prosthodontics, treatment modalities includes honorable accepted methods of diagnosis, treatment plan, records maintenance, and treatment and laboratory procedures and after care and preventive.
- Understanding all applied aspects for achieving physical, psychological well being of the patients for control of diseases and / or treatment related syndromes with the patient satisfaction and restoring function of Cranio mandibular system for a quality life of a patient
- The theoretical knowledge and clinical practice shall include principles involved for support, retention, stability, esthetics, phonation, mastication, occlusion, behavioral, psychological, preventive and social aspects of science of Prosthodontics including Crown & Bridge and Implantology
- Theoretical knowledge and clinical practice shall include knowledge for laboratory practice and material science. Students shall acquire knowledge and practice of history taking, systemic and oro and Craniofacial region and diagnosis and treatment plan and prognosis record maintaining. A comprehensive rehabilitation concept with pre prosthetic treatment plan including surgical Reevaluation and prosthodontic treatment plan, impressions, jaw relations, utility of face bow and articulators, selection and positioning of teeth for retention, stability, esthetics, phonation and psychological comfort. Fit and insertion and instruction for patients after care and preventive Prosthodontics, management of failed restorations.
- TMJ syndromes, occlusion rehabilitation and craniofacial esthetics. State of the art clinical methods and materials for implants supported extra oral and intra oral prosthesis.

- Student shall acquire knowledge of testing biological, mechanical and other physical property of all material used for the clinical and laboratory procedures in prosthodontic therapy.
- Students shall acquire full knowledge and practice Equipments, instruments, materials, and laboratory procedures at a higher competence with accepted methods.
- All clinical practice shall involve personal and social obligation of cross infection control, sterilization and waster management.

I. REMOVABLE PROSTHODONTICS AND IMPLANTS

a. Prosthodontic treatment for completely edentulous patients – Complete denture, immediate complete denture, single complete denture, tooth supported complete denture, Implant supported Prosthesis for completely edentulous
b. Prosthodontic treatment for partially edentulous patients: - Clasp-retained partial dentures, intra coronal and extra coronal precision attachments retained partial dentures, maxillofacial prosthesis.

Prosthodontic treatment for edentulous patients: - Complete Dentures and Implant supported Prosthesis.

Complete Denture Prosthesis – Definitions, terminology, G.P.T., Boucher's clinical dental terminology

Scope of Prosthodontic – the Cranio Mandibular system and its functions, the reasons for loss of teeth and methods of restorations,

Infection control, cross infection barrier – clinical and laboratory and hospital and lab waste management

a) Edentulous Predicament, Biomechanics of the edentulous state, Support mechanism for the natural dentition and complete dentures, Biological considerations, Functional and Para functional considerations, Esthetic, behavioral and adaptive responses, Temporomandibular joints changes.
b) Effects of aging of edentulous patients – aging population, distribution and edentulism in old age, impact of age on edentulous mouth – Mucosa, Bone, saliva, jaw movements in old age, taste and smell, nutrition, aging, skin and teeth, concern for personal appearance in old age
c) Sequalae caused by wearing complete denture – the denture in the oral environment – Mucosal reactions, altered taste perception, burning mouth syndrome, gagging, residual ridge reduction, denture stomatitis, flabby ridge, denture irritation hyperplasia, traumatic Ulcers, Oral cancer in denture wearers, nutritional deficiencies, masticatory ability and performance, nutritional status and masticatory functions.
d) Temporomandibular disorders in edentulous patients – Epidemiology, etiology and management, Pharmacotherapy, Physical modalities, and Bio-behavioral modalities
e) Nutrition Care for the denture wearing patient – Impact of dental status on food intake, Gastrointestinal functions, nutritional needs and status of older adults, Calcium and bone health, vitamin and herbal supplementation, dietary counseling and risk factor for malnutrition in patients with dentures and when teeth are extracted.
f) Preparing patient for complete denture patients – Diagnosis and treatment planning for edentulous and partially edentulous patients – familiarity with patients, principles of perception, health questionnaires and identification data, problem identification, prognosis and treatment identification data, problem identification, prognosis and treatment planning – contributing history – patient's history, social information, medical status – systemic status with special reference to debilitating diseases, diseases of the joint, cardiovascular, disease of the skin, neurological disorders, oral malignancies, climacteric, use of drugs, mental health – mental attitude, psychological changes, adaptability, geriatric changes – physiologic, pathological, pathological and intra oral changes. Intra oral health – mucose membrane, alveolar ridges, palate and vestibular sulcus and dental health.

Data collection and recording, visual observation, radiography, palpation, measurement – sulci or fossae, extra oral measurement, the vertical dimension of occlusion, diagnostic casts.

Specific observations – existing dentures, soft tissue health, hard tissue health – teeth, bone

Biomechanical considerations – jaw relations, border tissues, saliva, muscular development – muscle tone, neuromuscular co-ordination, tongue, cheek and lips.

Interpreting diagnostic findings and treatment planning

g) Pre prosthetic surgery – Improving the patients denture bearing areas and ridge relations: - non surgical methods – rest for the denture supporting tissues, occlusal correction of the old prosthesis, good nutrition, conditioning of the patients musculature, surgical methods – Correction of conditions, that preclude optimal prosthetic function – hyperplastic ridge – epulis fissuratum and papillomatosis, frenular attachments and pendulous maxillary tuberosities, ridge augmentation, maxillary and Mandibular oral implants, corrections of congenital deformities, discrepancies in jaw size, relief of pressure on the mental foramen, enlargement of denture bearing areas, vestibuloplasty, ridge augmentation, replacement of tooth roots with Osseo integrated denture implants.

h) Immediate Denture – Advantages, disadvantages, contra indication, diagnosis treatment plan and prognosis, Explanation to the patient, Oral examinations, examination of existing prosthesis, tooth modification, prognosis, referrals/adjunctive care, oral prophylaxis and other treatment needs.

First extraction/surgical visit, preliminary impressions and diagnostic casts, management of loose teeth, custom trays, final impressions and final casts two tray or sectional custom impression tray, location of posterior limit and jaw relation records, setting the denture teeth / verifying jaw relations and the patient try in, laboratory phase, setting of anterior teeth, Wax contouring, flasking and boil out, processing and finishing, surgical templates, surgery and immediate denture insertion, post operative care and patient instructions, subsequent service for the patient on the immediate denture, over denture tooth attachments, implants or implant attachments.

i) Over dentures (tooth supported complete dentures) – indications and treatment planning, advantages and disadvantages, selection of abutment teeth, lose of abutment teeth, tooth supported complete dentures. Non-coping abutments, abutment with copings, abutments with attachments, submerged vital roots, preparations of the retained teeth.

j) Single Dentures: Single Mandibular denture to oppose natural maxillary teeth, single complete maxillary denture to oppose natural Mandibular teeth to oppose a partially edentulous Mandibular arch with fixed prosthesis, partially edentulous Mandibular arch with removable partial dentures. Opposing existing complete dentures, preservation of the residual alveolar ridge, necessity for retaining maxillary teeth and mental trauma.

k) Art of communication in the management of the edentulous predicament – Communication – scope, a model of communication, why communication important, what are the elements of effective communications, special significance of doctor / patient communication, doctor behavior, The iatrosedative (doctor & act of making calm) recognizing and acknowledging the problem, exploring and identifying the problem, interpreting and explaining the problem, offering a solution to the problem for mobilize their resources to operate most efficient way, recognizing and acknowledging the problem, interpreting and explaining the problem, offering a solution to the problem.

l) Materials prescribed in the management of edentulous patients -

Denture base materials, General requirements of biomaterials for edentulous patients, requirement of an ideal denture base, chemical composition of denture base resins, materials used in the fabrication of prosthetic denture teeth, requirement of prosthetic denture teeth, denture lining materials and tissue conditioners, cast metal alloys as denture, bases – base metal alloys.

m) Articulators – Classification, selection, limitations, precision, accuracy and sensitivity, and Functional activities of the lower member of the articulator and uses,

n) Fabrications of complete dentures – complete denture impressions – muscles of facial expressions and anatomical landmarks, support, retention, stability, aims and objectives – preservation, support, stability, aesthetics, and retention. Impression materials and techniques – need of 2 impressions the preliminary impression and final impression Developing an analogue / substitute for the maxillary denture bearing area – anatomy of supporting structures – mucous membrane, hard palate, residual ridge, shape of the supporting structure and factors that influence the form and size of the supporting bones, incisive foramen, maxillary tuberosity, sharp spiny process, torus palatinus, Anatomy of peripheral or limiting structures, labial vestibule, Buccal vestibule, vibrating line, preliminary and final impressions, impression making, custom tray and refining the custom tray, preparing the tray to secure the final impression, making the final impression, boxing impression and making the casts

Developing an analogue / substitute for the Mandibular denture bearing area-Mandible – anatomy of supporting structure, crest of the residual ridge, the Buccal shelf, shape of supporting structure, mylohyoid ridge, mental foramen, genial tubercles, torus mandibularis, Anatomy of peripheral or limiting structure – labial vestibule, Buccal vestibule, lingual border, mylohyoid muscle, retromylohyoid fossa, sublingual gland region, alveolingual sulcus, Mandibular impressions – preliminary impressions, custom tray, refining, preparing the tray\, final impressions.

o) Mandibular movements, Maxillo mandibular relation and concepts of occlusion – Gnathology, identification of shape and location of arch form – Mandibular and maxillary, occlusion rim, level of occlusal plane and recording of trail denture base, tests to determine vertical dimension of occlusion, interocclusal, centric relation records, Biological and clinical considerations in making jaw relation records and transferring records from the patients to the articulator, Recording of Mandibular movements – influence of opposing tooth contacts, Temporomandibular joint, muscular involvements, neuromuscular regulation of Mandibular motion, the envelope of motion, rest position, Maxillo – Mandibular relations – the centric, eccentric, physiologic rest position, vertical dimension, occlusion, recording methods – mechanical, physiological, Determining the horizontal jaw relation – Functional graphics, tactile or interpcclusal check record method, Orientation / sagittal relation records, Arbitrary / Hinge axis and face bow record, significance and requirement, principles and biological considerations and securing on articulators.

p) Selecting and arranging artificial teeth and occlusion for the edentulous patient – anterior tooth selection, posterior tooth selection, and principles in arrangement of teeth, and factors governing position of teeth – horizontal, vertical. The inclinations and arrangement of teeth for aesthetics, phonetics and mechanics – to concept of occlusion.

q) The Try in – verifying vertical dimension, centric relation, establishment of posterior palatal seal, creating a facial and functional harmony with anterior teeth, harmony of spaces of individual teeth position, harmony with sex, personality and age of the patient, co-relating aesthetics and incisal guidance.

r) Speech considerations with complete dentures – speech production – structural and functional demands, neuropsychological background, speech production and the roll of teeth and other oral structures – bilabial sounds, labiodentals sounds, linguodental sounds, linguoalveolar sound, articulatoric characteristics, acoustic characteristics, auditory characteristics, linguopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.

s) Waxing contouring and processing the dentures their fit and insertion and after care – laboratory procedure – wax contouring, flasking and processing, laboratory remount procedures and selective, finishing and polishing. Critiquing the finished prosthesis – doctors evaluation, patients evaluation, friends evaluation, elimination of basal surface errors, errors in occlusion, interocclusal records for remounting procedures – verifying centric relation, eliminating occlusal errors, special instructions to the patient – appearance with new denture, mastication with new dentures, speaking with new dentures, speaking with new dentures, oral hygiene with dentures, preserving of residual ridges and educational material for patients, maintaining the comfort and

health of the oral cavity in the rehabilitated edentulous patients. Twenty-four hours oral examination and treatment and preventive Prosthodontic – periodontic recall for oral examination 3 to 4 months intervals and yearly intervals.

t) Implant supported Prosthesis for partially edentulous patients – Science of Osseo integration, clinical protocol for treatment with implant supported over dentures, managing problems and complications, implant Prosthodontics for edentulous patients: current and future directions.

u) Implant supported prosthesis for partially edentulous patients – Clinical and laboratory protocol: Implant supported prosthesis, managing problems and complications

- Introduction and Historical Review
- Biological, clinical and surgical aspects of oral implants
- Diagnosis and treatment planning
- Radiological interpretation for selection of fixtures
- Radiological interpretation for selection of fixtures
- Splints for guidance fort surgical placement of fixtures
- Intra oral plastic surgery
- Guided bone and Tissue generation consideration for implants fixture.
- Implants supported prosthesis for complete edentulism and partial edentulism
- Occlusion for implants support prosthesis.
- Peri-implant tissue and Management
- Peri – implant and management
- Maintenance and after care
- Management of failed restoration.
- Work authorization for implant supported prosthesis – definitive instructions, legal aspects, delineation of responsibility.

Prosthodontic treatment for partially edentulous patients – Removable partial Prosthodontics –

a. Scope, definition and terminology, Classification of partially edentulous arches - requirements of an acceptable methods of classification, Kennedy's classification, Applegate's rules for applying the Kennedy classification

b. Components of RPD – major connector – mandibular and maxillary, minor connectors, design, functions, form and location of major and minor connectors, tissue stops, finishing lines, reaction of tissue to metallic coverage

Rest and rest seats – from of the Occlusal rest and rest seat, interproximal Occlusal rest seats, internal Occlusal rests, possible movements of partial dentures, support for rests, lingual rests on canines and incisor teeth, incisal rest and rest seat.

Direct retainer- Internal attachment, extracoronal direct retainer, relative uniformity of retention, flexibility of clasp arms, stabilizing – reciprocal clasp are, criteria for selecting a given clasp design, the basic principles of clasp design, circumferential clasp, bar clasp, combination clasp and other type of retainers.

Indirect Retainer – denture rotation about an axis, factors influencing effectiveness of indirect retainers, forms of indirect retainers, auxiliary Occlusal rest, canine extensions from Occlusal rests, canine rests, continuous bar retainers and linguoplates, modification areas, rugae support, direct – indirect retention.

Principles of removable partial Denture design – bio mechanic considerations, and the factors influence after mouth preparations – Occlusal relationship of remaining teeth, orientation of Occlusal plane, available space for restoration, arch integrity, tooth morphology, response of oral structure to previous stress, periodontal conditions, abutment support, tooth supported and tooth and tissue supported, need for indirect retention, clasp design, need for rebasing, secondary impression, need for abutment tooth modification, type of major connector, type of teeth selection, patients past experience, method of replacing single teeth or missing anterior teeth.

Difference between tooth supported and tissue supported partial dentures, essential of partial denture design, components of partial denture design, tooth support, ridge support,

stabilizing components, guiding planes, use of splint bar for denture support, internal clip attachments, overlay abutment as support for a denture base, use of a component partial to gain support.

c. Education of patient

d. Diagnosis and treatment planning

e. Design, treatment sequencing and mouth preparation

f. Surveying – Description of dental surveyor, purposes of surveying, Aims and objectives in surveying of diagnostic cast and master cast, Final path of placement, factors that determine path of placement and removal, Recording relation of cast to surveyor, measuring retention, Blocking of master cast – paralleled blockout, shaped blockout, arbitrary blockout and relief.

g. Diagnosis and treatment planning – Infection control and cross infection barriers – clinical and laboratory and hospital waste management, Objectives of prosthodontic treatment, Records, systemic evaluation, Oral examination, preparation of diagnostic cast, interpretation of examination data, radiographic interpretation, periodontal considerations, caries activity, prospective surgical preparation, endodontic treatment, analysis of occlusal factors, fixed restorations, orthodontic treatment, need for determining the design of components, impression procedures and occlusion, need for reshaping remaining teeth, reduction of unfavorable tooth contours, differential diagnosis : fixed or removable partial dentures, choice between complete denture and removable partial dentures, choice of materials

h. Preparation of Mouth for removable partial dentures – Oral surgical preparation, conditioning of abused and irritated tissues, periodontal preparation – objectives of periodontal therapy, periodontal diagnosis, control therapy, periodontal surgery.

i. Preparation of Abutment teeth – Classification of abutment teeth, sequence of abutment preparations on sound enamel or existing restorations, conservative restoration< using crowns, splinting abutment teeth, utilization, temporary crowns to be used as abutment.

j. Impression Materials and Procedures for Removable Partial Dentures – Rigid materials, thermoplastic materials, Elastic materials, Impressions of the partially edentulous arch, Tooth supported, tooth tissue supported, Individual impression trays.

k. Support for the Distal Extension Denture Base – Distal extension removable partial denture, Factors influencing the support of distal extension base, Methods for obtaining functional support for the distal extension base.

l. Laboratory Procedures – Duplicating a stone cast, Waxing the partial denture framework, Anatomic replica patterns, Spruing, investing, burnout, casting and finishing of the partial denture framework, making record bases, occlusion rims, making a stone occlusal template from a functional occlusal record, arranging posterior teeth to an opposing cast or template, types of anterior teeth, waxing and investing the partial denture before processing acrylic resin bases, processing the denture, remounting and occlusal correction to an occlusal template, polishing the denture.

m. Initial placement, adjustment and servicing of the removable partial denture – adjustments to bearing surfaces of denture framework, adjustment of occlusion in harmony with natural and artificial dentition, instructions to the patient, follow – up services

n. Relining and Rebasing the removable partial denture – Relining tooth supported dentures bases, relining distal extension denture bases, methods of reestablishing occlusion on a relined partial denture.

o. Repairs and additions to removable partial dentures – Broken clasp arms, fractured occlusal rests, distortion or breakage of other components – major and minor connectors, loss of a tooth or teeth not involved in the support or retention of the restoration, loss of an abutment tooth necessitating its replacement and making a new direct retainer, Other types of repairs, Repair by soldering.

p. Removable partial denture considerations in maxillofacial prosthetics – Maxillofacial prosthetics, intra oral prosthesis, design considerations, maxillary prosthesis, Obturators, speech aids, palatal lifts, palatal augmentations, mandibular prosthesis, treatment planning, framework design, class I resection, Class II resection, mandibular flange prosthesis, jaw relation record

q. Management of failed restorations and work authorization.

II. MAXILLOFACIAL REHABILITATION:

Scope, terminology, definitions, cross infection control and hospital waste management, work authorization.

Behavioral and psychological issues in Head and neck cancer, Psychodynamic interactions – clinician and patient – Cancer Chemotherapy: Oral Manifestations, Complications, and management, Radiation therapy of head and neck tumors: Oral effects, Dental manifestations and dental treatment: Etiology, treatment and rehabilitation (restoration) – Acquired defects of the mandible, acquired defects of hard palate, soft palate, clinical management of edentulous and partially edentulous maxillectomy patients, Facial defects, Restoration of speech, Velopharyngeal function, cleft lip and palate, cranial implants, maxillofacial trauma, Lip and cheek support prosthesis, Laryngectomy aids, Obstructive sleep apnoea, Tongue prosthesis, Esophageal prosthesis, Vaginal radiation carrier, Burn stents, Nasal stents, Auditory inserts, trismus appliances, mouth controlled devices for assisting the handicapped, custom prosthesis for lagophthalomos of the eye. Osseo integrated supported facial and maxillofacial prosthesis. Resin bonding for maxillofacial prosthesis, Implant rehabilitation of the mandible compromise by radiotherapy, Craniofacial Osseo integration, Prosthodontic treatment, Material and laboratory procedures for maxillofacial prosthesis.

III. OCCLUSION

EVALUATION, DIAGNOSIS AND TREATMENT OF OCCLUSAL PROBLEMS:

Scope, definition, terminology, optimum oral health, anatomic harmony, functional harmony, occlusal stability, causes of deterioration of dental and oral health, Anatomical, physiological, neuro – muscular, psychological, considerations of teeth, muscles of mastication, temporomandibular joint, intra oral and extra oral and facial musculatures, the functions of Cranio mandibular system.

Occlusal therapy, the stomatognathic system, centric relation, vertical dimension, the neutral zone, the occlusal plane, differential diagnosis of temporomandibular disorders, understanding and diagnosing intra articular problems, relating treatment to diagnosis of internal derangements of TMJ, Occlusal splints, Selecting instruments for occlusal diagnosis and treatment, mounting casts, Pankey-mann-schuyler philosophy of complete occlusal rehabilitation, long centric, anterior guidance, restoring lower anterior teeth, restoring upper anterior teeth, determining the type of posterior occlusal contours, methods for determining the plane of occlusion, restoring lower posterior teeth, restoring upper posterior teeth, functionally generated path techniques for recording border movements intra orally, occlusal equilibration, Bruxism, Procedural steps in restoring occlusions, requirements for occlusal stability, solving occlusal problems through programmed treatment planning, splinting, solving – occlusal wear problems, deep overbite problems, anterior overjet problems, anterior open bite problems. Treating – end to end occlusion, splayed anterior teeth, cross bite patient, Crowded, irregular, or interlocking anterior bite, using Cephalometric for occlusal analysis, solving severe arch malrelationship problems, transcranial radiography, postoperative care of occlusal therapy.

IV.FIXED PROSTHODONTICS

Scope, definitions and terminology, classification and principles, design, mechanical and biological considerations of components – Retainers, connectors, pontics, work authorization.

- **Diagnosis and treatment planning** – patients history and interview, patients desires and expectations and needs, systemic and emotional health, clinical examinations – head and neck, oral – teeth, occlusal and periodontal, Preparation of diagnostic cast, radiographic interpretation, Aesthetics, endodontics considerations, abutment selection – bone support, root proximities and inclinations, selection of abutments, for cantilever, pier abutments, splinting, available tooth structures and crown morphology, TMJ and muscles mastication and comprehensive planning and prognosis.

- **Management of Carious teeth** – caries in aged, caries control, removal carious, protection of pulp, reconstruction measure for compromising teeth – retentive pins, horizontal slots, retention grooves, prevention of caries, diet, prevention of root caries and vaccine for caries.
- **Periodontal considerations** – attachment units, ligaments, gingivitis, periodontitis. Microbiological aspect of periodontal diseases, marginal lesion, occlusal trauma, periodontal pockets attached gingiva, interdental papilla, gingival embrasures, gingival/periodontal prosthesis, radiographic interpretations of Periodontia, intraoral, periodontal splinting – Fixed prosthodontics with periodontially compromised dentitions, placement of margin restorations.
- **Biomechanical principle of tooth preparations** – individual tooth preparations - Complete metal Crowns – P.F.C., All porcelain – Cerestore crowns, dicor crowns, incerem etc. porcelain jacket crowns partial 3/4, fronional half, radicular 7/8, telescopic, pin–ledge, laminates, inlays, onlays and preparations for restoration of teeth–amalgam, glass Ionomer and composite resins, Resin Bond retainers, Gingival marginal preparations – Design, material selection, and biological and mechanical considerations – intracoronal retainer and precision attachments – custom made and ready made
- **Isolation and fluid control** – Rubber dam applications, tissue dilation – soft tissue management for cast restoration, impression materials and techniques, provisional restoration, interocclusal records, laboratory support for fixed Prosthodontics, Occlusion, Occlusal equilibration, articulators, recording and transferring of occlusal relations, cementing of restorations.
- **Resins, Gold and gold alloys, glass Ionomer, restorations.**
- **Restorations of endodontically treated teeth, Stomatognathic Dysfunction and management**
- **Management of failed restorations**

Osseo integrated supported fixed Prosthodontics – Osseo integrated supported and tooth supported fixed Prosthodontics

V. TMJ – Temporomandibular joint dysfunction – Scope, definitions, and terminology

Temporomandibular joint and its function, Orofacial pain, and pain from the temporomandibular joint region, temporomandibular joint dysfunction, temporomandibular joint sounds, temporomandibular joint disorders

Anatomy related, trauma, disc displacement, Osteoarthrosis/Osteoarthritis, Hyper mobility and dislocation, infectious arthritis, inflammatory diseases, Eagle's syndrome (Styloid – stylohyoid syndrome), Synovial chondromatosis, Osteochondrrosis disease, Ostonecrosis, Nerve entrapment process, Growth changes, Tumors, Radiographic imaging

- Etiology, diagnosis and cranio mandibular pain, differential diagnosis and management of orofacial pain – pain from teeth, pulp, dentin, muscle pain, TMJ pain – psycho logic, physiologic – endogenous control, acupuncture analgesia, Placebo effects on analgesia, Trigeminal neuralgia, Temporal arteritis
- Occlusal splint therapy – construction and fitting of occlusal splints, management of occlusal splints, therapeutic effects of occlusal splints, occlusal splints and general muscles performance, TMJ joint uploading and anterior repositioning appliances, use and care of occlusal splints.
- Occlusal adjustment procedures – Reversible – occlusal stabilization splints and physical therapies, jaw exercises, jaw manipulation and other physiotherapy or irreversible therapy – occlusal repositioning appliances, orthodontic treatment, Orthognathic surgery, fixed and removable prosthodontic treatment and occlusal adjustment, removable prosthodontic treatment and occlusal adjustment, Indication for occlusal adjustment, special nature of orofacial pain, Indication for occlusal adjustment, special nature of orofacial pain, Psychopathological considerations, occlusal adjustment philosophies, mandibular position, excursive guidance,, occlusal contact scheme, goals of occlusal adjustment, significance of a slide in centric, Preclinical procedures, clinical procedures for occlusal adjustment.

VI. AESTHETIC

SCOPE, DEFINITIONS :

Morpho psychology and esthetics, structural esthetic rules – facial components, dental components, gingival components and physical components. Esthetics and its relationship to function – Crown morphology, physiology of occlusion, mastication, occlusal loading and clinical aspect in bio esthetic aspects, Physical and physiologic characteristic and muscular activities of facial muscle, perioral anatomy and muscle retaining exercises Smile – classification and smile components, smile design, esthetic restoration of smile, Esthetic management of the dentogingival unit, intraoral materials for management of gingival contours, and ridge contours, Periodontal esthetics, Restorations – Tooth colored restorative materials, the clinical and laboratory aspects, marginal fit, anatomy, inclinations, form, size, shape, color, embrasures, contact point.

TEACHING AND LEARNING ACTIVITIES:

All the candidates registered for MDS course shall pursue the course for a period of three years as full – time students. During this period each student shall take part actively in learning and teaching activities designed by the Institution/ University. The following teaching and learning activities in each speciality.

Prosthodontic treatment should be practiced by developing skills by teaching various and more number of patients to establish skill for diagnose and treatment and after care with bio-mechanical, biological, bio-esthetics, Bio-phonetics and all treatment should be carried out in more number for developing clinical skill

1. **Lectures:** There shall be didactic lectures both in the speciality and in the allied fields. The postgraduate departments should encourage the guest lectures in the required areas to strengthen the training programmes. It is also desirable to have certain integrated lectures by multidisciplinary teams on selected topics
2. **Journal club:** The journal review meetings shall be held at least once a week. All trainees are expected to participate actively and enter relevant details in logbook. Each trainee should make presentations from the allotted journal of selected articles at least 5 times in a year.
3. **Seminars:** The seminars shall be held at least twice a week in the department, all trainees associated with postgraduate teaching are expected to participate actively and enter relevant details in logbook. Each trainee shall make at least 5-seminar presentation in each year.
4. **Symposium:** It is recommended to hold symposium on topics covering multiple disciplines one in each academic year.
5. **Workshops:** It is recommended to hold workshops on topics covering multiple disciplines one in each academic year.
6. **Clinical Postings:** Each trainee shall work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist
7. **Clinico Pathological Conference:** The Clinico pathological conferences should be held once in a month involving the faculties of oral biology, oral medicine and radiology, oral pathology, oral surgery, period-ontology, endodontia and concerned clinical department. The trainees should be encouraged to present the clinical details, radiological and histo-pathological interpretations and participation in the discussions.
8. **Interdepartmental Meetings:** To bring in more integration among various specialities there shall be interdepartmental meeting chaired by the dean with all heads of postgraduate departments atleast once a month.
9. **Rural oriented prosthodontics health care** – To carry out a prosthodontic therapy interacting with rural centers and the institution.
10. **Teaching skills:** All the trainees shall be encouraged to take part in undergraduate teaching programmes either in the form of lectures or group discussions
11. **Evaluation skills:** All the trainees shall be encouraged to enhance their skills and knowledge in clinical, laboratory practice including theory by formulating question banks and model answers.

12. **Continuing dental Education programmes**: Each Postgraduate department shall organize these programmes on regular basis involving the other institutions. The trainees shall also be encouraged to attend such programmes conducted elsewhere.
13. **Conferences/Workshops/Advanced courses**: The trainees shall be encouraged not only to attend conference/workshops/advance courses but also to present atleast two papers at state/national speciality meeting during their training period.
14. **Rotational posting in other Departments**: To bring in more integration between the speciality and allied fields each post graduate department shall workout a programme to rotate the trainees in related disciplines and craniofacial and maxillofacial ward.
15. **Dissertation**: Trainees shall prepare a dissertation based on the clinical or laboratory experimental work or any other study conducted by them under the supervision of the post graduate guide.

I YEAR M.D.S.

- Theoretical exposure of all applied sciences of study
- Clinical and non-clinical exercises involved in Prosthodontics therapy for assessment and acquiring higher competence
- Commencement of Library Assignment within six months.
- Short epidemiological study relevant to Prosthodontics.
- Acquaintance with books, journals and referrals to acquire knowledge of published books, journals and website for the purpose of gaining knowledge and reference – in the fields of Prosthodontics including Crown & bridge and implantology
- Acquire knowledge of instruments, equipment, and research tools in Prosthodontics.
- To acquire knowledge of Dental Material Science – Biological and biomechanical & bio-esthetics, knowledge of using material in laboratory and clinics including testing methods for dental materials.
- Participation and presentation in seminars, didactic lectures
- Evaluation – Internal Assessment examinations on Applied subjects

II YEAR M.D.S.

- Acquiring confidence in obtaining various phases and techniques for providing Prosthodontic therapy.
- Acquiring confidence by clinical practice with sufficient numbers of patients requiring tooth and tooth surface restorations.
- Fabrication of Adequate number of complete denture prosthesis following, higher clinical approach by utilizing semi-adjustable articulators, face bow and graphic tracing.
- Understanding the use of the dental surveyor and its application in diagnosis and treatment plan in R.P.D.
- Adequate numbers of R.P.D. covering all partially edentulous situation
- Adequate number of Crowns, Inlays, laminates F.P.D. covering all clinical situation.
- Selection of cases and principles in treatment of partially or complete edentulous patients by implant supported prosthesis.
- Treating single edentulous arch situation by implant supported prosthesis.
- Diagnosis and treatment planning for implant prosthesis.
- Ist stage and IInd stage implant surgery
- Understanding the maxillofacial Prosthodontics
- Treating craniofacial defects
- Management of orofacial defects
- Prosthetic management of TMJ syndrome
- Occlusal rehabilitation
- Management of failed restoration
- Prosthodontics Management of patient with psychogenic disorder.
- Practice of child and geriatric prosthodontics
- Participation and presentation in seminars, didactics lectures

- Evaluation – Internal Assessment examinations

III YEAR M.D.S

- Clinical and laboratory practice continued from IInd year
- Occlusion equilibration procedures – fabrication of stabilizing splint for parafunctional disorders, occlusal disorders and TMJ functions.
- Practice of dental, oral and facial esthetics
- The clinical practice of all aspects of Prosthodontic therapy for elderly patients.
- Implants Prosthodontics – Rehabilitation of Partial Edentulous, Complete edentulism and for craniofacial rehabilitation
- Failures in all aspects of Prosthodontics and its management and after care
- Team management for esthetics, TMJ syndrome and Maxillofacial and Craniofacial Prosthodontics
- Management of Prosthodontics emergencies, resuscitation.
- Candidate should complete the course by attending by large number and variety of patients to master the prosthodontic therapy. This includes the practice management, examinations, treatment planning, communication with patients, clinical and laboratory techniques materials and instrumentation requiring different aspects of prosthodontic therapy, Tooth and Tooth surface restoration, Restoration of root treated teeth, splints for periodontal rehabilitations and fractured jaws, complete dentures, R.P.D. FPD. Immediate dentures over dentures implant supported prosthesis, maxillofacial and body prosthesis, occlusal rehabilitation.
- Prosthetic management of TMJ syndrome
- Management of failed restorations
- Complete and submit Library Assignment 6 months prior to examination.
- Candidates should acquire complete theoretical and clinical knowledge through seminars, symposium, workshops and reading.
- Participation and presentation in seminars, didactic lectures
- Evaluation – Internal Assessment examinations three months before University examinations

PROSTHODONTIC TREATMENT MODALITIES

1. Diagnosis and treatment plan in prosthodontics
2. Tooth and tooth surface restorations
   - Fillings
   - Veneers – composites and ceramics
   - Inlays- composite, ceramic and alloys
   - Onlay – composite, ceramic and alloys
   - Partial crowns – ¾ th, 4/5th, 7/8th, ½ crowns
   - Pin-ledge
   - Radicular crowns
   - Full crowns

3. **Tooth replacements**

	PARTIAL	COMPLETE
• Tooth supported	Fixed partial denture	Overdenture
• Tissue supported	Interim partial denture	Complete denture
	Intermediate partial denture	Immediate denture
		Immediate complete denture
• Tooth and tissue Supported	Cast partial denture	Overdenture
	Precision attachment	
• Implant supported	Cement retained	Bar attachment
	Screw retained	Ball attachment
	Clip attachment	
• Tooth and implant Supported	Screw retained	
	Cement retained	

- Root supported — Dowel and core, Pin retained — Overdenture

➢ Precision attachments
- Intra coronal attachments
- Extra coronal attachments
- Bar – slide attachments
- Joints and hinge joint attachments

4. Tooth and tissue defects (Maxillo- facial and Cranio-facial prosthesis)

A. **Congenital Defects**

a. Cleft lip and palate
b. Pierre Robin Syndrome
c. Ectodermal dysplasia
d. Hemifacial microsomia
e. Anodontia
f. Oligodontia
g. Malformed teeth

→ cast partial dentures, implant supported prosthesis, complete dentures, fixed partial dentiures

B. **Acquired defects**

a. Head and neck cancer patients – prosthodontic splints and stents
b. Restoration of facial defects
   – Auricular prosthesis
   – Nasal prosthesis
   – Orbital prosthesis
   – Craniofacial implants
c. Midfacial defects
d. Restoration of maxillofacial trauma
e. Hemimandibulectomy
f. Maxillectomy
g. Lip and cheek support prosthesis

→ cast partial denture, implant supported dentures, complete dentures

h. Ocular prosthesis
i. Speech and Velopharyngeal prosthesis
j. Laryngectomy aids
k. Esophageal prosthesis
l. Nasal stents
m. Tongue prosthesis
n. Burn stents
o. Auditory inserts
p. Trismus appliances

5. **T.M.J and Occlusal disturbances**

a. Occlusal equilibration
b. Splints - Diagnostic
   - Repositioners / Deprogrammers
c. Anterior bite plate
d. Posterior bite plate
e. Bite raising appliances
f. Occlusal rehabilitation

6. **Esthetic/Smile designing**

a. Laminates / Veneers
b. Tooth contouring (peg laterals, malformed teeth)
c. Tooth replacements
d. Team management

7. **Psychological therapy**

a. Questionnaires

b. Charts, papers, photographs
c. Models
d. Case reports
e. Patient counseling
f. Behavioral modifications
g. Referrals

8. **Geriatric Prosthodontics**
   a. Prosthodontics for the elderly
   b. Behavioral and psychological counseling
   c. Removable Prosthodontics
   d. Fixed Prosthodontics
   e. Implant supported Prosthodontics
   f. Maxillofacial Prosthodontics
   g. Psychological and physiological considerations

9. **Preventive measures**
   a. Diet and nutrition modulation and counseling
   b. Referrals

The bench work should be completed before the clinical work starts during the first year of the MDS Course

I. Complete dentures
1. Arrangements in adjustable articulator for
- Class I
- Class II
- Class III

2. Various face bow transfer to adjustable articulators
3. Processing of characterized anatomical denture

II. Removable partial denture
1. Design for Kennedy's Classification
   (Survey, block out and design)
   a. Class I
   b. Class II
   c. Class III
   d. Class IV
2. Designing of various components of RPD
3. Wax pattern on refractory cast
   a. Class I
   b. Class II
   c. Class III
   d. Class IV
4. Casting and finishing of metal frameworks
5. Acrylisation on metal frameworks for
   Class I
   Class III with modification

III. Fixed Partial Denture
1. Preparation in ivory teeth / natural teeth
   - FVC for metal
   - FVC for ceramic
   - Porcelain jacket crown
   - Acrylic jacket crown
   - PFM crown
   - 3/4th (canine, premolar and central)

- 7/8th posterior
- Proximal half crown
- Inlay – Class I, II, V
- Onlay – Pin ledged, pinhole
- Laminates

2. Preparation of different die system

3. Fabrication of wax pattern by drop wax build up technique
   - Wax in increments to produce wax coping over dies of tooth preparations on substructures
   - Wax additive technique
   - 3-unit wax pattern (maxillary and Mandibular)
   - Full mouth
4. Pontic design in wax pattern
   - Ridge lap
   - Sanitary
   - Modified ridge lap
   - Modified sanitary
   - Spheroidal or conical
5. Fabrication of metal framework
   - Full metal bridge for posterior (3 units)
   - Coping for anterior (3 unit)
   - Full metal with acrylic facing
   - Full metal with ceramic facing
   - Adhesive bridge for anterior
   - Coping for metal margin ceramic crown
   - Pin ledge crown
6. Fabrication of crowns
   - All ceramic crowns with characterisation
   - Metal ceramic crowns with characterisation
   - Full metal crown
   - Precious metal crown
   - Post and core
7. Laminates
   - Composites with characterisation
   - Ceramic with characterisation
   - Acrylic
8. Preparation for composites
   - Laminates
   - Crown
   - Inlay
   - Onlay
   - Class I
   - Class II
   - Class III
   - Class IV
   - Fractured anterior tooth

IV. Maxillofacial prosthesis

1. Eye
2. Ear
3. Nose
4. Face

SCHEME OF EXAMINATION:

A. Theory : 300 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

Paper I : Applied Basic Sciences: Applied Anatomy, embryology, growth and development Genetics, Immunology, anthropology, Physiology, nutrition & Biochemistry, Pathology & Microbiology, virology, Applied pharmacology, Research Methodology and bio statistics,. Applied Dental anatomy & histology, Oral pathology & oral Microbiology, Adult and geriatric psychology. Applied dental materials.

PaperII : Removable Prosthodontics and Implant supported prosthosis(Implantology), Geriatric dentistry and Cranio facial Prosthodontics

Paper III : Fixed Prosthodontics, occlusion, TMJ and esthetics.

Paper IV : Essay

**The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical / Clinical Examination : 200 Marks

Examination shall be for three days. If there are more than 6 cndidates, it may be extended for one more day. Each candidate shall be examined for a minimum of three days, six hours per day including viva voce.

1. **Presentation of treated patients and records during their 3 years training period – 25 Marks**

a.	C.D.	- 1 mark
b.	R. P.D.	- 2 marks
c.	F.P.D. including single tooth and surface restoration	- 2 marks
d.	I.S.P.	- 5 marks
e.	Occlusal rehabilitation	- 5 marks
f.	T.M.J.	- 5 marks
g.	Maxillofacial Prosthesis	- 5 marks

2. **Present actual treated patients C.D. Prosthesis and Insertion – 90 Marks**

1.	Discussion on treatment plan and patient review	- 10 marks
2.	Tentative jaw relation records	- 5 marks
3.	Face Bow – transfer	- 5 marks
4.	Transferring it on articulators	- 5 marks
5.	Extra oral tracing and securing centric and protrusive/lateral, record	- 25 marks
6.	Transfer in on articulator.	- 5 marks
7.	Selection of teeth	- 5 marks
8.	Arrangement of teeth	- 15 marks
9.	Waxedup denture trial	- 10 marks
10.	Fit, insertion and instruction of previously processed charaterised, anatomic complete denture prosthesis	- 5 marks

All steps will include chairside, lab and viva voce

3. **Fixed Partial Denture – 50 Marks**

a.	Case discussion and selection of patients for F.P.D.	– 5 marks
b.	Abutment preparation isolation and fluid control	– 25 marks
c.	Gingival retraction and impressions	– 10 marks
d.	Cementation of provisional restoration	– 10 marks

4. **Removable Partial Denture – 35 Marks**

a.	Surveying and designing of partial dentate cast.	– 10 marks
b.	Discussion on components and material selection including occulsal scheme.	– 15 marks

C. Viva Voce : 100 Marks

i. Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

2. PERIODONTOLOGY

OBJECTIVES:

The following objectives are laid out to achieve the goals of the course

KNOWLEDGE:

Discuss historical perspective to advancement in the subject proper and related topics.

- Describe etiology, pathogenesis, diagnosis and management of common periodontal diseases with emphasis on Indian population
- Familiarize with the biochemical, microbiologic and immunologic genetic aspects of periodontal pathology
- Describe various preventive periodontal measures
- Describe various treatment modalities of periodontal disease from historical aspect to currently available ones
- Describe interrelationship between periodontal disease and various systemic conditions
- Describe periodontal hazards due to estrogenic causes and deleterious habits and prevention of it
- Identify rarities in periodontal disease and environmental/Emotional determinates in a given case
- Recognize conditions that may be outside the area of his Speciality/ competence and refer them to an appropriate Specialist
- Decide regarding non-surgical or surgical management of the case
- Update him by attending course, conferences and seminars relevant to periodontics or by self-learning process.
- Plan out/ carry out research activity both basic and clinical aspects with the aim of publishing his work in scientific journals
- Reach to the public to motivate and educate regarding periodontal disease, its prevention and consequences if not treated
- Plan out epidemiological survey to assess prevalence and incidence of early onset periodontitis and adult periodontitis in Indian population (Region wise)
- Shall develop knowledge, skill in the science and practice of Oral Implantology
- Shall develop teaching skill in the field of Periodontology and Oral Implantology

SKILLS:

- Take a proper clinical history, thorough examination of intra orally, extra orally, medical history evaluation, advice essential diagnostic procedures and interpret them to come to a reasonable diagnosis
- Effective motivation and education regarding periodontal disease maintenance after the treatment
- Perform both non-surgical & education regarding periodontal disease, maintenance after the treatment
- Perform both non-surgical and surgical procedures independently
- Provide Basic Life Support Service (BLS) recognizes the need for and advance life support and does the immediate need for that.
- Human values, ethical practice to communication abilities
- Adopt ethical principles in all aspects of treatment modalities, Professional honesty & integrity are to be fostered Develop, Adopt ethical principles in all aspects of treatment modalities; Professional honesty & integrity are to be fostered. Develop Communication skills to make awareness regarding periodontal disease Apply high moral and ethical standards while carrying out human or animal research, Be humble, accept the limitations in his knowledge and skill, and ask for help from colleagues when needed, Respect patients rights and privileges, including patients right to information and right to seek a second opinion.

COURSE CONTENTS:

PAPER-I

APPLIED ANATOMY:

1. Development of the Periodontium
2. Micro and Macro structural anatomy and biology of the periodontal tissues
3. Age changes in the periodontal tissues
4. Anatomy of the Periodontium

- Macroscopic and microscopic anatomy
- Blood supply of the Periodontium
- Lymphatic system of the Periodontium
- Nerves of the Periodontium

5. Temporomandibular joint, Maxillae and Mandible
6. Nerves of Periodontics
7. Tongue, oropharynx
8. Muscles of mastication

PHYSIOLOGY:

1. Blood
2. Respiratory system – Acknowledge of the respiratory diseases which are a cause of periodontal diseases (periodontal Medicine)
3. Cardiovascular system
   a. Blood pressure
   b. Normal ECG
   c. Shock
4. Endocrinology – hormonal influences on Periodontium
5. Gastrointestinal system
   a. Salivary secretion – composition, function & regulation
   b. Reproductive physiology
   c. Hormones – Actions and regulations, role in periodontal disease
   d. Family planning methods
6. Nervous system
   a. Pain pathways
   b. Taste – Taste buds, primary taste sensation & pathways for sensation

BIOCHEMISTRY:

1. Basics of carbohydrates, lipids, proteins, vitamins, proteins, enzymes and minerals
2. Diet and nutrition and periodontium
3. Biochemical tests and their significance
4. Calcium and phosphorus

PATHOLOGY:

1. Cell structure and metabolism
2. Inflammation and repair, necrosis and degeneration
3. Immunity and hypersensitivity
4. Circulatory disturbances – edema, hemorrhage, shock, thrombosis, embolism, infarction and hypertension
5. Disturbances of nutrition
6. Diabetes mellitus
7. Cellular growth and differentiation, regulation
8. Lab investigations
9. Blood

MICROBIOLOGY:

1. General bacteriology
   a. Identification of bacteria
   b. Culture media and methods
   c. Sterilization and disinfection
2. Immunology and Infection
3. Systemic bacteriology with special emphasis on oral microbiology – staphylococci, genus actinomyces and other filamentous bacteria and actinobacillus actinomycetumcomitans
4. Virology
   a. General properties of viruses
   b. Herpes, Hepatitis, virus, HIV virus
5. Mycology

a. Candidasis
6. Applied microbiology
7. Diagnostic microbiology and immunology, hospital infections and management

PHARMACOLOGY:

1. General pharmacology
   a. Definitions – Pharmcokinetics with clinical applications, routes of administration including local drug delivery in Periodontics
   b. Adverse drug reactions and drug interactions
2. Detailed pharmacology of
   a. Analgesics – opiod and nonopoid
   b. Local anesthetics
   c. Haematinics and coagulants, Anticoagulants
   d. Vit D and Calcium preparations
   e. Antidiabetics drugs
   f. Steroids
   g. Antibiotics
   h. Antihypertensive
   i. Immunosuppressive drugs and their effects on oral tissues
   j. Antiepileptic drugs
3. Brief pharmacology, dental use and adverse effects of
   a. General anesthetics
   b. Antypsychotics
   c. Antidepressants
   d. Anxiolytic drugs
   e. Sedatives
   f. Antiepileptics
   g. Antihypertensives
   h. Antianginal drugs
   i. Diuretics
   j. Hormones
   k. Pre-anesthetic medications
4. Drugs used in Bronchial asthma cough
5. Drug therapy of
   a. Emergencies
   b. Seizures
   c. Anaphylaxis
   d. Bleeding
   e. Shock
   f. Diabetic ketoacidosis
   g. Acute addisonian crisis
6. Dental Pharmacology
   a. Antiseptics
   b. Astringents
   c. Sialogogues
   d. Disclosing agents
   e. Antiplaque agents
7. Fluoride pharmacology

BIOSTATISTICS:

- Introduction, definition and branches of biostatistics
- Collection of data, sampling, types, bias and errors
- Compiling data-graphs and charts
- Measures of central tendency (mean, median and mode), standard deviation and variability
- Tests of significance (chi square test't'test and Z-test)

- Null hypothesis

PAPER-II

ETIOPATHOGENESIS:

1. Classification of periodontal diseases and conditions
2. Epidemiology of gingival and periodontal diseases
3. Defense mechanisms of gingiva
4. Periodontal microbiology
5. Basic concepts of inflammation and immunity
6. Microbial interactions with the host in periodontal diseases
7. Pathogenesis of plaque associated periodontal diseases
8. Dental calculus
9. Role of iatrogenic and other local factors
10. Genetic factors associated with periodontal diseases
11. Influence of systemic diseases and disorders of the periodontium
12. Role of environmental factors in the etiology of periodontal disease
13. Stress and periodontal diseases
14. Occlusion and periodontal diseases
15. Smoking and tobacco in the etiology of periodontal diseases
16. AIDS and periodontium
17. Periodontal medicine
18. Dentinal hypersensitivity

PAPER-III

Clinical and Therapeutic Periodontology and Oral Implantology

Please note:
Clinical periodontology includes gingival diseases, periodontal diseases, periodontal instrumentation, diagnosis, prognosis and treatment of periodontal diseases.

I. GINGIVAL DISEASES

1. Gingival inflammation
2. Clinical features of gingivitis
3. Gingival enlargement
4. Acute gingival infections
5. Desquamative gingivitis and oral mucous membrane diseases
6. Gingival diseases in the childhood

II. PERIODONTAL DISEASES

1. Periodontal pocket
2. Bone loss and patterns of bone destruction
3. Periodontal response to external forces
4. Masticatory system disorders
5. Chronic periodontitis
6. Aggressive periodontitis
7. Necrotising ulcerative periodontitis
8. Interdisciplinary approaches
   -Orthodontic
   -Endodontic
9. Periodontic considerations in periodontal therapy

III. TREATMENT OF PERIODONTAL DISEASES

A. History, examination, diagnosis, prognosis and treatment planning

1. Clinical diagnosis
2. Radiographic and other aids in the diagnosis of periodontal diseases
3. Advanced diagnostic techniques
4. Risk assessment

5. Determination of prognosis
6. Treatment plan
7. Rationale for periodontal treatment
8. General principles of anti-infective therapy with special emphasis on infection control in periodontal practice
9. Halitosis and its treatment
10. Bruxism and its treatment

B. Periodontal instrumentation
1. Instrumentation
2. Principles of periodontal instrumentation
3. Instruments used in different parts of the mouth

C. Periodontal therapy
1. Preparation of tooth surface
2. Plaque control
3. Anti microbial and other drugs used in periodontal therapy and wasting diseases of teeth
4. Periodontal management of HIV infected patients
5. Occlusal evaluation and therapy in the management of periodontal diseases
6. Role of orthodontics as an adjunct to periodontal therapy
7. Special emphasis on precautions and treatment for medically compromised patients
8. Periodontal splints
9. Management of dentinal hypersensitivity

D. Periodontal surgical phase – special emphasis on drug prescription
1. General principles of periodontal surgery
2. Surgical anatomy of periodontium and related structures
3. Gingival curettage
4. Gingivectomy technique
5. Treatment of gingival enlargements
6. Periodontal flap
7. Osseous surgery (resective and regenerative)
8. Furcation; Problem and its management
9. The periodontic – endodontic continuum
10. Periodontic plastic and esthetic surgery
11. Recent advances in surgical techniques

E. Future directions and controversial questions in periodontal therapy
1. Future directions for infection control
2. Research directions in regenerative therapy
3. Future directions in anti-inflammatory therapy
4. Future directions in measurement of periodontal diseases

F. Periodontal maintenance phase
1. Supportive periodontal treatment
2. Results of periodontal treatment

IV. ORAL IMPLANTOLOGY
1. Introduction and historical review
2. Biological, clinical and surgical aspects of dental implants
3. Diagnosis and treatment planning
4. Implant surgery
5. Prosthetic aspects of dental implants
6. Diagnosis and treatment of Peri implant complications
7. Special emphasis on plaque control measures implant patients
8. Maintenance phase

V. MANAGEMENT OF MEDICAL EMERGENCIES IN PERIODONTAL PRACTICE

Teaching / learning Activities

- **Seminars**: - A minimum of 15 seminars to be presented by each student during the P.G. course (Atleast 5 Seminars per year)
- **Journal clubs**: - a minimum of 25 Journal articles to be reviewed by each student during the P.G. course
- **Interdepartmental Seminars**: - Each P.G. student should present at least 1 seminar in an Interdepartmental meeting during the P.G. course. Such meetings may be held at least once every month
- **Library Assignment**: - one to be presented at the end of 18 months of the course

ACADEMIC ACTIVITIES:

I Year

Submission of synopsis for Dissertation – within 6 months from the start of the course
Library Assignment – to be submitted at the end of the I year

II Year

Scientific Paper presentation at the conferences

III Year

Scientific Paper/ Poster presentation at conferences
Submission of Dissertation – 6 months before completion of III year

SKILLS:

First year

Pre – Clinical work

Dental

1. Practice of incisions and suturing techniques on the typhodont models
2. Fabrication of bite guards and splints
3. Occlusal adjustments on the casts mounted on the articulator
4. X- Ray techniques and interpretation
5. Local anesthetic techniques

Medical

1. Basic diagnostic microbiology and immunology, collection and handling of sample, culture techniques
2. Basic understanding of immunological diseases
3. Interpretation of various biochemical investigations
4. Practical training and handling medical emergencies and basic life support devices
5. Basic Biostatistics – Surveying and data analysis

Clinical work

1. Applied periodontal indices	10 CASES
2. Scaling and root planning (SRP)	
a. Hand	15 CASES
b. Ultrasonic	15 CASES
3. Curettage	10 CASES
4. Gingivectomy	20 CASES
5. Gingivoplasty	10 CASES

Second Year

1. Clinical Work	10 CASES
2. Case history and treatment planning	5 CASES

3. Local Drug Delivery techniques
4. Periodontal surgical procedures
   - Pocket therapy
   - Muco-gingival surgeries
   - Implants (2 implants)
   - Management of perio endo problems

5. Occlusal adjustments 10 CASES
6. Perio splints 10 CASES

Third Year

Clinical work

1. Regenerative techniques
   - Using various graft and barrier membranes
2. Record, maintenance and follow up of all treated cases including implants

Assessment examinations:- In addition to the regular evaluation, log book etc., Assessment examination should be conducted once every six months & progress of the student monitored

Note:
Submission of Synopsis for Dissertation should be done within 6 months of the commencement of the course
Submission of two copies of Library Assignments at the end of 1 and 2nd year
Submission of pre-clinical work as scheduled
Submission of Dissertation – 6 months before completion of III year
Maintenance of Work Diary/Log book as prescribed by RGUHS

MONITORING LEARNING PROGRESS:

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be doneby the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV

SCHEME OF EXAMINATION:

A. Theory : 300 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

Paper I : Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics.
Shoud Epidmiology comes under Paper II?

Paper II: Normal Periodontal structure, Etiology & Pathogenesis of Periodontal diseases, epidemiology as related to Periodontics

Paper III: Periodontal diagnosis, therapy & Oral implantology

Paper IV: Essay (with emphasis on recent advances in periodontics)

**The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical / Clinical Examination : 200 Marks

The clinical examination shall be of two days duration

1st day
Case discussion

- Long case - One
- Short case - One

Periodontal surgery – Periodontal flap surgery on a previously prepared case in one quadrant of the mouth after getting approval from the examiners

2nd day

Post-surgical review and discussion of the case treated on the 1st day
Presentation of dissertation & discussion
All the examiners shall participate in all the aspects of clinical examinations / Viva Voce

Distribution of Marks for Clinical examination (recommended)

a) Long Case discussion	50
b) 2 short cases	50
c) Periodontal surgery	75
Post – operative review	25
Total	**200**

C. Viva Voce : 100 Marks

i. Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy : 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

3. ORAL AND MAXILLOFACIAL SURGERY

OBJECTIVES:

The training program in Oral and Maxillofacial Surgery is structured to achieve the following four objectives-

- Knowledge
- Skills
- Attitude
- Communicative skills and ability
- Research

KNOWLEDGE:

- To have acquired adequate knowledge and understanding of the etiology, pathophysiology and diagnosis, treatment planning of various common oral and Maxillofacial surgical problems both minor and major in nature
- To have understood the general surgical principles like pre and post surgical management, particularly evaluation, post surgical care, fluid and electrolyte management, blood transfusion and post surgical pain management.
- Understanding of basic sciences relevant to practice of oral and maxillofacial surgery
- Able to identify social, cultural, economic, genetic and environmental factors and their relevance to disease process management in the oral and Maxillofacial region.
- Essential knowledge of personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste keeping in view the high prevalence of hepatitis and HIV.

SKILLS:

- To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures and order relevant laboratory tests and interpret them and to arrive at a reasonable diagnosis about the surgical condition.
- To perform with competence minor oral surgical procedures and common maxillofacial surgery. To treat both surgically and medically (or by other means of the oral and Maxillofacial and the related area).
- Capable of providing care for maxillofacial surgery patients.

ATTITUDE:

- Develop attitude to adopt ethical principles in all aspect of surgical practice, professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Willing to share the knowledge and clinical experience with professional colleagues.
- Wiling to adopt new techniques of surgical management developed from time to time based on scientific research which are in the best interest of the patient
- Respect patient right and privileges, including patients right to information and right to seek a second opinion.
- Develop attitude to seek opinion from an allied medical and dental specialists as and when required.

COMMUNICATION SKILLS:

- Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular surgical problem and obtain a true informed consent from them for the most appropriate treatment available at that point of time
- Develop the ability to communicate with professional colleagues.
- Develop ability to teach undergraduates.

COURSE CONTENT:

The program outline addresses both the knowledge needed in Oral and Maxillofacial Surgery and allied medical specialties in its scope. A minimum of three years of formal training through a graded system of education as specified will equip the trainee with skill and knowledge at its completion to be able to practice basic oral and Maxillofacial surgery competently and have the ability to intelligently pursue further apprenticeship towards advanced Maxillofacial surgery.

The topics are considered as under:-

- Basic sciences
- Oral and Maxillofacial surgery
- Allied specialties

APPLIED BASIC SCIENCES:

A thorough knowledge both on theory and principles in general and particularly the basic medical subjects as relevant to the practice of maxillofacial surgery. It is desirable to have adequate knowledge in bio-statistics, Epidemiology, research methodology, nutrition and computers.

ANATOMY:

Development of face, paranasal sinuses and associated structures and their anomalies: surgical anatomy of scalp temple and face, anatomy and its applied aspects of triangles of neck, deep structures of neck, cranial and facial bones and its surrounding soft tissues, cranial nerves tongue, temporal and infratemporal region, orbits and its contents, muscles of face and neck, paranasal sinuses, eyelids and nasal septum, teeth, gums and palate, salivary glands, pharynx, thyroid and parathyroid glands, larynx, trachea and esophagus, congenital abnormality of orofacial regions, General consideration of the structure and function of brain and applied anatomy of intracranial venous sinuses; cavernous sinus and superior sagital sinus, Brief consideration of autonomous nervous system of head and neck, Functional anatomy of mastication, deglutition, speech, respiration and circulation. Histology of skin, oral mucosa, connective tissue bone, cartilage cellular elements of blood vessels, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.

PHYSIOLOGY:

Nervous system-physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature; Blood-its composition hemostasis, blood dyscrasias and its management, hemorrhage and its control, blood grouping, cross matching, blood component therapy, complications of blood transfusion, blood substitutes, auto transfusion, cell savers; Digestive system composition and functions of saliva

mastication deglutition, digestion, assimilation, urine formation, normal and abnormal constituents; Respiration control of ventilation anoxia, asphyxia, artificial respiration, hypoxia – types and management; CVS – cardiac cycle, shock, heart sounds, blood pressure, hypertension; Endocrinology-metabolism of calcium; endocrinal activity and disorder relating to thyroid gland, parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads; Nutrition-general principles balanced diet. Effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus, Nutritional assessment, metabolic responses to stress, need for nutritional support, entrails nutrition, roots of access to GI tract, Parenteral nutrition, Access to central veins, Nutritional support; Fluid and Electrolytic balance/Acid Base metabolism-body fluid compartment, metabolism of water and electrolytes, factors maintaining hemostasis, causes & treatment of acidosis and alkalosis.

BIOCHEMISTRY:

General principles governing the various biological principles of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc; general composition of body, intermediary metabolism, carbohydrate, proteins, lipids, enzymes, vitamins, minerals and antimetabolites

GENERAL PATHOLOGY:

Inflammation – Acute and chronic inflammation, repair and regeneration, necrosis and gangrene, role of component system in acute inflammation, role of arachidonic acid and its metabolites in acute inflammation, growth factors in acute inflammation role of NSAIDS in inflammation, cellular changes in radiation injury and its manifestation; Wound management – Wound healing factors influencing healing; properties of suture materials, appropriate uses of sutures; hemostasis – role of endothelium in thrombogenesis; arterial and venous thrombi, disseminated intravascular coagulation; Hypersensitivity; Shock and pulmonary failure: types of shock, diagnosis, resuscitation, pharmacological support, ARDS and its causes and prevention, ventilation and support, Neoplasm – classification of tumors, Carcinogens and Carcinogenesis, grading and staging of tumors, various laboratory investigation.

GENERAL MICROBIOLOGY:

Immunity, Hepatitis B and its prophylaxis, Knowledge of organisms, commonly associated with diseases of oral cavity, culture and sensitivity tests, various staining techniques-Smears and cultures, urine analysis and culture.

ORAL PATHOLOGY AND MICROBIOLOGY:

Developmental disturbances of oral and para oral structures, regressive changes of teeth, bacterial, viral, mycotic infection of oral cavity, Dental caries, diseases of pulp and Periapical tissues, physical and chemical injuries of oral cavity, wide range of pathological lesions of hard and soft tissues of the orofacial regions like cysts, odontogenic infection, benign & malignant neoplasms, salivary gland diseases, maxillary sinus diseases, mucosal diseases, oral aspects of various systemic diseases & role of laboratory investigation in oral surgery.

PHARMACOLOGY AND THERAPEUTICS:

Definition of terminology used, pharmacokinetics and pharmadynamic dosage and mode of administration of drugs, action and fate in the body, drug addiction, tolerance and hypersensitivity reactions, drugs acting on CNS, general and local anesthetics, antibiotics and analgesics, antiseptics, antitubercular, sialagogues, hematinics, anti diabetic, Vitamins A, B-complex, C,D,E,K

COMPUTER SCIENCE:

Use of computers in surgery, components of computer and its use in practice, principles of word processing, spreadsheet function database and presentations; the internet and its use. The value of computer based systems in biomedical equipment.

ORAL AND MAXILLOFACIAL SURGERY:

- Evolution of Maxillofacial surgery.

- Diagnosis, history taking, clinical examination, investigations.
- Informed consent/medico-legal issues.
- Concept of essential drugs and rational use of drugs.
- Communication skills with patients- understanding, clarity in communication, compassionate explanations and giving emotional support at the time of suffering and bereavement
- Principles of surgical audit – understanding the audit of process and outcome. Methods adopted for the same. Basic statistics.
- Principles of evidence based surgery- understanding journal based literature study; the value of textbook, reference book articles, value of review articles; original articles and their critical assessment, understanding the value of retrospective, prospective, randomized control and blinded studies, understanding the principles and the meaning of various Bio-statistical tests applied in these studies.
- Principles of surgery- developing a surgical diagnosis, basic necessities for surgery, aseptic technique, incisions, flap designs, tissue handling, hemostasis, dead space management, decontamination and debridement, suturing, edema control, patient general health and nutrition.
- Medical emergencies – Prevention and management of altered consciousness, hyper sensitivity reaction, chest discomfort, respiratory difficulty.
- Pre operative workup – Concept of fitness for surgery; basic medical work up; work up in special situation like diabetes, renal failure, cardiac and respiratory illness; risk stratification
- Surgical sutures, drains
- Post operative care- concept of recovery room care, Airway management, Assessment of Wakefulness, management of cardio vascular instability in this period, Criteria for shifting to the ward, pain management
- Wound management- Wound healing, factors influencing healing, basic surgical techniques, Properties of suture materials, appropriate use of sutures.
- Surgical Infections – Asepsis and antisepsis, Microbiological principles, Rational use of antibiotics, special infections like Synergistic Gangrene and Diabetic foot infection, Hepatitis and HIV infection and cross infection.
- Airway obstruction/management – Anatomy of the airway, principles of keeping the airway patent, mouth to mouth resuscitation, Oropharyngeal airway, endotracheal intubation, Cricothyroidectomy, Tracheostomy.
- Anesthesia – stages of Anesthesia, pharmacology of inhalation, intravenous and regional anesthetics, muscle relaxants.
- Facial pain; Facial palsy and nerve injuries.
- Pain control – acute and chronic pain, cancer and non-cancer pain, patient controlled analgesia
- General patient management – competence in physical assessment of patients of surgery, competence in evaluation of patients presenting with acute injury, particularly to maxillofacial region. Competence in the evaluation of management of patients for Anesthesia
- Clinical oral surgery – all aspects of dento alveolar surgery
- Pre-prosthetic surgery – A wide range of surgical reconstructive procedures involving their hard and soft tissues of the edentulous jaws.
- Temporomandibular joint disorders – TMJ disorders and their sequelae need expert evaluation, assessment and management. It is preferable to be familiar with diagnostic and therapeutic arthroscopic surgery procedures.
- Tissue grafting – Understanding of the biological mechanisms involved in autogenous and heterogeneous tissue grafting.
- Reconstructive oral and maxillofacial surgery – hard tissue and soft tissue reconstruction.
- Cyst and tumors of head and neck region and their management – including principles of tumor surgery, giant cell lesion of jaw bones, fibro osseous lesions of jaw.
- Neurological disorders of maxillofacial region-diagnosis and management of Trigeminal Neuralgia, MPDS, Bells palsy, Frey's Syndrome, Nerve injuries
- Maxillofacial trauma – basic principles of treatment, primary care, diagnosis and management of hard and soft tissue injuries, Comprehensive management including polytrauma patients

- Assessment of trauma-multiple injuries patient, closed abdominal and chest injuries, penetrating injuries, pelvic fractures, urological injuries, vascular injuries.
- Orthognathic surgery – The trainee must be familiar with the assessment and correcting of jaw deformities
- Laser surgery – The application of laser technology in the surgical treatment of lesions amenable to such therapy
- Distraction osteogenesis in maxillofacial region.
- Cryosurgeries – Principles, the application of cryosurgery in the surgical management of lesions amenable to such surgeries.
- Cleft lip and palate surgery- detailed knowledge of the development of the face, head and neck, diagnosis and treatment planning, Current concepts in the management of cleft lip and palate deformity, knowledge of nasal endoscopy and other diagnostic techniques in the evaluation of speech and hearing, concept of multi disciplinary team management.
- Aesthetic facial surgery – detailed knowledge of structures of face & neck including skin and underlying soft tissues, diagnosis and treatment planning of deformities and conditions affecting facial kin, underlying facial muscles, bone, eyelids, external ear etc., surgical management of post acne scaring, face lift, blepharoplasty, otoplasty, facial bone recountouring etc.
- Craniofacial surgery – basic knowledge of developmental anomalies of face, head and neck, basics concept in the diagnosis and planning of various head and neck anomalies including facial cleft, craniosynostosis, syndromes, etc., Current concepts in the management of craniofacial anomalies.
- Head and neck oncology – understanding of the principles of management of head and neck oncology including various pre cancerous lesions, Experience in the surgical techniques of reconstruction following ablative surgery.
- Micro vascular surgery.
- Implantology – principles, surgical procedures for insertion of various types of implants.
- Maxillofacial radiology/ radio diagnosis
- Other diagnostic methods and imaging techniques

ALLIED SPECIALTIES:

- General medicine: General assessment of the patient including children with special emphasis on cardiovascular diseases, endocrinal, metabolic respiratory and renal diseases, Blood dyscrasias
- General surgery: Principles of general surgery, exposure to common general surgical procedures.
- Neuro – surgery: Evaluation of a patient with head injury, knowledge & exposure of various Neuro – surgical procedures
- ENT/Ophthalmology: Examination of ear, nose, throat, exposure to ENT surgical procedures, ophthalmic examination and evaluation, exposure to ophthalmic surgical procedures.
- Orthopedic: basic principles of orthopedic surgery, bone diseases and trauma as relevant to Maxillofacial surgery, interpretation of radiographs, CT, MRI and ultrasound
- Anesthesia: Evaluation of patients for GA technique and management of emergencies, various IV sedation techniques

Academic Clinical programme (*applicable for all three years):*

- **Seminars** to be presented & attended once in a week.
- **Journal clubs** (departmental and interdepartmental) to be conducted once in fifteen days.
- **Departmental and interdepartmental** discussions to be held once in a month.
- Minimum 2 **scientific papers** should be presented.
- Every candidate shall maintain a logbook to record his/her work or participation in all activities such as journal clubs, seminars, CDE programs etc. This work shall be scrutinized and certified by the head of the department and head of the institution and presented to the university every year

ORAL AND MAXILLOFACIAL SURGERY

PAPER–I

APPLIED BASIC SCIENCES: Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology and Pharmacology

APPLIED ANATOMY:

1. Surgical anatomy of the scalp, temple and face
2. Anatomy of the triangles of neck and deep structures of the neck
3. Cranial and facial bones and its surrounding soft tissues with its applied aspects in maxillofacial injuries.
4. Muscles of head and neck
5. Arterial supply, venous drainage and lymphatics of head and neck
6. Congenital abnormalities of the head and neck
7. Surgical anatomy of the cranial nerves
8. Anatomy of the tongue and its applied aspects
9. Surgical anatomy of the temporal and infratemporal regions
10. Anatomy and its applied aspects of salivary glands, pharynx, thyroid and parathyroid gland, larynx, trachea esophagus
11. Tooth eruption, morphology, and occlusion.
12. Surgical anatomy of the nose.
13. The structure and function of the brain including surgical anatomy of intra cranial venous sinuses.
14. Autonomous nervous system of head and neck
15. Functional anatomy of mastication, deglutition, speech, respiration and circulation
16. Development of face, paranasal sinuses and associated structures and their anomalies
17. TMJ: surgical anatomy and function

PHYSIOLOGY:

1. **Nervous system**
   - Physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature
2. **Blood**
   - Composition
   - Haemostasis, various blood dyscrasias and management of patients with the same
   - Hemorrhage and its control
   - Capillary and lymphatic circulation.
   - Blood grouping, transfusing procedures.
3. **Digestive system**

- Saliva - composition and functions of saliva
- Mastication deglutition, digestion, assimilation
- Urine formation, normal and abnormal constituents

4. **Respiration**
   - Control of ventilation, anoxia, asphyxia, artificial respiration
   - Hypoxia – types and management

5. **CardioVascular System**
   - Cardiac cycle,
   - Shock
   - Heart sounds,
   - Blood pressure,
   - Hypertension:

6. **Endocrinology**
   - General endocrinal activity and disorder relating to thyroid gland,
   - Parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads:
   - Metabolism of calcium

7. **Nutrition**
   - General principles of a balanced diet, effect of dietary deficiency, protein energy malnutrition, Kwashiorkor, Marasmus.
   - Fluid and Electrolytic balance in maintaining haemostasis and significance in minor and major surgical procedures.

BIOCHEMISTRY:

General principles governing the various biological activities of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc.
General composition of the body
Intermediary metabolism
Carbohydrates, proteins, lipids, and their metabolism
Nucleoproteins, nucleic acid and nucleotides and their metabolism
Enzymes, vitamins and minerals
Hormones
Body and other fluids.
Metabolism of inorganic elements.
Detoxification in the body.
Antimetabolites.

PATHOLOGY:

1. **Inflammation –**
   - Repair and regeneration, necrosis and gangrene
   - Role of component system in acute inflammation,
   - Role of arachidonic acid and its metabolites in acute inflammation,
   - Growth factors in acute inflammation
   - Role of molecular events in cell growth and intercellular signaling cell surface receptors
   - Role of NSAIDs in inflammation,
   - Cellular changes in radiation injury and its manifestation:

2. **Haemostasis**
   - Role of endothelium in thrombogenesis,
   - Arterial and venous thrombi,
   - Disseminated Intravascular coagulation

3. **Shock:**
   - Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock
   - Circulatory disturbances, ischemia, hyperemia, venous congestion, edema, infarction

4. **Chromosomal abnormalities:**
   - Marfans Syndrome, Ehler's Danlos Syndrome, Fragile X- Syndrome

5. **Hypersensitivity:**
   - Anaphylaxis, type 2 hypersensitivity, type 3 hyper sensitivity and cell mediated reaction and its clinical importance, systemic lupus erythematosus.
   - Infection and infective granulomas.
6. **Neoplasia:**
   - Classification of tumors.
   - Carcinogenesis and carcinogen- chemical, viral and microbial
   - Grading and staging of cancers, tumor Angiogenesis, Paraneoplastic syndrome, spread of tumors
   - Characteristics of benign and malignant tumors
7. **Others:**
   - . Sex linked agammaglobulinemia.
   - AIDS
   - Management of immun deficiency patients requiring surgical procedures
   - De George Syndrome
   - Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis.
8. **Oral Pathology:**
   - Developmental disturbances of oral and Para oral structures
   - Regressive changes of teeth.
   - Bacterial, viral and mycotic infections of oral cavity
   - Dental caries,, diseases of pulp and periapical tissues
   - Physical and chemical injuries of the oral cavity
   - Oral manifestations of metabolic and endocrinal disturbances
   - Diseases of jawbones and TMJ
   - Diseases of blood and blood forming organs in relation to oral cavity
   - Cysts of the oral cavity
   - Salivary gland diseases
   - Role of laboratory investigations in oral surgery
9. **Microbiology:**
   - Immunity
   - Knowledge of organisms commonly associated with disease of oral cavity.
   - Morphology cultural characteristics of strepto, staphylo, pneumo, gono, meningo, clostridium group of organism, spirochetes, organisms of TB, leprosy, diphtheria, actinomycosis and moniliasis
   - Hepatitis B and its prophylaxis
   - Culture and sensitivity test
   - Laboratory determinations
   - Blood groups, blood matching, RBC and WBC count
   - Bleeding and clotting time etc, smears and cultures,
   - Urine analysis and cultures.

APPLIED PHARMACOLOGY AND THERAPEUTICS:

1. Definition of terminologies used
2. Dosage and mode of administration of drugs.
3. Action and fate of drugs in the body
4. Drug addiction, tolerance and hypersensitivity reactions.
5. Drugs acting on the CNS
6. General and local anesthetics, hypnotics, analeptics, and tranquilizers.
7. Chemo therapeutics and antibiotics
8. Analgesics and antipyretics
9. Antitubercular and antisyphilitic drugs.
10. Antiseptics, sialogogues and antisialogogues
11. Haematinics
12. Antidiabetics

13. Vitamins A, B-complex, C, D, E, K

PAPER-II : Minor Oral Surgery and Trauma

MINOR ORAL SURGERY:

- **PRINCIPLES OF SURGERY**: DEVELOPING A SURGICAL DIAGNOSIS, BASIC NECESSITIES FOR SURGERY, ASEPTIC TECHNIQUE, INCISIONS, FLAP DESIGN TISSUE HANDLING, HAEMOSTASIS, DEAD SPACE MANAGEMENT, DECONTAMINATION AND DEBRIDEMENT, SUTURING, OEDEMA CONTROL, PATIENT GENERAL HEALTH AND NUTRITION.
- **MEDICAL EMERGENCIES**: prevention and management of altered consciousness (syncope, orthostatic hypotension, seizures, diabetes mellitus, adrenal insufficiency), hypersensitivity reactions, chest discomfort, and respiratory difficulty.

1. **EXAMINATION AND DIAGNOSIS**: clinical history, physical and radiographic, clinical and laboratory diagnosis, oral manifestations of systemic diseases, implications of systemic diseases in surgical patients.
2. **HAEMORRHAGE AND SHOCK**: applied physiology, clinical abnormalities of coagulation, extra vascular hemorrhage, and hemorrhagic lesions, management of secondary hemorrhage, shock.
3. **EXODONTIA**: principles of extraction, indications and contraindications, types of extraction, complications and their management, principles of elevators and elevators used in oral surgery.
4. **IMPACTION:** surgical anatomy, classification, indications and contraindications, diagnosis, procedures, complications and their management.
5. **SURGICAL AIDS TO ERUPTION OF TEETH**: surgical exposure of unerupted teeth, surgical repositioning of partially erupted teeth.
6. **TRANSPLANTATION OF TEETH**
7. **SURGICAL ENDODONTICS:** indications and contraindications, diagnosis, procedures of periradicular surgery
8. **PREPROSTHETIC SURGERY:** requirements, types (alvoloplasty, tuberosity reduction, mylohyoid ridge reduction, genial reduction, removal of exostosis, vestibuloplasty)
9. **PROCEDURES TO IMPROVE ALVEOLAR SOFT TISSUES**: hypermobile tissues- operative / sclerosing method, epulis fissuratum, frenectomy and frenotomy
10. **INFECTION OF HEAD AND NECK:** Odontogenic and non Odontogenic infections, factors affecting spread of infection, diagnosis and differential diagnosis, management of facial space infections, Ludwig angina, cavernous sinus thrombosis.
11. **CHRONIC INFECTIONS OF THE JAWS:** Osteomyelitis (types, etiology, pathogenesis, management) osteoradionecrosis
12. **MAXILLARY SINUS:** maxillary sinusitis – types, pathology, treatment, closure of Oro – antral fistula, Caldwell- luc operation
13. **CYSTS OF THE OROFACIAL REGION:** classification, diagnosis, management of OKC, dentigerous, radicular, non Odontogenic, ranula
14. **NEUROLOGICAL DISORDERS OF THE MAXILLOFACIAL REGION:** diagnosis and management of trigeminal neuralgia, MPDS, bell's palsy, Frey's syndrome, nerve injuries.
15. **IMPLANTOLOGY**: definition, classification, indications and contraindications, advantages and disadvantages, surgical procedure.
16. **ANESTHESIA**

    LOCAL ANESTHESIA:

    Classification of local anesthetic drugs, mode of action, indications and contra indications, advantages and disadvantages, techniques, complications and their management.

    GENERAL ANESTHESIA:

    Classification, stages of GA, mechanism of action, indications, and contra indications, advantages and disadvantages, post anesthetic complications and emergencies, anesthetic for dental procedures in children, pre medication, conscious sedation, legal aspects for GA
17. **TRAUMA**
18. **SURGICAL ANATOMY OF HEAD AND NECK.**
19. **ETIOLOGY OF INJURY.**
20. **BASIC PRINCIPLES OF TREATMENT**

21. **PRIMARY CARE:** resuscitation, establishment of airway, management of hemorrhage, management of head injuries and admission to hospital.
22. **DIAGNOSIS:** clinical, radiological
23. **SOFT TISSUE INJURY OF FACE AND SCALP:** classification and management of soft tissue wounds, injuries to structure requiring special treatment.
24. **DENTO ALVEOALR FRACTURES**: examination and diagnosis, classification, treatment, prevention.
25. **MANDIBULAR FRACTURES:** classification, examination and diagnosis, general principles of treatment, complications and their management
26. **FRACTURE OF ZYGOMATIC COMPLEX**: classification, examination and diagnosis, general principles of treatment, complications and their management.
27. **ORBITAL FRACTURES**: blow out fractures
28. **NASAL FRACTURES**
29. **FRACTURES OF MIDDLE THIRD OF THE FACIAL SKELETON**: emergency care, fracture of maxilla, and treatment of le fort I, II, III, fractures of Naso orbito ethmoidal region.
30. **OPTHALMIC INJURIES**: minor injuries, non-perforating injuries, perforating injuries, retro bulbar hemorrhage, and traumatic optic neuropathy.
31. **TRAUMATIC INJURIES TO FRONTAL SINUS**: diagnosis, classification, treatment
32. **MAXILLOFACIAL INJURIES IN GERIATRIC AND PEDIATRIC PATIENTS.**
33. **GUN SHOT WOUNDS AND WAR INJURIES**
34. **OSSEOINTEGRATION IN MAXILLOFACIAL RECONSTRUCTION**
35. **METABOLIC RESPONSE TO TRAUMA:** neuro endocrine responses, inflammatory mediators, clinical implications
36. **HEALING OF TRAUMATIC INJURIES:** soft tissues, bone, cartilage, response of peripheral nerve to injury
37. **NUTRITIONAL CONSIDERATION FOLLOWING TRAUMA.**
38. **TRACHEOSTOMY:** indications and contraindications, procedure, complications and their management.

PAPER-III : MAXILLOFACIAL SURGERY

Salivary gland

- Sialography
- Salivary fistula and management
- Diseases of salivary gland – developmental disturbances, cysts, inflammation and sialolithiasis
- Mucocele and Ranula
- Tumors of salivary gland and their management
- Staging of salivary gland tumors
- Parotidectomy

Temporomandibular Joint

- Etiology, history signs, symptoms, examination and diagnosis of temporomandibular joint disorders
- Ankylosis and management of the same with different treatment modalities
- MPDS and management
- Condylectomy – different procedures
- Various approaches to TMJ
- Recurrent dislocations – Etiology and Management

Oncology

- Biopsy
- Management of pre-malignant tumors of head and neck region
- Benign and Malignant tumors of Head and Neck region
- Staging of oral cancer and tumor markers
- Management of oral cancer
- Radical Neck dissection

- Modes of spread of tumors
- Diagnosis and management of tumors of nasal, paranasal, neck, tongue, cheek, maxilla and mandible
- Radiation therapy in maxillofacial regions
- Lateral neck swellings

Orthognathic surgery

- Diagnosis and treatment planning
- Cephalometric analysis
- Model surgery
- Maxillary and mandibular repositioning procedures
- Segmental osteotomies
- Management of apertognathia
- Genioplasty
- Distraction osteogenesis

Cysts and tumor of oro facial region

- Odontogenic and non-Odontogenic tumors and their management
- Giant Cell lesions of jawbone
- Fibro osseous lesions of jawbone
- Cysts of jaw

Laser surgery

- The application of laser technology in surgical treatment of lesions

Cryosurgery

- Principles, applications of cryosurgery in surgical management

Cleft lip and palate surgery

- Detailed knowledge of the development of the face, head and neck
- Diagnosis and treatment planning
- Current concepts in the management of cleft lip and palate deformity
- Knowledge of Naso endoscopy and other diagnostic techniques in the evaluation of speech and hearing
- Concept of multidisciplinary team management

Aesthetic facial surgery

- Detailed knowledge of the structures of the face and neck including skin and underlying soft tissue
- Diagnosis and treatment planning of deformities and conditions affecting facial skin
- Underlying facial muscles, bone, Eyelids, external ear
- Surgical management of post acne scarring, facelift, blepharoplasty, otoplasty, facial bone recontouring, etc

Craniofacial surgery

- Basic knowledge of developmental anomalies of the face, head and neck
- Basic concepts in the diagnosis and planning of various head and neck anomalies including facial clefts, craniosynostosis, syndromes, etc.
- Current concept in the management of Craniofacial anomalies

MONITORING LEARNING PROGRESS:

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be doneby the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV

SCHEME OF EXAMINATION:

A. Theory : 400 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PAPER-I	:	Applied Basic Sciences: Applied Anatomy, Physiology, Biochemistry, General and Oral Pathology and Microbiology and Pharmacology
PAPER-II	:	Minor Oral Surgery and Trauma
PAPER-III	:	Maxillofacial Surgery
PAPER-IV	:	Essay

B. Practical / Clinical Examination : 200 Marks

1. **Minor Oral Surgery** - **100 Marks**

Each candidate is required to perform the minor oral surgical procedures under local anaesthesia. The minor surgical cases may include removal of impacted lower third molar, cyst enucleation, any similar procedure where students can exhibit their professional skills in raising the flap, removing the bone and suturing the wound.

2. (a) One long case - 60 marks
   (b) Two short cases - 20 marks each

C. Viva Voce - **100 Marks**

i. Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

4. CONSERVATIVE DENTISTRY AND ENDODONTICS

OBJECTIVES:

The following objectives are laid out to achieve the goals of the course. These are to be achieved by the time the candidate completes the course. These objectives may be considered under the following subtitles.

KNOWLEDGE:

At the end of 36 months of training, the candidates should be able to:

- Describe aeitology, pathophysiology, periapical diagnosis and management of common restorative situations, endodontic situations that will include contemporary management of dental caries, management of trauma and pulpal pathoses including periodontal situations.
- Demonstrate understanding of basic sciences as relevant to conservative / restorative dentistry and Endodontics.
- Identify social, economic, environmental and emotional determinants in a given case or community and take them into account for planning and execution at individual and community level.
- Ability to master differential diagnosis and recognize conditions that may require multi disciplinary approach or a clinical situation outside the realm of the specialty, which he or she should be able to recognize and refer to appropriate specialist.
- Update himself by self-study and by attending basic and advanced courses, conferences, seminars, and workshops in the specialty of Conservative Dentistry-Endodontics-Dental Materials and Restorative Dentistry.
- Ability to teach/guide, colleagues and other students.

Use information technology tools and carry out research both basic and clinical with the aim of his publishing his work and presenting the same at scientific platform

SKILLS:

- Take proper chair side history, exam the patient and perform medical and dental diagnostic procedures and order as well as perform relevant tests and interpret to them to come to a reasonable diagnosis about the dental condition in general and Conservative Dentistry – Endodontics in particular. And undertake complete patient monitoring including preoperative as well as post operative care of the patient.
- Perform all levels of restorative work and surgical and non-surgical Endodontics including endodontic endoosseous implants, as well as endodontic-periodontal surgical procedures as part of multidisciplinary approach to clinical condition.
- Provide basic life saving support in emergency situations.
- Manage acute pulpal and pulpo periodontal situations.
- Have a thorough knowledge of infection control measures in the dental clinical environment and laboratories.

Human Values, Ethical Practice and Communication Abilities

- Adopt ethical principles in all aspects of restorative and contemporaries Endodontics including non-surgical and surgical Endodontics.
- Professional honesty and integrity should be the top priority.
- Dental care has to be provided regardless of social status, caste, creed or religion of the patient.
- Develop communication skills in particular to explain various options available management and to obtain a true informed consent from the patient.
- Apply high moral and ethical standards while carrying on human or animal research
- He/She shall not carry out any heroic procedures and must know his limitations in performing all aspects of restorative dentistry including Endodontics. Ask for help from colleagues or seniors when required without hesitation
- Respect patient's rights and privileges including patients right to information.

COURSE CONTENTS:

PAPER-I : APPLIED ANATOMY OF HEAD AND NECK

- Development of face, paranasal sinuses and the associated structures and their anomalies, cranial and facial bones, TMJ anatomy and function, arterial and venous drainage of head and neck, muscles of face and neck including muscles of mastication and deglutition, brief consideration of structures and function of brain. Brief consideration of all cranial nerves and autonomic nervous system of head and neck. Salivary glands, Functional anatomy of mastication, deglutition and speech. Detailed anatomy of deciduous and permanent teeth, general consideration in physiology of permanent dentition, form, function, alignment, contact, occlusion.)
- Internal anatomy of permanent teeth and its significance
- Applied histology – histology of skin, oral mucosa, connective tissue, bone cartilage, blood vessels, lymphatics, nerves, muscles, tongue.

DEVELOPMENT OF TEETH:

- Enamel – development and composition, physical characteristics, chemical properties, structure
- Age changes – clinical structure
- Dentin – development, physical and chemical properties, structure type of dentin, innervations, age and functional changes.
- Pulp – development, histological structures, innervations, functions, regressive changes, clinical considerations.
- Cementum – composition, cementogenesis, structure, function, clinical consideration.
- Periodontal ligament – development, structure, function and clinical consideration.

- Salivary glands – structure, function, clinical considerations.
- Eruption of teeth.

APPLIED PHYSIOLOGY:

- Mastication, deglutition, digestion and assimilation, fluid and electrolyte balance.
- Blood composition, volume, function, blood groups, haemostasis, coagulation, blood transfusion, circulation, heart, pulse, blood pressure, shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration, and endocrinology – general principles of endocrine activity and disorders relating to pituitary, thyroid, parathyroid, adrenals including pregnancy and lactation.
- Physiology of saliva – composition, function, clinical significance.
- Clinical significance of vitamins, diet and nutrition – balanced diet.
- Physiology of pain, sympathetic and Para sympathetic nervous system, pain pathways, physiology of pulpal pain, Odontogenic and non Odontogenic pain, pain disorders – typical and atypical, biochemistry such as osmotic pressure, electrolytic dissociation, oxidation, reduction etc. Carbohydrates, proteins, lipids and their metabolism, nucleoproteins, nucleic acid and their metabolism. Enzymes, vitamins and minerals, metabolism of inorganic elements, detoxification in the body, anti metabolites, chemistry of blood lymph and urine.

PATHOLOGY:

- Inflammation, repair, degeneration, necrosis and gangrene.
- Circulatory disturbances – ischemia, hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.
- Neoplasms – classifications of tumors, characteristics of benign and malignant tumors, spread tumors.
- Blood dyscrasias
- Developmental disturbances of oral and Para oral structures, dental caries, regressive changes of teeth, pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
- Bacterial, viral, mycotic infections of the oral cavity.

MICROBIOLOGY:

- Pathways of pulpal infection, oral flora and micro organisms associated with endodontic diseases, pathogenesis, host defense, bacterial virulence factors, healing, theory of focal infections, microbes or relevance to dentistry – strepto, staphylococci, lactobacilli, cornyebacterium, actinomycetes, clostridium, neisseria, vibrio, bacteriods, fusobacteria, spirochetes, mycobacterium, virus and fungi.
- Cross infection, infection control, infection control procedure, sterilization and disinfection.
- Immunology – antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotic sensitivity test).

PHARMACOLOGY:

- Dosage and route of administration of drugs, actions and fate of drug in body, drug addiction, tolerance of hypersensitivity reactions.
- Local anesthesia – agents and chemistry, pharmacological actions, fate and metabolism of anaesthetic, ideal properties, techniques and complications.
- General anesthesia – pre medications, neuro muscular blocking agents, induction agents, inhalation anesthesia, and agents used, assessment of anesthetic problems in medically compromised patients.
- Anaesthetic emergencies
- Antihistamines, corticosteroids, chemotherapeutic and antibiotics, drug resistance, haemostasis, and haemostatic agents, anticoagulants, sympathomimitic drugs, vitamins and minerals (A, B, C, D, E, K IRON), anti sialogogue, immunosupressants, drug interactions, antiseptics, disinfectants, anti viral agents, drugs acting on CNS.

BIOSTATISTICS:

- Introduction, Basic concepts, Sampling, Health information systems – collection, compilation, presentation of data. Elementary statistical methods – presentation of statistical data, Statistical averages – measures of central tendency, measures of dispersion, Normal distribution. Tests of significance – parametric and non – parametric tests (Fisher extract test, Sign test, Median test, Mann Whitney test, Krusical Wallis one way analysis, Friedmann two way analysis, Regression analysis), Correlation and regression, Use of computers.

RESEARCH METHODOLOGY:

- Essential features of a protocol for research in humans
- Experimental and non-experimental study designs
- Ethical considerations of research

APPLIED DENTAL MATERIALS:

- Physical and mechanical properties of dental materials, biocompatibility.
- Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding- recent developments- tarnish and corrosion, dental amalgam, direct filling gold, casting alloys, inlay wax, die materials, investments, casting procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.
- Dental ceramics-recent advances, finishing and polishing materials.
- Dental burs – design and mechanics of cutting – other modalities of tooth preparation.
- Methods of testing biocompatibility of materials used.

PAPER-II : CONSERVATIVE DENTISTRY

1. Examination, diagnosis and treatment plan
2. Occlusion as related to conservative dentistry, contact, contour, its significance. Separation of teeth, matrices, used in conservative dentistry.
3. Dental caries- epidemiology, recent concept of etiological factors, pathophysiology, Histopathology, diagnosis, caries activity tests, prevention of dental caries and management – recent methods.
4. Hand and rotary cutting instruments, development of rotary equipment, speed ranges, hazards.
5. Dental burs and other modalities of tooth reparation- recent developments (air abrasions, lasers etc)
6. Infection control procedures in conservative dentistry, isolation equipments etc.
7. Direct concepts in tooth preparation for amalgam, composite, GIC and restorative techniques, failures and management.
8. Direct and indirect composite restorations.
9. Indirect tooth colored restorations- ceramic, inlays and onlays, veneers, crowns, recent advances in fabrication and materials.
   a. Tissue management
10. Impression procedures used for indirect restorations.
11. Cast metal restorations, indications, contraindications, tooth preparation for class 2 inlay, Onlay full crown restorations.
    Restorative techniques, direct and indirect methods of fabrication including materials used for fabrication like inlay wax, investment materials and
12. Direct gold restorations.
13. Recent advances in restorative materials and procedures.
14. Management of non-carious lesion.
15. Advance knowledge of minimal intervention dentistry.
16. Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth
17. Hypersensitivity, theories, causes and management.
18. Lasers in Conservative Dentistry
19. CAD-CAM & CAD-CIM in restorative dentistry
20. Dental imaging and its applications in restorative dentistry (clinical photography)
21. Principles of esthetics

- Color
- Facial analysis
- Smile design
- Principles of esthetic integration
- Treatment planning in esthetic dentistry

PAPER-III : ENDODONTICS

1. Rationale of ndodontics.
2. Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
3. Dentin and pulp complex.
4. Pulp and periapical pathology
5. Pathobiology of periapex.
6. Diagnostic procedure – recent advances and various aids used for diagnosis-

a. Orofacial dental pain emergencies: endodontic diagnosis and management

7. Case selection and treatment planning
8. Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
9. Access cavity preparation – objectives and principles
10. Endodontic instruments and instrumentation – recent developments, detailed description of hand, rotary, sonic, ultra sonic etc..
11. Working length determination / cleaning and shaping of root canal system and recent development in techniques of canal preparation.
12. Root canal irrigants and intra canal medicaments used including non – surgical Endodontics by calcium hydroxide.
13. Endodontic microbiology.
14. Obturating materials, various obturation techniques and recent advances in obturation of root canal.
15. Traumatic injuries and management – endodontic treatment for young permanent teeth. Pediatric Endodontics – treatment of immature apex.
16. Endodontic surgeries, recent developments in technique and devices, endoosseous endodontic implants – biology of bone and wound healing.
17. Endoperio interrelationship, endo + Perio lesion and management
18. Drugs and chemicals used in Endodontics
19. Endo emergencies and management.
20. Restoration of endodontically treated teeth, recent advances.
21. Geriatric Endodontics
22. Endo emergencies and management.
23. Biologic response of pulp to various restorative materials and operative procedures.
24. Lasers in Endodontics.
25. Multidisciplinary approach to endodontics situations.
26. Endodontics radiology- digital technology in endodontics practice.
27. Local anesthesia in endodontics.
28. Procedural errors in endodontics and their management.
29. Endodontics failures and retreatment.
30. Resorptions and its management.
31. Microscopes in endodontics.
32. Single visit endodontics, current concepts and controversies.

TEACHING / LEARNING ACTIVITIES:

The following is the minimum required to be completed before the candidate can be considered eligible to appear for final MDS exam.

First Year

3. Access cavity opening and root canal therapy in relation to maxillary and mandibular permanent teeth
4. Access cavity preparation and BMP
   Anterior
   a. Conventional prep
   b. Step back
   c. Crown down
   Obturation 03
5. BMP Premolar 06 (2 upper and 2 lower) obturation 1 each
6. BMP Molar 06 (3 upper – 2 first molars and 1 second molar, 3 lower – 2 first molars and 1 second molar) obturation 1 each
7. Post and core preparation and fabrication in relation to anterior and posterior teeth
   a. Anterior 10 (casting 4)
   b. Posterior 05 (casting 2)
8. Removable dies 04

Note : Technique work to be completed in the first four months

CLINICAL WORK:

A	Composite restorations	30
B	GIC Restorations	30
C	Complex amalgam restorations	05
D	Composite inlay + veneers (direct and indirect)	05
E	Ceramic jacket crowns	05
F	Post and core for anterior teeth	05
G	Bleaching vital	05
	Non vital	05
H	RCT Anterior	20
I	Endo surgery – observation and assisting	05

Presentation of:

- Seminars – 5 seminars by each student – should include topics in dental materials, conservative dentistry and endodontics
- Journal clubs - by each student
- Submission of synopsis at the end of 6 months
- Library assignment work
- Internal assessment – theory and clinicals.

Second Year

Case discussion- 5

1	Ceramic jacket crowns	10
2	Post and core for anterior teeth	10
3	Post and core for posterior teeth	05
4	Composite restoration	05
5	Full crown for posterior teeth	15
6	Cast gold inlay	05
7	Other special types of work such as splinting - Reattachment of fractured teeth etc.	05
8	Anterior RCT	20
9	Posterior RCT	30
10	Endo surgery performed independently	05
11	Management of endo.– Perio problems	05

- Under graduate teaching program as allotted by the HOD
- Seminars – 5 by each student
- Journal club – 5 by each student
- Dissertation work
- Prepare scientific paper and present in conference and clinical meeting
- Library assignment to be submitted 18 months after starting of the course
- Internal assessment – theory and clinical

Third Year

Dissertation work to be submitted 6 months before final examination.

Clinical work

- Cast gold inlay- Onlay, cuspal restoration 10
- Post and core 20
- Molar endodontics 50
- Endo surgery 05
- All other types of surgeries including crown lengthening, perioesthetics, hemi sectioning, splinting, replantation, endodontic implants.

Presentation of:

- Seminars
- Journal club
- Teaching – lecture (under graduates)
- Internal assessment – theory and clinical

MONITORING LEARNING PROGRESS:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

SCHEME OF EXAMINATION:

A. Theory : 300 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PAPER-I : Applied Basic Sciences: Applied Anatomy, Physiology, Pathology including Oral Microbiology, Pharmacology, Biostatistics and Research Methodology and Applied Dental Materials.
PAPER-II : Conservative Dentistry
PAPER-III : Endodontics
PAPER-IV : Essay

B. Clinicals : 200 Marks

The duration of Clinical and Viva Voce examination will be 2 days for a batch of four students. If the number of candidates exceeds 4, the programme can be extended to 3rd day.

Day 1

Clinical Exercise I - 50 Marks

Cast core preparation
(i) Tooth Preparation - 10 marks
(ii) Direct Wax Pattern - 10 marks

(iii) Casting - 10 marks
(iv) Cementation - 10 marks
(v) Retraction & Elastomeric Impression - 10 marks

Clinical Exercise II - 50 Marks

(Inlay Exercise)
(i) Tooth preparation for Class II Gold Inlay - 25 marks

(ii) Fabrication of Direct Wax Pattern - 25 marks

Day 2

Clinical Exercise III - 100 Marks

(Molar Endodontics)
(i) Local Anaesthesia and Ruber Dam application - 20 marks

(ii) Access Cavity - 20 marks

(iii) Working length determination - 20 marks

(iv) Canal Preparation - 20 marks

(v) Master bone selection - 20 marks

C. Viva Voce : 100 Marks

i. Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

Day 3:
Viva-Voce (Continued if more than 4 students are taking examination or shortage of time on 2nd day)

5. ORTHODONTICS & DENTOFACIAL ORTHOPAEDICS

OBJECTIVES:

The training programme in Orthodontics is to structure and achieve the following four objectives

KNOWLEDGE:

1. The dynamic interaction of biologic processes and mechanical forces acting on the stomatognathic system during orthodontic treatment
2. The etiology, pathophysiology, diagnosis and treatment planning of various common Orthodontic problems
3. Various treatment modalities in Orthodontics preventive interceptive and corrective.
4. Basic sciences relevant to the practice of Orthodontics
5. Interaction of social, cultural, economic, genetic and environmental factors and their relevance to management of oro – facial deformities
6. Factors affecting the long-range stability of orthodontic correction and their management

7. Personal hygiene and infection control, prevention of cross infection and safe disposal of hospital waste, keeping in view the high prevalence of Hepatitis and HIV and other highly contagious diseases.

SKILLS:

1. To obtain proper clinical history, methodical examination of the patient, perform essential diagnostic procedures, and interpret them and arrive at a reasonable diagnosis about the Dentofacial deformities.
2. To be competent to fabricate and manage the most appropriate appliance – intra or extra oral, removable or fixed, mechanical or functional, and active or passive – for the treatment of any orthodontic problem to be treated singly or as a part of multidisciplinary treatment of orofacial deformities.

ATTITUDES:

1. Develop an attitude to adopt ethical principles in all aspects of Orthodontic practice.
2. Professional honesty and integrity are to b fostered
3. Treatment care is to be delivered irrespective of the social Status, cast, creed or colleagues
4. Willingness to share the knowledge and clinical experience with professional colleagues
5. Willingness to adopt, after a critical assessment, new methods and techniques of orthodontic management developed from time to time based on scientific research, which are in the best interest of the patient
6. Respect patients rights and privileges, including patients right to information and right to seek a second opinion
7. Develop attitude to seek opinion from allied medical and dental specialists as and when required

COMMUNICATION SKILLS:

1. Develop adequate communication skills particularly with the patients giving them the various options available to manage a particular Dentofacial problem and to obtain a true informed consent from them for the most appropriate treatment available at that point of time.
2. Develop the ability to communicate with professional colleagues, in Orthodontics or other specialities through various media like correspondence, Internet, e-video, conference, etc. To render the best possible treatment.

COURSE CONTENT:

The program outlined, addresses both the knowledge needed in Orthodontics and allied Medical specialities in its scope. A minimum of three years of formal training through a graded system of education as specifies, will equip the trainee with skill and knowledge at its completion to be able to practice basic Orthodontics and have the ability to intelligently pursue further apprenticeship towards advanced Orthodontics.

SPREAD OF THE CURRICULUM:

Six months teaching o basic subjects including completion of pre – clinical exercises 2 ½ years of coverage of all the relevant topics in Orthodontics, clinical training involving treatment of patients and submission of dissertation. These may be divided into blocks of 6 to 8 months duration each, depending on the training policies of each institution.

I. **APPLIED ANATOMY:**

- Prenatal growth of head:
  Stages of embryonic development, origin of head, origin of face, origin of teeth.
- Postnatal growth of head:
  Bones of skull, the oral cavity, development of chin, the hyoid bone, general growth of head, face growth.
- Bone growth:
  Origin of bone, composition of bone, units of bone structure, schedule of Ossification, mechanical properties of bone, roentgen graphic appearance of bone

- Assessment of growth and development:
  Growth prediction, growth spurts, the concept of normality and growth increments of growth, differential growth, gradient of growth, methods of gathering growth data. Theories of growth and recent advances, factors affecting physical growth.
- Muscles of mastication:
  Development of muscles, muscle change during growth, muscle function and facial development, muscle function and malocclusion
- Development of dentition and occlusion:
  Dental development periods, order of tooth eruption, chronology of permanent tooth formation, periods of occlusal development, pattern of occlusion.
- Assessment of skeletal age
  The carpal bones, carpal x – rays, cervical vertebrae

II **PHYSIOLOGY:**

- **Endocrinology and its disorders**
  (Growth hormone, thyroid hormone, parathyroid hormone, ACTH) pituitary gland hormones, thyroid gland hormones, parathyroid gland hormones
- **Calcium and its metabolism**
- **Nutrition-metabolism and their disorders**: proteins, carbohydrates, fats, vitamins and minerals.
- **Muscle physiology**
- **Craniofacial Biology**: ell adhesion molecules and mechanism of adhesion
- **Bleeding disorders in orthodontics: Hemophilia**

III **DENTAL MATERIALS:**

- **Gypsum products:** dental plaster, dental stone and their properties, setting reaction etc.
- **Impression materials:** impression materials in general and particularly of alginate impression material.
- **Acrylics:** chemistry, composition physical properties
- **Composites**: composition types, properties setting reaction
- **Banding and bonding cements**: Zn $(PO_4)_2$, zinc silicophosphate, Zinc polycarboxylate, resin cements and glass Ionomer cements
- **Wrought metal alloys**: deformation, strain hardening, annealing, recovery, recrystallization, grain growth, properties of metal alloys
- **Orthodontic arch wires**: stainless steel gold, wrought cobalt chromium nickel alloys, alpha&beta titanium alloys
- **Elastics:** Latex and non-latex elastics.
- **Applied physics**, Bioengineering and metallurgy.
- **Specification and tests methods** used for materials used in Orthodontics
- **Survey of all contemporary literature and Recent advances** in above – mentioned materials.

IV. **GENETICS:**

- Cell structure, DNA, RNA, protein synthesis, cell division
- Chromosomal abnormalities
- Principles of orofacial genetics
- Genetics in malocclusion
- 5 Molecular basis of genetics
- Studies related to malocclusion
- Recent advances in genetics related to malocclusion
- Genetic counseling
- Bioethics and relationship to Orthodontic management of patients.

V. **PHYSICAL ANTHROPOLOGY:**

- Evolutionary development of dentition
- Evolutionary development of jaws.

VI. **PATHOLOGY:**
- Inflammation
- Necrosis

VII. **BIOSTATISTICS:**
- Statistical principles
  - Data Collection
  - Method of presentation
  - Method of Summarizing
  - Methods of analysis – different tests/errors
- Sampling and Sampling technique
- Experimental models, design and interpretation
- Development of skills for preparing clear concise and cognent scientific abstracts and publication

VIII. **APPLIED RESEARCH METHODOLOGY IN ORTHODONTICS:**
- Experimental design
- Animal experimental protocol
- Principles in the development, execution and interpretation of methodologies in Orthodontics
- Critical Scientific appraisal of literature.

IX. **APPLIED PHARMACOLOGY**

X. **ORTHODONTIC HISTORY:**
- Historical perspective,
- Evolution of orthodontic appliances,
- Pencil sketch history of Orthodontic peers
- History of Orthodontics in India

XI. **CONCEPTS OF OCCLUSION AND ESTHETICS:**
- Structure and function of all anatomic components of occlusion,
- Mechanics of articulation,
- Recording of masticatory function,
- Diagnosis of Occlusal dysfunction,
- Relationship of TMJ anatomy and pathology and related neuromuscular physiology.

XII. **ETIOLOGY AND CLASSIFICATION OF MALOCCLUSION:**
- A comprehensive review of the local and systemic factors in the causation of malocclusion
- Various classifications of malocclusion

XIII. **DENTOFACIAL ANOMALIES:**
- Anatomical, physiological and pathological characteristics of major groups of developmental defects of the orofacial structures.

XIV. **CHILD AND ADULT PSYCHOLOGY:**
- Stages of child development.
- Theories of psychological development.
- Management of child in orthodontic treatment.
- Management of handicapped child.
- Motivation and Psychological problems related to malocclusion / orthodontics
- Adolescent psychology
- Behavioral psychology and communication

XV. **DIAGNOSTIC PROCEDURES AND TREATMENT PLANNING IN ORTHODONTICS**
- Emphasis on the process of data gathering, synthesis and translating it into a treatment plan
- Problem cases – analysis of cases and its management

- Adult cases, handicapped and mentally retarded cases and their special problems
- Critique of treated cases.

Cephalometrics

- Instrumentation
- Image processing
- Tracing and analysis of errors and applications
- Radiation hygiene
- Advanced Cephalometrics techniques
- Comprehensive review of literature
- Video imaging principles and application.

XVII. PRACTICE MANAGEMENT IN ORTHODONTICS:

- Economics and dynamics of solo and group practices
- Personal management
- Materials management
- Public relations
- Professional relationship
- Dental ethics and jurisprudence
- Office sterilization procedures
- Community based Orthodontics.

XVIII. CLINICAL ORTHODONTICS:

Myofunctional Orthodontics:

- Basic principles
- Contemporary appliances – their design and manipulation
- Case selection and evaluation of the treatment results
- Review of the current literature.

Dentofacial Orthopedics

- Principles
- Biomechanics
- Appliance design and manipulation
- Review of contemporary literature

Cleft lip and palate rehabilitation:

- Diagnosis and treatment planning
- Mechanotherapy
- Special growth problems of cleft cases
- Speech physiology, pathology and elements of therapy as applied to orthodontics
- Team rehabilitative procedures.

Biology of tooth movement:

- Principles of tooth movement-review
- Review of contemporary literature
- Applied histophysiology of bone, periodontal ligament
- Molecular and ultra cellular consideration in tooth movement

Orthodontic / Orthognathic surgery:

- Orthodontist' role in conjoint diagnosis and treatment planning
- Pre and post-surgical Orthodontics
- Participation in actual clinical cases, progress evaluation and post retention study
- Review of current literature

Ortho / Perio / Prostho inter relationship

- Principles of interdisciplinary patient treatment
- Common problems and their management

Basic principles of Mechanotherapy Includes Removable appliances and fixed appliances

- Design
- Construction
- Fabrication
- Management
- Review of current literature on treatment methods and results

Applied preventive aspects in Orthodontics

- Caries and periodontal disease prevention
- Oral hygiene measures
- Clinical procedures

Interceptive Orthodontics

- Principles
- Growth guidance
- Diagnosis and treatment planning
- Therapy emphasis on:
  a. Dento-facial problems
  b. Tooth material discrepancies
  c. Minor surgery for Orthodontics

Retention and relapse

- Mechanotherapy – special reference to stability of results with various procedures
- Post retention analysis
- Review of contemporary literature

XIX. RECENT ADVANCES LIKE:

- Use of implants
- Lasers
- Application of F.E.M.
- Distraction Osteogenesis

SKILLS:

II. **Pre – Clinical Exercises**

A general outline of the type of exercises is given here. Every institution can decide the details of exercises under each category.

1. General Wire bending exercises to develop the manual dexterity.
2. Clasps, Bows and springs used in the removable appliances.
3. Soldering and welding exercises.
4. Fabrication of removable habit breaking, mechanical and functional appliances, also all types of space maintainers and space regainers.
5. Bonwill Hawley Ideal arch preparation.
6. Construction of orthodontic models trimmed and polished preferably as per specifications of Tweed or A.B.O.
7. Cephalometric tracing and various Analyses, also superimposition methods –
8. Fixed appliance typhodont exercises.
   a) Training shall be imparted in one basic technique i.e. Standard Edgewise / Begg technique or its derivative / Straight wire etc., with adequate exposure to other techniques.
   b) Typhodont exercise
      i. Band making
      ii. Bracket positioning and placement
      iii. Different stages in treatment appropriate to technique taught
9. Clinical photography
10. Computerized imaging
11. Preparation of surgical splints, and splints for TMJ problems.
12. Handling of equipments like vacuum forming appliances and hydro solder etc.

viii. Removable functional appliance cases like activator, Bionator, functional regulator, twin block and new developments
ix. Fixed functional appliances – Herbst appliance, jasper jumper etc – 5 cases
x. Dento-facial orthopedic appliances like head gears, rapid maxillary expansion niti expander etc., - 5 cases
xi. Appliance for arch development such as molar distalization –m 5 cases
xii. Fixed mechano therapy cases (Begg, PEA, Tip edge, Edgewise)
Retention procedures of above treated cases.

Other work to be done during FIRST YEAR

1. **Seminars:** One Seminar per week to be conducted in the department. A minimum of five seminars should be presented by each student each year
2. **Journal club:** One Journal club per week to re conducted in the department. A minimum of five seminars should be presented by each student each year
3. **Protocol for dissertation to be submitted on or before the end of six months from the date of admission.**
4. **Under graduate classes:** Around 4 – 5 classes should be handled by each post-graduate student
5. **Field survey:** To be conducted and submit the report
6. **Inter-departmental meetings:** should be held once in a month.
7. **Case discussions**
8. **Field visits: To attend dental camps and to educate the masses**
9. **Basic subjects classes**
10. **Internal assessment or Term paper**

Second Year:

The clinical cases taken up should be followed under the guidance. More case discussions and cases to be taken up. Other routine work as follows.

1. **Seminars:** One Seminar per week to be conducted in the department. Each student should present a minimum of five seminars each year.
2. **Journal club:** One Journal club per week to be conducted in the department. Each student should present a minimum of five seminars each year.
3. **Library assignment to be submitted on or before the end of six months.**
4. **Undergraduate classes:** each post-graduate student should handle Around 4-5 classes.
5. **Inter-departmental meetings:** Should be held once in a month
6. *Case discussions*
7. **Field visits: To attend dental camps and to educate the masses.**
8. **Internal assessment or term paper.**
9. **Dissertation work:** On getting the approval from the university work for the dissertation to be started.

Third Year:

The clinical cases taken up should be followed under the guidance. More cases discussions and cases to be taken up. Other routine work as follows:

1. **Seminars:** One Seminar per week to be conducted in the department. Each student should present a minimum of five seminars each year.
2. **Journal Club:** One Journal club per week to be conducted in the department. A minimum of five seminars should be presented by each student each year
3. **Under graduate classes:** each post – graduate student, should handle Around 4-5 classes.
4. **Inter-departmental meetings:** Should be held once in a month.
5. **The completed dissertation should be submitted six months before the final examination**
6. **Case discussions**
7. **Field visits:** To attend dental camps and to educate the masses.
8. Finishing and presenting the cases taken up.
9. **Preparation of finished cases and presenting the cases** (to be presented for the examination)

10. **Mock examination**

DISSERTATION:

a. The protocol for dissertation should be submitted on or before the end of six months from the date of admission as per calendar of events to the Registrar, Rajiv Gandhi University of Health Sciences, Karnataka, through proper channel.
b. The completed dissertation should be submitted 6 months before the final examination as per calendar of events to the Registrar (Evaluation), Rajiv Gandhi University of Health Sciences, Karnataka, through proper channel.
c. The dissertation should not be just a repetition of a previously undertaken study but it should try to explore some new aspects.
d. Approval of dissertation is essential before a candidate appears for the University examination.

MONITORING LEARNING PROGRESS:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

SCHEME OF EXAMINATION:

A. Theory : 300 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

Paper-I : Applied Basic Sciences: Applied anatomy, Physiology, Dental Materials, Genetics, Pathology, Physical Anthropology, Applied Research methodology, Bio-Statistics and Applied Pharmacology.

Paper II : Orthodontic history, Concepts of occlusion and esthetics, Child and Adult Psychology, Etiology and classification of maloclusion, Dentofacial Anomalies, Diagnostic procedures and treatment planning in Orthodontics, Practice management in Orthodontics

Paper III : Clinical Orthodontics

Paper IV : Essay

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical / Clinical Examination : 200 Marks
Exercise No: 1 Functional Case : 50 Marks

Selection of case for functional appliance and recording of construction bite.
Fabrication and delivery of the appliance the next day.

Exercise No: 2 Multiband exercise : 50 Marks

1. III stage with auxiliary springs

OR

2. Bonding of SWA brackets and construction of suitable arch wire.

Exercise No. 3 Display of records of the treated cases (minimum of 5 cases)

5 cases * 15 marks = 75 Marks

Exercise No: 4 long case discussions: 25 Marks

No	Exercise	Marks allotted	Approximate Time
1	Functional appliance	50	1 hour 1 hour
2	III stage mechanics / Bonding and arch wire fabrication	50	1 hr 30 min
3	Display of case records (a minimum of 5 cases to be presented with all the cases)	75	1 hour
4	Long cases	25	2 hours

C. Viva Voce : 100 Marks

i. Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

6. ORAL PATHOLOGY & ORAL MICROBIOLOGY

OBJECTIVES:

- To train a post graduate dental surgeon so as to ensure higher competence in both general and special pathology dealing with the nature of oral diseases, their causes, processes and effects.
- An oral pathologist is expected to perform routine histopathological evaluation of specimens relating to oral and perioral tissues, to carry out routine diagnostic procedures including hematological, cytological, microbiological, Immunological and ultra structural investigations.
- He/she is expected to have an understanding of current research methodology, collection and interpretation of data, ability to carry out research projects on clinical and or epidemiological aspects, a working knowledge on current databases, automated data retrieval systems, referencing and skill in writing scientific papers.
- He/she is expected to present scientific data pertaining to the field, in conferences both as poster and verbal presentations and ot take part in group discussions.

BROAD OUTLINE OF THEORETICAL, CLINICAL AND PRACTICAL COURSES

1. Study of principles of routine and special techniques used for histopathology including principles of histochemistry, Immunochemistry, applied and theoretical biochemical basis of histochemistry as related to oral pathology.
2. Advanced histological and histopathological study of dental and oral tissues including embryonic considerations, clinical considerations, biology, histology, Pathology, prognosis and management of oral oncology, Concepts of oral premalignancy
3. Study of special and applied pathology of oral tissues as well as relation of local pathologic and clinical findings to systemic conditions.
4. Oral microbiology and their relationship to various branches of dentistry.
5. Oral microbiology affecting hard and soft tissues. Study of clinical changes and their significance to dental and oral diseases as related to oral pathology
6. Forensic odontology

7. Inter institutional postings such as cancer hospital, dermatology clinics, regional HIV detection centers, sophisticated instrumentation centers for electron microscopy and other techniques.
8. Maintenance of records of all postgraduates activities.
9. Library assignment.
10. University Dissertation.

A. COURSE CONTENTS:

First year

1) BIOSTATISTICS AND RESEARCH METHODOLOGY:

- Basic principles of biostatistics and study as applied to dentistry and research
- Collection/organization of data/measurement scales presentation of data and analysis.
- Measures of central tendency.
- Measures of variability.
- Sampling and planning of health survey.
- Probability, normal distribution and indicative statistics.
- Estimating population values.
- Tests of significance (parametric/non-parametric qualitative methods.)
- Analysis of variance
- Association, correlation and regression.

Approach:

- Didactic lectures on biostatistics and discussion on research methodology by eminent researchers.
- Two – day P.G. orientation course including general approach PG course, library and main dissertation, journal club topic selection and presentation, seminars, clinico-pathological meets, teaching methodology and use of audiovisual aids.

2) APPLIED GROSS ANATOMY OF HEAD AND NECK INCLUDING HISTOLOGY:

- Temporomandibular joint
- Trigeminal nerve and facial nerve
- Muscles of mastication
- Tongue
- Salivary glands
- Nerve supply; blood supply, lymphatic drainage and venous drainage of Oro dental tissues.
- Embryology
  - Development of face, palate, mandible, maxilla, tongue and applied aspects of the same
  - Development of teeth and dental tissues and developmental defects of oral and maxillofacial region and abnormalities of teeth
- Maxillary sinus
- Jaw muscles and facial muscles.

Genetics:

Introduction modes of inheritance, chromosomal anomalies of oral tissues and single gene disorders.

Approach:

- To be covered as didactic lectures.
- Posting in department of anatomy for dissection of head, face and neck.

3) PHYSIOLOGY (GENERAL AND ORAL):

- Saliva
- Pain
- Mastication
- Taste

- Deglutition
- Wound healing
- Vitamins (Influence on growth, development and structure of oral soft and hard tissues and paraoral tissues.)
- Calcium metabolism.
- Theories of mineralization.
- Tooth eruption and shedding.
- Hormones. (Influence on growth, development and structure of oral soft and hard tissues and para oral tissues.)
- Blood and its constituents.

Approach:
To be covered as didactic lectures.

4) CELL BIOLOGY:
- Cell-structure and function (ultrastructural and molecular aspects), intercellular junctions, cell cycle and division, cell cycle regulators, cell – cell and cell – extra cellular matrix interactions.
- Detailed molecular aspects of DNA, RNA, and intracellular organelles, transcription and translation and molecular biology techniques.

Approach:
To be covered as seminars and didactic lecture.

5) GENERAL HISTOLOGY:
Light and electron microscopy considerations of Epithelial tissues and glands, bone, hematopoietic system, lymphatic system, muscle, neural tissue, endocrinal system (thyroid, pituitary, parathyroid)

Approach:
- Topics to be covered as didactic lectures.
- Postings in the department of anatomy and histology for slide discussion
- Record book to be maintained.

6) BIOCHEMISTRY:
- Chemistry of carbohydrates, lipids and proteins.
- Methods of identification and purification.
- Metabolism of carbohydrates, lipids and proteins.
- Biological oxidation.
- Various techniques – cell fractionation and ultra filtration, centrifugation, Electrophoresis, Spectrophotometry, and radioactive techniques.

Approach:
- Topics to be covered as didactic lectures.
- Postings to the department of biochemistry to familiarize with various techniques
- Record book to be maintained.

7) GENERAL PATHOLOGY:
- Inflammation and chemical mediators, thrombosis, embolism, necrosis, repair, degeneration, shock, hemorrhage pathogenic mechanisms at molecular level and blood dyscrasias, Carcinogenesis and Neoplasia.

Approach:
To be covered as seminars and didactic lectures.

8) GENERAL MICROBIOLOGY:
- Definitions of various types of infections.
- Routes of infection and spread
- Sterilization, disinfection and antiseptics.
- Bacterial genetics.

- Physiology and growth of microorganisms.

Approach:
- To be covered as seminars and didactic lectures.
- Record book to be maintained.

9) BASIC IMMUNOLOGY:
- Basic principles of immunity, antigen and antibody reactions.
- Cell mediated immunity and Humoral immunity.
- Immunology of hypersensitivity.
- Immunological basis of the autoimmune phenomena.
- Immunodeficiency with relevance to opportunistic infections.
- Basic principles of transplantation and tumor immunity.

Approach:
To be covered as didactic lectures.

10) SYSTEMIC MICROBIOLOGY/APPLIED MICROBIOLOGY:
Morphology, classification, pathogenicity, mode of transmission, methods of prevention, collection and transport of specimen, for laboratory diagnosis, staining methods, common culture media, interpretation of laboratory reports and antibiotic sensitivity tests.
- Staphylococci
- Streptococci
- Corynebacterium diphtheria
- Mycobacteria
- Clostridia, bacteroides and fusobacteria
- Actinomycetales
- Spirochetes

Virology:

General properties: structure, broad classification of viruses, pathogenesis, pathology of viral infections.
Herpes virus: list of viruses included, lesions produced, pathogenesis, latency principles and laboratory diagnosis.
Hepatitis virus: list of viruses, pathogenesis, and mode of infection, list of diagnostic tests, and their interpretations, methods of prevention and control.
Human Immunodeficiency virus: structure with relevance to laboratory diagnosis, type of infection, laboratory tests and their interpretation, universal precautions, specific precautions and recent trends in diagnosis and prophylaxis.

Mycology:
- General properties of fungi, classification bases on disease, superficial, subcutaneous, deep opportunistic infections.
- General principles of fungal infections, diagnosis rapid diagnosis method of collection of sample and examination for fungi.

Approach:
- To be covered as seminars and didactic lectures
- Postings to the dept. of microbiology to familiarize with relevant diagnostic methods
- Record book to be maintained

11) ORAL BIOLOGY (ORAL AND DENTAL HISTOLOGY):
- Structure and function of oral, dental and paraoral tissues including their ultra structure, molecular and biochemical aspects.
- Study of morphology of permanent and deciduous teeth
(Lectures and practical demonstrations to be given by PG students)

Approach:

- To be covered as seminars and didactic lectures.
- Slide discussion on histological appearance of normal oral tissues.
- Record book to be maintained.

12) BASIC MOLECULAR BIOLOGY AND TECHNIQUES:

experimental aspects – DNA extraction, PCR, western blotting.

Approach:

- To be covered as didactic lectures
- Postings in centers where facilities are available for demonstration of routine molecular biology techniques.
- Record book to be maintained.

13) BASIC HISTO TECHNIQUES AND MICROSCOPY:

- Routine hematological tests and clinical significance of the same.
- Biopsy procedures for oral lesions.
- Processing of tissues for Paraffin lesions.
- Microtome and principles of microtomy.
- Routine stains, principles and theories of staining techniques
- Microscope, principles and theories of microscopy.
- Light microscopy and various other types including electron microscopy.
- Methods of tissue preparation for ground sections, decalcified sections.

Approach:

- Topics to be covered as seminars.
- Preparation of ground and decalcified sections, tissue processing, sectioning and staining.
- Record book to be maintained

ACADEMIC ACTIVITIES:

- Submission of synopsis of dissertation at the end of six months.
- Journal clubs and seminars to be presented by every post graduate student twice a month.
- To attend interdepartmental meetings.
- To attend dental camps based on the survey to be done.
- Part – I year ending examination to be conducted by the college.

SECOND YEAR

ORAL PATHOLOGY

- Developmental defects of oral and maxillofacial region and abnormalities of teeth
- Dental caries (Introduction, Epidemiology, microbiology, cariogenic bacterial including properties, acid production in plaque, development of lesion, response of dentine – pulp unit, histopathology, root caries, sequelae and immunology).
- Pulpal and Periapical diseases
- Infections of oral and Para oral regions (bacterial, viral and fungal infections)
- Non – neoplastic disorders of salivary glands
- Bone pathology
- Hematological disorders
- Physical and chemical injuries, allergic and Immunological diseases.
- Cysts of odontogenic origin
- Dermatologic diseases.
- Periodontal diseases
- Oral manifestations of systemic diseases
- Facial pain and neuromuscular disorders including TMJ disorders
- Regressive alterations of teeth

CLINICAL PATHOLOGY:

- Laboratory investigations – Hematology, Microbiology and Urine analysis

- Postings to Clinical Pathology for relevant training
- Record book to be maintained.

SPECIALIZED HISTOTECHNIQUES AND SPECIAL STAINS:

Special staining techniques for different tissues.
Immunohistochemistry
Preparation of frozen sections and cytological smears

Approach:

Training to be imparted in the department or in other institutions having the facility
Record book to be maintained

RECORDING OF CASE HISTORY AND CLINICO-PATHOLOGICAL DISCUSSIONS:

Approach:

Posting to the department of Oral medicine, Diagnosis and Radiology and Oral and Maxillo-facial surgery. Record of case histories to be maintained

DERMATOLOGY:

Study of selected mucocutaneous lesions-etiopathogenesis, pathology, clinical presentation and diagnosis.

Approach:

- Posting to the dept of Dermatology of a Medical college
- Topics to be covered as Seminars
- Record of cases seen to be maintained.

ORAL ONCOLOGY:

Detailed study including Pathogenesis, molecular and biochemical changes of various tumors, tumor like lesions and Premalignant lesions affecting the hard and soft tissues of oral and paraoral tissues. Tumour markers

Approach:

To be covered as seminars
Posting to a Cancer center to amiliarize with the pathological appearances, diagnosis, radio-diagnosis and treatment modalities.

ORAL MICROBIOLOGY AND IMMUNOLOGY:

- Normal Oral microbial flora
- Defense mechanism of the oral cavity
- Microbiology and immunology of Dental caries and Periodontal diseases
- Dental caries (Introduction, epidemiology, microbiology, cariogenic bacteria including properties, acid production in plaque, development of lesion, response of dentin-pulp unit, histopathology, root caries, sequelae and immunology)
- Tumor immunology
- Infections of Pulp and Periapical and periodontal tissues
- Oral sepsis and Bacterimia
- Microbial genetics
- Infections of oral and Para oral regions (bacterial, viral and fungal infections)

Approach:

To be covered as seminars

FORENSIC ODONTOLOGY:

Legal procedures like inquest, medico-legal evidences post mortem examination of violence around mouth and neck, identification of deceased individual-dental importance.
Bite marks rugae patterns and lip prints.

Approach:

To be covered as seminars

Posting to a Cancer center to familiarize with the pathological appearances, diagnosis, and radio-diagnosis and treatment modalities

HISTOPATHOLOGY – SLIDE DISCUSSION:

Record book to be maintained

LABORATORY TECHNIQUES AND DIAGNOSIS:

- Routine hematological tests and clinical significance of the same
- Biopsy procedures for oral lesions
- Processing of tissues for Paraffin sections
- Microtome and principles of microtomy
- Routine stains, principles and theories of staining techniques
- Microscope, principles and theories of microscopy
- Light microscopy and various other types including electron microscopy
- Methods of tissue preparation for ground sections, decalcified sections.
- Special stains and staining techniques for different tissues
- Immunohistochemistry
- Preparation of frozen sections and cytological smears

OTHER TOPICS IN ORAL PATHOLOGY.

- Detailed description of diseases affecting oral mucosa, teeth, supporting tissues & jaws
- Cysts of the oral & Para-oral regions
- Systemic diseases affecting oral cavity.

Approach:

Seminars & Slide discussions. Record notebook to be maintained. Training in histo-pathology slide reporting.

EXPERIMENTAL ASPECTS OF ORAL DISEASES:

Approach:

Posting is desirable in Centers where animal experimentation is carried out to familiarize with laboratory techniques, upkeep & care of experimental animals.

RECENT ADVANCES IN ORAL PATHOLOGY:

Approach:

Update of knowledge in Oral Pathology through study of recent journals & Internet browsing. Journal Clubs & Group discussions.

ACADEMIC ACTIVITIES:

- Library assignment to be submitted at the end of 6 months
- Commencement of dissertation work
- Journal clubs and seminars to be presented by every PG student
- Clinico – pathological discussions once in a month by every PG student
- To attend interdepartmental meetings.
- Lecture and practical classes and slide discussions to be taken for II BDS students in oral and dental anatomy, dental histology and oral physiology.
- Year ending examination (theory and practical) to be conducted by the college.

THIRD YEAR

- Non-neoplastic disorders of salivary glands.
- Bone pathology
- Physical and chemical injuries, allergic and Immunological diseases.
- Cysts of odontogenic origin
- Oral manifestations of systemic diseases

Approach:

To be covered as seminars
Slide discussions of the same
Record book to be maintained

ACADEMIC ACTIVITIES:

- Visit to center of Animal experimentation to familiarize with Laboratory techniques, upkeep and care of animals
- Completion of Dissertation work and submission of the same, six months before the Final Examination
- Study of Journals, Internet Browsing, and group discussions, to update knowledge in the recent advances in Oral Pathology
- Lecture and Practical demonstrations for third B.D.S students in Oral pathology and Microbiology
- Reporting of histopathology slides
- Journal clubs and Seminars to be presented by every post graduate student twice a month
- Clinico-pathological discussions by every student once in a month
- To attend Inter-departmental meetings.

MONITORING LEARNING PROGRESS:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment is done using checklists that assess various aspects. Checklists are given in Section IV.

SCHEME OF EXAMINATION:

A. Theory - 300 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II, III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows *:

PAPER-I	:	Applied Basic Sciences: Applied anatomy, Physiology (General and oral), Cell Biology, General Histology, Biochemistry, General Pathology, General and systemic Microbiology, Virology, Mycology, Basic Immunology, Oral Biology (oral and dental histology), Biostatistics and Research Methodology
PAPER-II	:	Oral pathology, Oral Microbiology & Immunology and Forensic Odontology
PAPER-III	:	Laboratory techniques and Diagnosis and Oncology
PAPER-IV	:	Essay

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical/Clinical - 200 Marks

1. Case Presentation

a) Long case – 20 marks

b) Short case – 10 marks

2. Clinical Hematology (any two investigations) – 20 Marks

Hb%, bleeding time, clotting time, Total WBC count, Differential WBC count and ESR

3. Smear Presentation - 20 marks

Cytology or microbial smear and staining

4. Paraffin sectioning and H & E Staining - 30 Marks

5. Histopathology slide discussion - 100 Marks

C. Viva Voce 100 Marks

i. Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

7. PUBLIC HEALTH DENTISTRY

OBJECTIVES:

At the end of 3 years of training the candidate should be able to:

KNOWLEDGE:

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

SKILLS:

The candidate should be able to

1. Take history, conduct clinical examination including all diagnostic procedures to arrive at diagnosis at the individual level and conduct survey of the community at state and national level of all conditions related to oral health to arrive at community diagnosis.
2. Plan and perform all necessary treatment, prevention and promotion of Oral Health at the individual and community level.
3. Plan appropriate Community Oral Health Program, conduct the program and evaluate, at the community level.
4. Ability to make use of knowledge of epidemiology to identify causes and plan appropriate preventive and control measures.
5. Develop appropriate person power at various levels and their effective utilization.
6. Conduct survey and use appropriate methods to impart Oral Health Education.
7. Develop ways of helping the community towards easy payment plan, and followed by evaluation for their oral health care needs.
8. Develop the planning, implementation, evaluation and administrative skills to carry out successful community Oral Health Programs.

VALUES:

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

COURSE CONTENTS:

PAPER-I: Applied Basic Sciences

I. APPLIED ANATOMY AND HISTOLOGY:

A. Applied Anatomy in relation to:

- Development of face
- Bronchial arches
- Muscles of facial expression
- Muscles of mastication
- TMJ
- Salivary gland
- Tongue
- Salivary gland
- Tongue
- Hard and soft palate
- Infratemporal fossa
- Paranasal air sinuses
- Pharynx and larynx
- Cranial and spinal nerves- with emphasis on trigeminal, facial, glossopharyngeal and hypoglossal nerve
- Osteology of maxilla and mandible
- Blood supply, venous and lymphatic drainage of head and neck
- Lymph nodes of head and neck
- Structure and relations of alveolar process and edentulous mouth
- Genetics-fundamentals

B. Oral Histology

- Development of dentition, Innervations of dentin and pulp
- Periodontium-development, histology, blood supply, nerve supply and lymphatic drainage
- Oral mucous membrane
- Pulp-periodontal complex

II. APPLIED PHYSIOLOGY AND BIOCHEMISTRY:

- Cell
- Mastication and deglutition
- Food and nutrition
- Metabolism of carbohydrates, proteins and fats
- Vitamins and minerals
- Fluid and electrolyte balance
- Pain pathway and mechanism-types, properties
- Blood composition and functions, clotting mechanism and erythropoiesis, Blood groups and transfusions, Pulse and blood pressure,
- Dynamics of blood flow
- Cardiovascular homeostasis-heart sounds
- Respiratory system: Normal physiology and variations in health and diseases, Asphyxia and artificial respiration
- Endocrinology: thyroid, parathyroid, adrenals, pituitary, sex hormones and pregnancy, Endocrine regulation of blood sugar.

III. A. APPLIED PATHOLOGY:

- Pathogenic mechanism of molecular level
- Cellular changes following injury
- Inflammation and chemical mediators
- Oedema, thrombosis and embolism
- Hemorrhage and shock
- Neoplasia and metastasis
- Blood disorders
- Histopathology and pathogenesis of dental caries, periodontal disease, oral mucosal lesions, and malignancies, HIV
- Propagation of dental infection

B. **MICROBIOLOGY:**
- Microbial flora of oral cavity
- Bacteriology of dental caries and periodontal disease
- Methods of sterilization
- Virology of HIV, herpes, hepatitis
- Parasitology
- Basic immunology – basic concepts of immune system in human body
  - Cellular and humoral immunity
  - Antigen and antibody system
  - Hypersensitivity
  - Autoimmune diseases

C. **ORAL PATHOLOGY:**
- Detailed description of diseases affecting the oral mucosa, teeth, supporting tissues and jaws.

IV. **PHYSICAL AND SOCIAL ANTHROPOLOGY:**
- Introduction and definition
- Appreciation of the biological basis of health and disease
- Evolution of human race, various studies of different races by anthropological methods

V. **APPLIED PHARMACOLOGY:**
- Definition, scope and relations to other branches of medicine, mode of action, bioassay, standardization, pharmacodyanamics, pharmcokinetics.
- Chemotherapy of bacterial infections and viral infections – sulphonamides and antibiotics.
- Local anesthesia
- Analgesics and anti-inflammatory drugs
- Hypnotics, tranquilizers and antipyretics
- Important hormones-ACTH, cortisone, insulin and oral antidiabetics.
- Drug addiction and tolerance
- Important pharmacological agents in connection with autonomic nervous system-adrenaline, noradrenaline, atropine
- Brief mention of antihypertensive drugs
- Emergency drugs in dental practice
- Vitamins and haemopoietic drugs

VI. **RESEARCH METHODOLOGY AND BIOSTATISTICS:**

HEALTH INFORMATICS – basic understanding of computers and its components, operating software (Windows), Microsoft office, preparation of teaching materials like slides, project, multimedia knowledge.

RESEARCH METHODOLOGY – definitions, types of research, designing written protocol for research, objectivity in methodology, quantification, records and analysis.

BIOSTATISTICS – introduction, applications, uses and limitations of bio – statistics in Public Health dentistry, collection of data, presentation of data, measures of central tendency, measures of dispersion, methods of summarizing, parametric and non parametric tests of significance, correlation and regression, multivariate analysis, sampling and sampling techniques – types, errors, bias, trial and calibration

COMPUTERS – Basic operative skills in analysis of data and knowledge of multimedia.

PAPER-II – Public Health

1. **PUBLIC HEALTH:**
- Definition, concepts and philosophy of dental health
- History of public health in India and at international level

- Terminologies used in public health

2. **HEALTH:**
   - Definition, concepts and philosophy of health
   - Health indicators
   - Community and its characteristics and relation to health

3. **DISEASE:**
   - Definition, concepts
   - Multifactorial causation, natural history, risk factors
   - Disease control and eradication, evaluation and causation, infection of specific diseases
   - Vaccines and immunization

4. **GENERAL EPIDEMIOLOGY:**
   - Definition and aims, general principles
   - Multifactorial causation, natural history, risk factors
   - Methods in epidemiology, descriptive, analytical, experimental and classic epidemiology of specific diseases, uses of epidemiology
   - Duties of epidemiologist
   - General idea of method of investigating chronic diseases, mostly non-infectious nature, epidemic, endemic, and pandemic.
   - Ethical conversation in any study requirement
   - New knowledge regarding ethical subjects
   - Screening of diseases and standard procedures used

5. **ENVIRONMENTAL HEALTH:**
   - Impact of important components of the environment of health
   - Principles and methods of identification, evaluation and control of such health hazards
   - Pollution of air, water, soil, noise, food
   - Water purification, international standards of water
   - Domestic and industrial toxins, ionizing radiation
   - Occupational hazards
   - Waster disposal- various methods and sanitation

6. **PUBLIC HEALTH EDUCATION:**
   - Definition, aims, principles of health education
   - Health education, methods, models, contents, planning health education programs

7. **PUBLIC HEALTH PRACTICE AND ADMINISTRATION SYSTEM IN INDIA.**

8. **ETHICS AND JURISPRUDENCE:**
   - Basic principles of law
   - Contract laws- dentist – patient relationships & Legal forms of practice
   - Dental malpractice
   - Person identification through dentistry
   - Legal protection for practicing dentist
   - Consumer protection act

9. **NUTRITION IN PUBLIC HEALTH:**
   - Study of science of nutrition and its application to human problem
   - Nutritional surveys and their evaluations
   - Influence of nutrition and diet on general health and oral health, dental caries, periodontal disease and oral cancers
   - Dietary constituents and cariogenecity
   - Guidelines for nutrition

10. **BEHAVIORAL SCIENCES:**
    - Definition and introduction

- Sociology: social class, social group, family types, communities and social relationships, culture, its effect on oral health.
- Psychology: definition, development of child psychology, anxiety, fear and phobia, intelligence, learning, motivation, personalities, fear, dentist-patient relationship, modeling and experience

11. **HOSPITAL ADMINISTRATION:**
- Departmental maintenance, organizational structures
- Types of practices
- Biomedical waste management

12. **HEALTH CARE DELIVERY SYSTEM:**
- International oral health care delivery systems – Review
- Central and state system in general and oral health care delivery system if any
- National and health policy
- National health programme
- Primary health care – concepts, oral health in PHC and its implications
- National and international health organizations
- Dentists Act 1928, Dental council of India, Ethics, Indian Dental Association
- Role of W.H.O. and Voluntary organizations in Health Care for the Community

13. **ORAL BIOLOGY AND GENETICS:**
- A detailed study of cell structure
- Introduction to Genetics, Gene structure, DNA, RNA
- Genetic counseling, gene typing
- Genetic approaches in the study of oral disorders
- Genetic Engineering - Answer to current health problems

PAPER-III : Dental Public Health

1. **DENTAL PUBLIC HEALTH:**
- History
- Definition and concepts of dental public health
- Differences between clinical and community dentistry
- Critical review of current practice
- Dental problems of specific population groups such as chronically ill, handicapped and institutionalized group

2. **EPIDEMIOLOGY OF ORAL DISEASES AND CONDITIONS:**
- Dental caries, gingival, periodontal disease malocclusion, dental Fluorosis, oral cancer, TMJ disorders and other oral health related problems.

3. **ORAL SURVEY PROCEDURES:**
- Planning
- Implementation
- WHO basic oral health methods 1997
- Indices for dental diseases and conditions
- Evaluation

4. **DELIVERY OF DENTAL CARE:**
- Dental person power – dental auxiliaries
- Dentist – population ratios,
- Public dental care programs
- School dental health programs- Incremental and comprehensive care
- Private practice and group practice
- Oral health policy – National and international policy

5. **PAYMENT FOR DENTAL CARE:**

- Prepayment
- Post-payment
- Reimbursement plans
- Voluntary agencies
- Health insurance

6. **EVALUATION OF QUALITY OF DENTAL CARE:**
   - Problems in public and private oral health care system program
   - Evaluation of quality of services, governmental control

7. **PREVENTIVE DENTISTRY:**
   - Levels of prevention
   - Preventive oral health programs screening, health education and motivation
   - Prevention of all dental diseases-dental caries, periodontal diseases, oral cancer, malocclusion and Dentofacial anomalies
   - Role of dentist in prevention of oral diseases at individual and community level.
   - Fluoride
     -History
     -Mechanism of action
     -Metabolism
     -Fluoride toxicity
     -Fluorosis
     -Systemic and topical preparations
     -Advantages and disadvantages of each
     -Update regarding Fluorosis
     -Epidemiological studies
     -Methods of fluoride supplements
     -Defluoridation techniques
   - Plaque control measures-
     -Health Education
     -Personal oral hygiene
     -Tooth brushing technique
     -Dentifrices, mouth rinses
   - Pit and fissure sealant, ART
   - Preventive oral health care for medically compromised individual
   - Update on recent preventive modalities
   - Caries vaccines
   - Dietary counseling

8. **PRACTICE MANAGEMENT:**
   - Definition
   - Principles of management of dental practice and types
   - Organization and administration of dental practice
   - Ethical and legal issues in dental practice
   - Current trends

STRUCTURED TRAINING SCHEDULE:

First Year

SEMINARS:

- 5 seminars in basic sciences subject,
- To conduct 10 journal clubs
- Library assignment on assigned topics – 2
- Submission of synopsis for dissertation-within 6 months
- Periodic review of dissertation at two monthly intervals

CLINICAL TRAINING:

1. Clinical assessment of patient
2. Learning different criteria and instruments used in various oral indices – 5 cases each
   - Oral Hygiene Index – Greene and Vermillion
   - Oral Hygiene Index – Simplified
   - DMF – DMF (T), DMF (S)
   - Def
   - Fluorosis Indices – Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
   - Community Periodontal Index (CPI)
   - Plaque Index-Silness and Loe
   - WHO Oral Health Assessment Form – 1997
   - Carrying out treatment (under comprehensive oral health care) of 10 patients – maintaining complete records.

FIELD PROGRAMME:

1. Carrying out preventive programs and health education for school children of the adopted school.
2. School based preventive programs-
   - Topical Fluoride application-Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes, Fluoride mouth rinses
   - Pit and Fissure Sealant – chemically cured (GIC), light cured
   - Minimal Invasive Treatment-Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
   - Organizing and carrying out dental camps in both urban and rural areas.
3. Visit to slum, water treatment plant, sewage treatment plant, and Milk dairy, Public Health Institute, Anti-Tobacco Cell, Primary Health Center and submitting reports.
4. In additions the postgraduate shall assist and guide the under graduate students in their clinical and field programs.

Second Year

SEMINARS:

- Seminars in Public Health and Dental Public Health topics
- Conducting journal clubs
- Short term research project on assigned topics – 2
- Periodic review of dissertation at monthly reviews

CLINICAL TRAINING-CONTINUATION OF THE CLINICAL TRAINING:

1. Clinical assessment of patient
2. Learning different criteria and instruments used in various oral indices
   - Oral Hygiene Index – Greene and Vermillion
   - Oral Hygiene Index – Simplified
   - DMF – DMF (T), DMF (S)
   - Def t/s
   - Fluorosis Indices – Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
   - Community Periodontal Index (CPI)
   - Plaque Index-Silness and Loe
   - WHO Oral Health Assessment Form – 1987
   - Carrying out treatment (under comprehensive oral health care) of 10 patients – maintaining complete records

FIELD PROGRAM – CONTINUATION OF FIELD PROGRAM:

1. Carrying out school dental health education
2. School based preventive programs-

- Topical Fluoride application-Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes, Fluoride mouth rinses
- Pit and Fissure Sealant – chemically cured (GIC), light cured
- Minimal Invasive Treatment-Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
- Organizing and carrying out dental camps in both urban and rural areas.

3. Assessing oral health status of various target groups like School children, Expectant mothers Handicapped, Underprivileged, and geriatric populations. Planning dental manpower and financing dental health care for the above group.
4. Application of the following preventive measures in clinic-10 Cases each.
   - Topical Fluoride application – Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes.
   - Pit and Fissure Sealant
5. Planning total health care for school children in an adopted school:
   a) Periodic surveying of school children
   b) Incremental dental care
   c) Comprehensive dental care
6. Organizing and conducting community oral health surveys for all oral conditions-3 surveys
7. In addition the post graduate shall assist and guide the under graduate students in their clinical and field programs
8. To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic.

Third Year:

SEMINARS:

- Seminars on recent advances in Preventive Dentistry and Dental Public Health
- Critical evaluation of scientific articles – 10 articles
- Completion and submission of dissertation

CLINICAL TRAINING:

1. Clinical assessment of patient
2. Learning different criteria and instruments used in various oral indices – 5 each
   - Oral Hygiene Index – Greene and Vermillion
   - Oral Hygiene Index – Simplified
   - DMF – DMF (T), DMF (S)
   - Def t/s
   - Fluorosis Indices – Dean's Fluorosis Index, Tooth Surface Index for Fluorosis, Thylstrup and Fejerskov Index
   - Community Periodontal Index (CPI)
   - Plaque Index-Silness and Loe
   - WHO Oral Health Assessment Form – 1987
   - Carrying out treatment (under comprehensive oral health care) of 10 patients – maintaining complete records
3. Carrying out school dental health education
4. School based preventive programs-
   - Topical Fluoride application – Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations and Fluoride varnishes.
   - Pit and Fissure Sealant
   - Minimal Invasive Techniques – Preventive Resin Restorations (PRR), Atraumatic Restorative Treatment (ART)
5. To take lecture classes (2) for Undergraduate students in order to learn teaching methods (pedagogy) on assigned topic
6. Exercise on solving community health problems – 10 problems
7. Application of the following preventive measures in clinic – 10 cases each.

- Topical Fluoride application – Sodium Fluoride, Stannous Fluoride, Acidulated Phosphate Fluoride preparations
- Pit and Fissure sealants

8. Dental – health education training of school teachers, social workers, health workers,
9. Posting at dental satellite centers/ nodal centers
10. In addition the post graduate shall assist and guide the under graduate students in their clinical and field programs

Before completing the third year M.D.S., a student must have attended two national conferences. Attempts should be made to present two scientific papers, publication of a scientific article in a journal.

MONITORING LEARNING PROCESS:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV.

SCHEME OF EXAMINATION

A. Theory : 300 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PAPER-I : Applied Basic Sciences: Applied Anatomy and Histology, Applied Physiology and Biochemistry, Applied Pathology, Microbiology, Oral Pathology, Physical and Social Anthropology, Applied Pharmacology and Research Methodology and Biostatistics.

PAPER-II : Public Health

PAPER-III: Dental Public Health

PAPER-IV: Essay

Topics of current interest in community oral healths

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical / Clinical Examination : 200 Marks

1. Clinical examination of at least 2 patients representing the community – includes history, main complaints, examination and recording of the findings, using indices for the assessment of oral health and presentation of the observation including diagnosis, comprehensive treatment planning.
(50 Marks – 1 ½ Hrs)

2. Performing
   a. One of the treatment procedures as per treatment plan. (Restorative, surgical, rehabilitation)
   b. Preventive oral health care procedure. (50 Marks - 1 ½ Hrs)
   c. One of the procedures specified in the curriculum

3 Critical evaluation of a given research article published in an international journal
(50 Marks – 1 Hour)

4 Problem solving – a hypothetical oral health situation existing in a community is given with sufficient data. The student as a specialist in community dentistry is expected to suggest practical solutions to the existing oral health situation of the given community.

(50 Marks – 1 ½ Hours)

C. Viva Voce : 100 Marks

i. Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

8. PAEDODONTICS & PREVENTIVE DENTISTRY

OBJECTIVES:

At the end of 3 years of training the candidate should be able to

1. Create not only a good oral health in the child but also a good citizen tomorrow.
2. Instill a positive attitude and behavior in children
3. Understand the principles of prevention and preventive dentistry right from birth to adolescence
4. Guide and counsel the parents in regards to various treatment modalities including different facets of preventive dentistry
5. Prevent and intercept developing malocclusion

SKILLS:

1. Obtain proper clinical history, methodological examination of the child patient, perform essential diagnostic procedures and interpret them. and arrive at a reasonable diagnosis and treat appropriately
2. Be competent to treat dental diseases which are occurring in child patient.
3. Manage to repair and restore the lost / tooth structure to maintain harmony between both hard and soft tissues of the oral cavity.
4. Manage the disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions.
5. To acquire skills in managing efficiency life threatening condition with emphasis on basic life support measure.

ATTITUDES:

1. Develop an attitude to adopt ethical principles in all aspects of Pedodontic practice.
2. Professional honesty and integrity are to be fostered
3. Treatment care is to be delivered irrespective of the social status, cast, creed, and religion of the patients.
4. Willingness to share the knowledge and clinical experience with professional colleagues.
5. Willingness to adopt, after a critical assessment, new methods and techniques of Pedodontic management developed from time to time, based on scientific research, which are in the best interest of the child patient.
6. Respect child patient's rights and privileges, including child patients right to information and right to seek a second opinion.
7. Develop an attitude to seek opinion from allied medical and dental specialities, as and when required

COURSE CONTENTS:

1. Applied Anatomy & genetics
2. Applied Physiology
3. Applied Pathology
4. Nutrition and Dietics

5. Growth & Development: Prenatal and Postnatal development of cranium, face, jaws, teeth and supporting structures. Chronology of dental development and development of occlusion. Dimensional changes in dental arches. Cephalometric evaluation of growth.
6. Child Psychology: Development & Classification of behavior, personality, intelligence in children, theories of child psychology, stages of psychological child development, fear anxiety, apprehension & its management
7. Behavior Management: Non- pharmacological & Pharmacological methods.
8. Child Abuse & Dental Neglect
9. Conscious Sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry: (Including Other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children
10. Preventive Pedodontics: Concepts, chair side preventive measures for dental diseases, high-risk caries including rampant & extensive caries – Recognition, Features & Preventive Management, Pit and Fissures Sealants, Oral Hygiene measures, Correlation of brushing with dental caries and periodontal diseases. Diet & Nutrition as related to dental caries. Diet Counseling
11. Dental Plaque: Definition, Initiation, Pathogenesis, Biochemistry, and Morphology & Metabolism.
12. Microbiology & Immunology as related to Oral Diseases in Children: Basic concepts, immune system in human body, Auto Immune diseases, Histopathology, Pathogenesis, Immunology of dental caries, Periodontal diseases, Tumors, Oral Mucosal lesions etc.
13. Gingival & Periodontal diseases in Children:
    - Normal Gingiva & Periodontium in children.
    - Gingival & Periodontal diseases – Etiology, Pathogenesis, Prevention & Management
14. Pediatric Operative Dentistry
    - Principle Of Operative Dentistry along with modifications of materials/past, current & latest including tooth colored materials.
    - Modifications required for cavity preparation in primary and young permanent teeth.
    - Various Isolation Techniques
    - Restorations of decayed primary, young permanent and permanent teeth in children using various restorative material like Glass Ionomer, Composites, Silver, Amalgam & latest material (gallium)
    - Stainless steel, Polycarbonate & Resin Crowns / Veneers & fibre pvit systems.
15. Pediatric Endodontics:
    a. Primary Dentition: - Diagnosis of pulpal diseases and their management – Pulp capping, Pulpotomy, Pulpectomy (Materials & Methods), Controversies & recent concepts.
    b. Young permanent teeth and permanent teeth, Pulp capping, Pulpotomy, Apexogenesis, Apexification, Concepts, Techniques and Materials used for different procedures.
    c. Recent advances in Pediatric diagnosis and Endodontics.
16. Prosthetic consideration in Paediatric Dentistry.
17. Traumatic Injuries in Children:
    - Classifications & Importance.
    - Sequalae & reaction of teeth to trauma.
    - Management of Traumatized teeth with latest concepts.
    - Management of jaw fracture in children.
18. Interceptive Orthodontics:
    a. Concepts of occlusion and esthetics: Structure and function of all anatomic components of occlusion, mechanics of articulations, recording of masticatory function, diagnosis of Occlusal dysfunction, relationship of TMJ anatomy and pathology and related neuromuscular physiology.
    b. A comprehensive review of the local and systemic factors in the causation of malocclusion.
    c. Recognition and management of normal and abnormal developmental occlusions in primary, mixed and permanent dentitions in children (Occlusal Guidance).

d. Biology of tooth movement: A comprehensive review of the principles of teeth movement. Review of contemporary literature. Histopathology of bone and Periodontal ligament, Molecular and ultra cellular consideration in tooth movement.
e. Myofunctional appliances: Basic principles, contemporary appliances: Design & Fabrication
f. Removable appliances: Basic principles, contemporary appliances: Design & Fabrication
g. Case selection & diagnosis in interceptive Orthodontics (Cephalometrics, Image processing, Tracing, Radiation hygiene, Video imaging & advance Cephalometric techniques).
h. Space Management: Etiology, Diagnosis of space problems, analysis, Biomechanics, Planned extraction in interception orthodontics.

19. Oral Habits in Children:
- Definition, Etiology & Classification
- Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits.
- Management of oral habits in children

20. Dental care of Children with special needs:
– Definition Etiology, Classification, Behavioral, Clinical features & Management of children with:
- Physically handicapping conditions
- Mentally compromising conditions
- Medically compromising conditions
- Genetic disorders

21. Oral manifestations of Systemic Conditions in Children & their Management
22. Management of Minor Oral Surgical Procedures in Children
23. Dental Radiology as related to Pediatric Dentistry
24. Cariology
- Historical background
- Definition, Aeitology & Pathogenesis
- Caries pattern in primary, young permanent and permanent teeth in children.
- Rampant caries, early childhood caries and extensive caries. Definition, aeitology, Pathogenesis, Clinical features, Complications & Management.
- Role of diet and nutrition in Dental Caries
- Dietary modifications & Diet counseling.
- Subjective & objective methods of Caries detection with emphasis on Caries Activity tests, Caries prediction, Caries susceptibility & their clinical Applications

25. Pediatric Oral Medicine & Clinical Pathology: Recognition & Management of developmental dental anomalies, teething disorders, stomatological conditions, mucosal lesions, viral infections etc.
26. Congenital Abnormalities in Children: Definition, Classification, Clinical features & Management.
27. Dental Emergencies in Children and their Management.
28. Dental Materials used in Pediatric Dentistry.
29. Preventive Dentistry:
- Definition
- Principles & Scope
- Types of prevention
- Different preventive measures used in Pediatric Dentistry including fissure sealants and caries vaccine.

30. Dental Health Education & School Dental Health Programmes
31. Dental health concepts, Effects of civilization and environment, Dental Health delivery system, Public Health measures related to children along with principles of Pediatric Preventive Dentistry
32. Fluorides:
- Historical background

- Systemic & Topical fluorides
- Mechanism of action
- Toxicity & Management.
- Defluoridation techniques.

33. Medicological aspects in Paediatric Dentistry with emphasis on informed concept.
34. Counseling in Padeiatric Dentistry
35. Case History Recording, Outline of principles of examination, diagnosis & treatment planning.
36. Epidemiology: Concepts, Methods of recording & evaluation of various oral diseases. Various national & global trends of epidemiology of oral diseases.
37. Comprehensive Infant Oral Health Care.
38. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography
39. Comprehensive cleft care management with emphasis on counseling, feeding, nasoalvcile bone remodeling, speech rehabilitation.
40. Setting up of Pedodontics & Preventive Dentistry Clinic.
41. Emerging concept in Paediatric Dentistry of scope of lasen/minimum inovasive procedures : Paediatric Dentistry.

First Year

Preclinical Work

(Duration – first 6 Months of First Year MDS)
(One On Each Exercise)

1. Carving of all deciduous teeth
2. Basic wire bending exercises
3. Fabrication of
   a. Maxillary bite plate / Hawley's'
   b. Maxillary expansion screw appliance
   c. Canine retractor appliance
   d. All habit breaking appliances
      i. Removable type
      ii. Fixed type
      iii. Partially fixed and removable
   e. Two Myofunctional appliance
   f. Making of inclined plane appliance
   g. Feeding appliances
4. Basic soldering exercise I – making of a lamppost of stainless steel wire pieces of different gauges soldered on either side of heavy gauge main post.
5. Fabrication of space maintainers
   a. Removable type-
      - Unilateral Non – Functional space maintainer
      - Bilateral Non-Functional space maintainer
      - Unilateral functional space maintainer
      - Bilateral functional space maintainer

   b. Space Regainers –
      - Hawley's appliances with Helical space regainer
      - Removable appliance with Slingshot space regainer
      - Removable appliance with Dumbell space regainer

   c. Fixed Space maintainers
      - Band & long loop space maintainer
      - Band & short loop space maintainer
      - Mayne's space maintainer
      - Transpalatal arch space maintainer
      - Nance Palatal holding arch
      - Nance Palatal holding arch with canine stoppers

- Gerber space regainer
- Distal shoe appliance
  a. Active space maintainers
  b. For guiding the eruption of first permanent molar
  c. Arch holding device
  d. Functional space maintainer

6. Basics for spot welding exercise
7. Collection of extracted deciduous and permanent teeth
   a. Sectioning of the teeth at various levels and planes
   b. Drawing of section and shapes of pulp
   c. Phantom Head Excersies : Performing ideal cavity preparation for various restorative materials for both Deciduous and permanent teeth
   d. Performing pulpotomy, root canal treatment and Apexification procedure
   i) Tooth preparation and fabrication of various temporary and permanent restorations on fractured anterior teeth.
   ii) Preparation of teeth for various types of crowns
   iii) Laminates/veneers
   iv) Bonding & banding exercise
5. Performing of behavioral rating and IQ tests for children.
6. Computation of: -
   a. Caries index and performing various caries activity test.
   b. Oral Hygiene Index
   c. Periodontal Index
   d. Fluorris Index
7. Surgical Exercises : a. Fabrication of splints b. Type of Wiring c. Suteering, various pvit system, prcing & perm. tuli
8. a. Taking of periapical, occlusal, bitewing radiographs of children
   b. Developing and processing of films, thus obtained
   c. Tracing of soft tissue dental and skeletal landmarks as observed on Cephalometric radiographs and drawing of various planes and angles, further interpretation of Cephalometric radiographs is analysis.
   d. Mixed dentition cast analysis
8. Library assignment
9. Synopsis

Clinical work Requirements from 7 to 36 months

The following is the minimum requirement to be completed before the candidate can be considered eligible to appear in the final M.D.S Examinations:

No.	Clinical Work	Total	7 To 12 Months	13 To 24 Months	25 To 36 Months
1.	Behavior Management of different age groups children with complete records.	17	2	10	5
2.	Detailed Case evaluation with complete records, treatment planning and presentation of cases with chair side and discussion	17	2	10	5
3.	Step-by-step chair side preventive dentistry scheduled for high risk children with gingival and periodontal diseases &Dental Caries	11	1	5	5
4.	Practical application of Preventive dentistry concepts in a class of 35-50 children& Dental Health Education & Motivation.	7	1	4	2

5.	Pediatric Operative Dentistry with application of recent concepts. (a). Management of Dental Caries				
	(I) Class I	50	30	10	10
	(II) Class II	100	40	50	10
	(III) Other Restorations	100	20	50	30
	(b). Management of traumatized anterior teeth	15	04	06	05
	(c) Aesthetic Restorations	25	05	10	10
	(d). Pediatric Endodontic Procedures • Deciduous teeth Pulpotomy/Pulpectomy • Permanent Molars • Permanent Incisor • Apexification & Apexogenesis	 150 20 15 20	 30 3 2 02	 50 7 3 08	 70 10 10 10
6.	Stainless Steel Crowns	50	10	20	20
7.	Other Crowns	05	01	02	02
8.	Fixed : Space Maintainers Habit breaking appliances	30	08	12	10
9.	Removable : Space Maintainers Habit brceking appliances	20	05	07	08
10.	Functional Appliances	05	01	02	02
11.	Preventive measures like fluoride applications & Pit & Fissure Sealants applications with complete follow-up and diet counseling	20	08	08	04
12.	Special Assignments (i) School Dental Health Programmes	03	01	01	01
	(ii) Camps etc.,	02	01	01	-

13. Library usage
14. Laboratory usage
15. Continuing Dental Health Programme

(The figures given against Sl. No. 4 to 12 are the minimum number of recommended procedures to be performed)

MONITORING LEARNING PROGRESS:

It is essential to monitor the learning progress to each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be doneby the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV

SCHEME OF EXAMINATION:

A. Theory - 300 Marks

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PAPER-I : Applied Basic Sciences : Applied Anatomy, Physiology, Pathology, Microbiology, Nutrition & Dietics, Growth & Development and Dental plaque, Genetics.

PAPER-II : Clinical Paedodontics

1. Conscious sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry
2. Gingival & Periodontal Diseases in Children
3. Pediatric Operative Dentistry
4. Pediatric Endodontics
5. Traumatic Injuries in Children
6. Interceptive Orthodontics
7. Oral Habits in children
8. Dental Care of Children with special needs
9. Oral Manifestations of Systemic Conditions in Children & their Management
10. Management of Minor Oral Surgical Procedures in Children
11. Dental Radiology as Related to Pediatric Dentistry
12. Pediatric Oral Medicine & Clinical Pathology
13. Congenital Abnormalities in Children
14. Dental Emergencies in Children & Their Management
15. Dental Materials Used in Pediatric Dentistry
16. Case History Recording
17. Setting up of Pedodontic & Preventive Dentistry Clinic

PAPER-III: Preventive and Community Dentistry as applied to Pediatric Dentistry

1. Child Psychology
2. Behavior Management
3. Child Abuse & Dental Neglect
4. Preventive Pedodontics
5. Cariology
6. Preventive Dentistry
7. Dental Health Education & School Dental Health Programmes:
8. Fluorides
9. Epidemiology
10. Comprehensive Infant Oral Health Care/Comprehensive cleft care
11. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography

PAPER-IV: Essay

** The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.*

B. Practical Examination : 200 Marks

The Clinical / Practical and Viva-Voce Examinations are conducted for a minimum of two days.

First Day:

1. **Case Discussion, Pulp Therapy i.e. Pulpectomy on a Primary Molar.**

Case Discussion	:	20 marks
Rubber Dam application	:	10 marks
Working length X-ray	:	20 marks
Obturation	:	20 marks
Total		70 marks

2. **Case Discussion, Crown preparation on a Primary Molar for Stainless steel crown and cementation of the same.**

Case discussion	:	10 marks
Crown Preparation	:	20 marks
Crown selection and Cementation	:	20 marks
Total		50 marks

Case Discussion, band adaptation for fixed type of space maintainer and impression making.

Case discussion	:	20 marks
Band adaptation	:	20 marks
Impression	:	20 marks
Total		60 marks

Second Day:

1. **Evaluation of Fixed Space Maintainer and Cementation** : 20 marks

C. Viva Voce : 100 Marks

i. Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

9. ORAL MEDICINE AND RADIOLOGY

OBJECTIVES:

At the end of 3 years of training the candidate should be able to acquire adequate knowledge of the discipline.

KNOWLEDGE:

Theoretical, Clinical and practical knowledge of all oral mucosal lesions, skeletal invdvement finaximo faid region, diagnostic procedures pertaining to them and latest information of imaging modules.

SKILLS AND ATTITUDE:

Three important skills need to be impart and maxillo-facial diseases
1. Diagnostic skill in recognition of oral with radiographic diagnosis and their management
2. Research skills in handling scientific problems pertaining to oral treatment
3. Clinical and Didactic skills in encouraging younger doctors to attain learning objectives

ATTITUDES:

The positive mental attitude and the persistence of continued learning need to be inculcated

COURSE CONTENTS:

Paper I: Applied Basic Sciences

Applied Anatomy

1. Gross anatomy of the face:
   a. Muscles of Facial Expression And Muscles Of Mastication
   b. Facial nerve
   c. Facial artery
   d. Facial vein
   e. Parotid gland and its relations
2. Neck region:
   a. Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures
   b. Facial spaces
   c. Carotid system of arteries, Vertebral Artery, and Subclavian arteries
   d. Jugular system

- Cellular transport
- RMP and action potential

MUSCLE NERVE PHYSIOLOGY:

1. Structure of a neuron and properties of nerve fibers
2. Structure of muscle fibers and properties of muscle fibers
3. Neuromuscular transmission
4. Mechanism of muscle contraction

BLOOD:

1. RBC and Hb
2. WBC – Structure and functions
3. Platelets – functions and applied aspects
4. Plasma proteins
5. Blood Coagulation with applied aspects
6. Blood groups
7. Lymph and applied aspects

RESPIRATORY SYSTEM:

- Air passages, composition of air, dead space, mechanics of respiration with pressure and volume changes
- Lung volumes and capacities and applied aspects
- Oxygen and carbon dioxide transport
- Neural regulation of respiration
- Chemical regulation of respiration
- Hypoxia, effects of increased barometric pressure and decreased barometric pressure

CARDIO-VASCULAR SYSTEM:

- Cardiac Cycle
- Regulation of heart rate/ Stroke volume / cardiac output / blood flow
- Regulation of blood pressure
- Shock, hypertension, cardiac failure

EXCRETORY SYSTEM:

- Renal function tests

Gastro – intestinal tract:

Composition, functions and regulation of:

- Saliva
- Gastric juice
- Pancreatic juice
- Bile and intestinal juice
- Mastication and deglutition

ENDOCRINE SYSTEM:

- Harmones – classification and mechanism of action
- Hypothalamic and pituitary hormones
- Thyroid harmones
- Parathyroid harmones and calcium homeostasis
- Pancreatic harmones
- Adrenal harmones

CENTRAL NERVOUS SYSTEM:

- Ascending tract with special references to pain pathway

SPECIAL SENSES:

- Gustation and Olfaction

BIOCHEMISTRY:

1. **Carbohydrates** – Disaccharides specifically maltose, lactose, sucrose
   - Digestion of starch/absorption of glucose
   - Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis
   - Blood sugar regulation
   - Glycogen storage regulation
   - Glycogen storage diseases
   - Galactosemia and fructosemia
2. **Lipids**
   - Fatty acids- Essential/non essential
   - Metabolism of fatty acids- oxidation, ketone body formation, utilization ketosis
   - Outline of cholesterol metabolism- synthesis and products formed from cholesterol
3. **Protein**
   - Amino acids- essential/non essential, complete/ incomplete proteins
   - Transamination/ Deamination (Definition with examples)
   - Urea cycle
   - Tyrosine-Harmones synthesized from tyrosine
   - In born errors of amino acid metabolism
   - Methionine and transmethylation
4. **Nucleic Acids**
   - Purines/Pyrimidines
   - Purine analogs in medicine
   - DNA/RNA – Outline of structure
   - Transcription/translation
   - Steps of protein synthesis
   - Inhibitors of protein synthesis
   - Regulation of gene function
5. **Minerals**
   - Calcium/Phosphorus metabolism specifically regulation of serum calcium levels
   - Iron metabolism
   - Iodine metabolism
   - Trace elements in nutrition
6. **Energy Metabolism**
   - Basal metabolic rate
   - Specific dynamic action (SDA) of foods
7. **Vitamins**
   - Mainly these vitamins and their metabolic role- specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

PATHOLOGY:

1. Inflammation:
   - Repair and regeneration, necrosis and gangrene
   - Role of complement system in acute inflammation
   - Role of arachidonic acid and its metabolites in acute inflammation
   - Growth factors in acute inflammation
   - Role of molecular events in cell growth and intercellular signaling cell surface receptors
   - Role of NSAIDS in inflammation
   - Cellular changes in radiation injury and its manifestations

   Homeostasis:
   - Role of Endothelium in thrombo – genesis
   - Arterial and venous thrombi
   - Disseminated Intravascular Coagulation

Shock:
- Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory disturbances, ischemic hyperemia, venous congestion, edema, infarction

Chromosomal Abnormalities:
- Marfan's syndrome
- Ehler's Danlos Syndrome
- Fragile X Syndrome

Hypersensitivity:
- Anaphylaxis
- Type II Hypersensitivity
- Type III Hypersensitivity
- Cell mediated Reaction and its clinical importance
- Systemic Lupus Erythmatosus
- Infection and infective granulomas

Neoplasia:
- Classification of Tumors
- Carcinogenesis & Carcinogens – Chemical, Viral and Microbial
- Grading and Staging of Cancer, tumor Angiogenesis, Paraneoplastic Syndrome
- Spread of tumors
- Characteristics of benign and malignant tumors

Others:
- Sex linked agamaglobulinemia
- AIDS
- Management of Immune deficiency patients requiring surgical procedures
- De George's Syndrome
- Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis

PHAMACOLOGY:

1. Definition of terminologies used
2. Dosage and mode of administration of drugs
3. Action and fate of drugs in the body
4. Drugs acting on the CNS
5. Drug addiction, tolerance and hypersensitive reactions
6. General and local anesthetics, hypnotics, antiepileptics, and & tranquilizers
7. Chemotherapeutics and antibiotics
8. Analgesics and anti – pyretics
9. Anti – tubercular and anti – syphilitic drugs
10. Antiseptics, sialogogues, and anti – sialogogues
11. Haematinics
12. Anti – diabetics
13. Vitamins – A B Complex, C, D, E, K
14. Steroids

PAPER-II : Oral And Maxillofacial Radiology

Study includes Seminars / lectures / Demonstrations

1. History of radiology, structure of x – ray tube, production of x – ray, property of x – rays
2. Biological effects of radiation
3. Filtration of collimation, grids and units of radiation
4. Films and recording media
5. Processing of image in radiology
6. Design of x –ray department, dark room and use of automatic processing units
7. Localization by radiographic techniques

8. Faults of dental radiographs and concept of ideal radiograph
9. Quality assurance and audit in dental radiology
10. Extra – oral-imaging techniques
11. OPG and other radiologic techniques
12. Advanced imaging technique like CT Scan, MRI, Ultrasound & thermo graphic
13. Radio nucleotide techniques
14. Contrast radiography in salivary gland, TMJ, and other radiolucent pathologies
15. Radiation protection and ICRP guidelines
16. Art of radiographic report, writing and descriptors preferred in reports
17. Radiograph differential diagnosis of radiolucent, radio opaque and mixed lesions
18. Digital radiology and its various types of advantages

PAPER-III : Oral Medicine, therapeutics and laboratory investigations

1. Study includes seminars / lectures / discussion
2. Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissue including modern diagnostic techniques
3. Laboratory investigations including special investigations of oral and oro – facial diseases
4. Teeth in local and systemic diseases, congenital, and hereditary disorders
5. Oral manifestations of systemic diseases
6. Oro – facial pain
7. Psychosomatic aspects of oral diseases
8. Management of medically compromised patients including medical emergencies in the dental chair
9. Congenital and Hereditary disorders involving tissues of oro facial region
10. Systemic diseases due to oral foci of infection
11. Hematological, Dermatological, Metabolic, Nutritional, & Endocrinal conditions with oral manifestations
12. Neuromuscular diseases affecting oro –facial region
13. Salivary gland disorders
14. Tongue in oral and systemic diseases
15. TMJ dysfunction and diseases
16. Concept of immunity as related to oro – facial lesions, including AIDS
17. Cysts, Neoplasms, Odontomes, and fibro – osseous lesions
18. Oral changes in Osteo – dystrophies and chondro – dystrophies
19. Pre malignant and malignant lesions of oro facial region
20. Allergy and other miscellaneous conditions
21. Therapeutics in oral medicine –clinical pharmacology
22. Forensic odontology
23. Computers in oral diagnosis and imaging
24. Evidence based oral care in treatment planning
25. Molecular Biology

ESSENTIAL KNOWLEDGE:

Basic medical subjects, Oral Medicine, Clinical Dentistry, Management of Medical Emergencies, Oral Radiology, Techniques and Inter – Operation, Diagnosis of Oro – facial Disorders

PROCEDURAL AND OPERATIVE SKILLS:

1st Year:

1. Examination of Patient
   - Case history recordings - 100
   - FNAC - 50
   - Biopsy - 50
   - Observe, Assist, & Perform under supervision
2. Intra – oral radiographs:
   - Perform an interpretation - 500

2nd Year:

1. Dental treatment to medically compromised patients
   - Observe, assist, and perform under supervision
2. Extra – oral radiographs, digital radiography – 20
   - Observe, assist and perform under supervision

Operative skills:

1. Giving intra – muscular and intravenous injections
2. Administration of oxygen and life saving drugs to the patients
3. Performing basic CPR and certification by Red Cross

3rd Year

All the above

- Performed independently – Case history: Routine cases – 100
- Interesting Cases – 25
- Intra – oral Radiographs – 100
- Periapical view – 100
- Bitewing view – 50
- Occlusal view – 50
- Extra – oral radiographs of different views – 100

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SCHEME OF EXAMINATION:

A. Theory

Written examination shall consist of four question papers each of three hours duration. Total marks for each paper will be 100. Paper I, II and III shall consist of two long questions carrying 20 marks each and 6 short essay questions each carrying 10 marks. Paper IV will be on Essay. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PAPER-I	:	**Applied Basic Sciences** : Applied Anatomy, Physiology, Biochemistry, Pathology, and Pharmacology.
PAPER-II	:	Oral and Maxillofacial Radiology
PAPER-III	:	Oral Medicine, therapeutics and laboratory investigations
PAPER-IV	:	Essay

* The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

B. Practical / Clinical Examination : 200 Marks

1st Day

Clinical Case Presentation

2 Spotters	2 x 10 = 20 Marks
2 Short Cases	2 x 15 = 30 Marks
1 Long Case	1 x 50 = 50 Marks
	Total = 100 Marks

Radiology Exercise

I. A) One Intra Oral Radiograph : 10 Marks
   B) One Occlusal Radiograph : 30 Marks

II. A) Two Extra Oral Radiograph : 2 x 30 = 60 Marks
Including technique and interpretation

2nd Day

C. Viva Voce : 100 Marks

i. Viva-Voce examination: 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise: 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

SECTION-VI

ETHICS IN DENTISTRY

INTRODUCTION :

There is a definite shift nsow from the traditional patient and doctor relationship and delivery of dental care. With the advances in science and technology and the increasing needs of the patient, theirs 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 the health care delivery to prepare themselves to deal with these problems. To accomplish this and develop human values, it is desired that all the trainees undergo ethical sensitization by lectures or discussion on ethical issues, discussion of cases with an important ethical component.

COURSE CONTENT :

Introduction to ethics –

- What are ethics?
- What are values and norms?
- How to form a value system in one's personal and professional life?
- Hippocratic oath.
- Declaration of Helsinki, WHO declaration of Geneva, International code of ethics, D.C.I. Code of ethics.

Ethics of the individual –

The patient as a person.
Right to be respected
Truth and confidentiality
Autonomy of decision
Doctor Patient relationship[

Professional Ethics –

Code of conduct
Contract and confidentiality
Charging of fees, fee splitting
Prescription of drugs
Over-investigating the patient
Malpractice and negligence

Research Ethics –

Animal and experimental research/humanness
Human experimentation
Human volunteer research-informed consent
Drug trials
Ethical workshop of cases
Gathering all scientific factors
Gathering all value factors
Identifying areas of value – conflict, setting of priorities
Working out criteria towards decisions