SYLLABUS

MDS - ORAL MEDICINE AND RADIOLOGY (9560)

Notice

1. Amendment made by the Statutory Regulating Council i.e. Dental Council of India in Rules/Regulations of Post Graduate Dental Courses shall automatically apply to the Rules/Regulations of the Mahatma Gandhi University of Medical Sciences & Technology (MGUMST), Jaipur.

2. The University reserves the right to make changes in the syllabus/books/guidelines, fees-structure or any other information at any time without prior notice. The decision of the University shall be binding on all.

3. The Jurisdiction of all court cases shall be Jaipur Bench of Hon'ble Rajasthan High Court only.

RULES & REGULATIONS
MASTER OF DENTAL SURGERY
(3 Years Post Graduate Degree Course)

TITLE OF THE COURSE:
It shall be called Master of Dental Surgery

ELIGIBILITY:

- A candidate for admission to the Master in Dental Surgery course, must possess a degree of Bachelor in Dental Surgery awarded by a University of Institute in India recognized by the Dental Council of 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 approval / recognized dental college.
- 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: The 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.

- **NRI Seats:**

(a) Students from other countries should possess passport, visa and exchange permits valid for the period of their course of study in this institution and should observe the regulations of both central and state governments regarding residential permits and obtain no-objection certificate from the same.
(b) The candidate should have a provisional "Student Visa". If he comes on any other visa and is selected for admission, he will have to first obtain a student visa from his country and then only he will be allowed to join the course. Therefore it is imperative to obtain provisional student visa before coming for counselling.
(c) This clause is applicable to NRI/ Foreign students only.

CRITERIA FOR SELECTION FOR ADMISSION:
There shall be 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.

- **NRI Quota**

15% of total seats are earmarked for foreign national/PIO/OCI/NRI/Ward of NRI/NRI sponsored candidates who would be admitted on the basis of merit obtained in NEET MDS or any other criteria laid down by Central Government/DCI.

- **Remaining seats (Other than NRI Quota seats)**

(a) Admissions to the remaining 85% of the seats shall be made on the basis of the merit obtained at the NEET conducted by the National Board of Examinations or any other authority appointed by Government of India for the purpose.
(b) The admission policy may be changed according to the law prevailing at the time of admission.

- **Qualifying Criteria for Admission**:

(a) The candidate has to secure the following category-wise minimum percentile in NEET-MDS Examination for admission to post-graduate courses held in a particular academic year.

General	50th Percentile
Person with locomotory disability lower limbs	45th Percentile
Scheduled Caste, Scheduled Tribes, Other Backward Classes	40th Percentile

The percentile shall be determined on the basis of highest marks secured in the All-India common merit list in NEET-MDS for post-graduate courses: Further, when sufficient number of candidates in the respective categories fail to secure minimum marks as prescribed in NEET-MDS held for any academic year for admission to post-graduate courses, the Central Government in consultation with the Council may, at its discretion lower the minimum marks required for admission to post-graduate courses for candidates belonging to respective categories and marks so lowered by the Central Government shall be applicable for the said academic year only.

(b) The reservation of seats in dental college/institutions for respective categories shall be as per applicable laws prevailing in States / Union territories. An all India merit list as well as State wise merit list of the eligible candidates shall be prepared on the basis of the marks obtained in NEET-MDS Test and candidates shall be admitted to post-graduate course from the said merit list only. In determining the merit of candidates who are in service of Government / public authority, weightage in the marks may be given by the Government / competent authority as an incentive upto 10% of the marks obtained for each year of service in remote and/or difficult areas upto the maximum of 30% of the marks obtained in NEET-MDS. The remote and difficult areas shall be as defined by State Government / competent authority from time to time.

(c) A candidate who has failed to secure the minimum percentile as prescribed in these regulations, shall not be admitted to any post-graduate courses in any academic year.

(d) Minimum 5% seats of the annual sanctioned intake capacity shall be filled up by candidates with locomotory disability of lower limbs between 50% to 70%: In case any seat in this quota remains unfilled on account of unavailability of candidates with locomotory disability of lower limbs between 50% TO 70% then any such unfiled seat shall be filled up by persons with locomotory disability of lower limbs between 40% to 50 – before they are included in the annual sanctioned seats for general category candidates: This entire exercise shall be completed by each dental college / institution as per the statutory time schedule for admission.

ENROLMENT AND ELIGIBILITY:

Every candidate who is admitted to MDS course in Mahatma Gandhi Dental College & Hospital shall be required to get himself/herself enrolled with the Mahatma Gandhi University of Medical Sciences & Technology after paying the prescribed eligibility and enrolment fees.

The candidate shall have to submit an application to the MGUMST for the enrolment/eligibility along with the following original documents with the prescribed fees (upto November 30 of the year of admission without late fees and upto December 31 of the year of admission with late fees) –

(a) BDS pass degree certificate issued by the University.
(b) Marks cards of all the university examinations passed (I to Final BDS).
(c) Attempt Certificate issued by the Principal.
(d) Certificate regarding the recognition of the Dental College by the Dental Council of India.
(e) Completion of paid Rotatory Internship certificate from a recognized dental college.
(f) Registration by any State Dental Council.
(g) Migration certificate issued by the concerned university.

(h) Proof of SC/ST or other reserve category, as the case may be.

REGISTRATION:
Every candidate who is admitted to MDS course in Mahatma Gandhi Medical College & Hospital shall be required to get himself/herself registered with the Mahatma Gandhi University of Medical Sciences & Technology after paying the prescribed registration fees.

The candidate shall have to submit an application to the MGUMST for registration with the prescribed fees (upto November 30 of the year of admission without late fees upto December 31 of the year of admission with late fees).

DURATION OF THE COURSE:
The Course will commence on 1st May of each academic year and shall be of three years duration. All the candidates for the degree of MDS are required to pursue the recommended course for at least three academic years as full time candidates in an institution affiliated to and approved for Postgraduate studies by Mahatma Gandhi University of Medical Sciences & Technology, Jaipur and recognized by the Dental Council India.

METHOD OF TRAINING:

- The period of training for the award of 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 the same as MDS Course in the concerned speciality except that they are not required to (i) to undergo study and training in Basic Sciences (ii) pass the PART-I examination of MDS course. However, they have to submit the dissertation work, as part of the post graduate programme.
- 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 speciality, shall be as under-

(a) Lectures
(b) Journal review
(c) Seminars
(d) Symposium
(e) Clinical postings
(f) Clinico-Pathological conference
(g) Interdepartmental meetings
(h) Teaching skills
(i) Dental education programmes
(j) Conferences/ Workshops/ Advanced Courses
(k) Rotation and posting in other Departments
(l) Dissertation/ Thesis

- All the students of the specialty 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 undergraduates: 1 in a year

(e) Scientific paper/ poster presentations in state/ national level conferences: 4 papers/ posters during three years of training workshop period
(f) Clinic-pathological conferences: 2 presentations during three years of training period.
(g) Scientific publications (optional) : one publication in any indexed scientific journal
(h) Submission of synopsis: one synopsis within six months from date of commencement of the course.
(i) Submission of Dissertation months: one dissertation six months before appearing for the university examination
(j) Submission of library dissertation: one dissertation within eighteen months from the date of commencement of the course

ATTENDANCE, PROGRESS AND CONDUCT:

- A candidate pursuing MDS course should work in the department of the institution for the full period as a full time student. Every candidate shall secure (80 % attendance during each academic year). No candidate is permitted to run a clinic/work in clinic/laboratory/nursing home/hospital/any similar establishment while studying postgraduate course. No candidate shall join any other course of study or appear for any other examination conducted by this university or any other university in India or abroad during the period of registration. Each year shall be taken as a unit for the purpose of calculating attendance.
- Every candidate shall attend symposia, seminars, conferences, journal review meetings, grand rounds, CPC, case presentation, clinics and lectures during each year as prescribed by the department and not absent himself / herself from work without valid reasons. Every candidate shall have not less than 80 percent of attendance in each year of the course. However, candidates should not be absent continuously as the course is a full time one.

MIGRATION:

Under no circumstances, the migration or the transfer of students undergoing post-graduate Degree/ Diploma shall not be permitted by the university or the authority. No interchange of the specialty in the same institution or in any other institution shall be permitted after the date of commencement of session.

MONITORING PROGRESS OF STUDIES- WORK DIARY / LOG BOOK:

Every candidate shall maintain a work diary in which his/her participation in the entire training programme conducted by the department such as reviews, seminars, etc. has to be chronologically entered. The work scrutinized and certified by the Head of the Department and Head of the Institution is to be presented in the University practical/clinical examination.

(a) Periodic tests: There shall be three tests; two of them shall be annual tests, one each at the end of first year and the second year. The third test shall be held three months before the final examination; tests shall include written papers, practical/clinical and viva voce.
(b) Records: Records and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University when called for.

DISSERTATION:

- Every candidate pursuing MDS degree course is required to carry out work on research project under the guidance of a recognized post graduate teacher . Then such a work shall be submitted in the form of a dissertation. The dissertation is aimed to train a

postgraduate student in research methods & techniques. It includes identification of a problem, formulation of a hypothesis, review of literature, getting acquainted with recent advances, designing of a study, collection of data, critical analysis, comparison of results and drawing conclusions.

- Every candidate shall submit to the Registrar of the University in the prescribed format a synopsis containing particulars of proposed dissertation work on or before the dates notified by the University. The synopsis shall be sent through the proper channel. Such synopsis will be reviewed and the dissertation topic will be registered by the University. No change in the dissertation topic or guide shall be made without prior notice and permission from the University.
- The dissertation should be written under the following headings:

(a) Introduction
(b) Aims and Objectives of study
(c) Review of Literature
(d) Material and Methods
(e) Results
(f) Discussion
(g) Conclusion
(h) Summary
(i) References
(j) Tables
(k) Annexure

- The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. The guide, head of the department and head of the Institution shall certify the dissertation. Four copies of dissertation thus prepared shall be submitted to the Registrar for evaluation, six months before final examination on or before the dates notified by the University. Examiners appointed by the University shall value the dissertation. Approval of dissertation work is an essential precondition for a candidate to appear in the University examination.
- Guide: The academic qualification and teaching experience required for recognition by this University as a guide for dissertation work is as laid down by Dental Council of India / Mahatma Gandhi University of Medical Sciences & Technology, Jaipur.
- Co-guide: A co-guide may be included provided the work requires substantial contribution from a sister department or from another institution recognized for teaching/training by Mahatma Gandhi University of Medical Sciences & Technology, Jaipur / Dental Council of India. The co-guide shall be a recognized postgraduate teacher of Mahatma Gandhi University of Medical Sciences & Technology, Jaipur.
- Change of guide: In the event of a registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the University.

ELIGIBILITY TO APPEAR FOR UNIVERSITY EXAMINATION:

- Eligibility: The following requirements shall be fulfilled by every candidate to become eligible to appear for the final examination.

(a) **Attendance**: Every candidate shall have fulfilled the attendance prescribed by DCI during each academic year of the postgraduate course. Every candidate shall secure (80 % attendance during each academic year).

(b) **Progress and Conduct**: Every candidate shall have participated in seminars, journal review meetings, symposia, conferences, case presentations, clinics and didactic lectures during each year as designed by the department. The candidate should have exemplified good conduct throughout.

(c) **Work diary and Logbook**: Every candidate shall maintain a work diary for recording his/her participation in the training programme conducted in the department. The work diary and logbook shall be verified and certified by the Department Head and Head of the Institution.

(d) Internal assessments shall be held every 6 months.

- The certification of satisfactory progress by the Head of the Department/ Institution shall be based on (a), (b) and (c) mentioned above.

SCHEME OF MDS EXAMINATIONS:

- The scheme of examination in respect of all the subjects of MDS shall be as under :
- The examinations shall be organised on the basis of marking system.
- Every student during the period of his post graduate studies would be required to submit evidence of the following so as to make him eligible to appear at the final examination of the University :-

(a) Scientific Publication in indexed journal - 1
(b) Scientific Presentations - 3
(c) Specialty Conferences/ PG Conventions attended - 3

- Every student would be required to appear in and qualify the Pre-University examination conducted at the college level .Post graduate students who fail to appear in or do not qualify the Pre-University examination shall not be permitted to appear in the final examination of the University.
- The University shall conduct not more than two examinations in a year for any subject with an interval of not less than 4 months and not more than 6 months between the two examinations.
- The examinations shall consist of Thesis, Theory papers and Clinical/ Practical and Oral examinations.

(a) **Thesis** : Thesis shall be submitted at least six months before the Theory and Clinical/ Practical and Oral examinations.

(1) The thesis shall be examined by a minimum of three examiners- one Internal and two External examiners.

(2) Only on the acceptance of the thesis by two examiners, the candidate shall be eligible to appear for the final examination.

(b) **Theory** :

(1) Theory exams will be conducted in 2 parts.

Part - I – Shall consist of one paper; Applied basic sciences paper at the end of the first year of MDS.The Paper I of Part I shall carry 100 marks. The question paper shall be set and evaluated by the paper setter (external examiner of the recognized university by DCI from out of the state). There shall be 10 questions of 10 marks each. The candidates shall have to secure a minimum of 50% in the basic Sciences and shall have to pass the Part I examination at least 6 months prior to the final (Part II) examination. There shall be one internal and one external examiner for three students appointed by the affiliating university for evaluating the answer scripts of the same speciality. However, the number of examiner/s may be increased with the corresponding increase in the number of students. Answer books shall be evaluated by the internal and external examiner/s and average marks shall be computed.

Part-II - Consisting of 3 papers, out of which 2 will be pertaining to the specialty and one shall be of Essays. Paper I and Paper II shall consist of 2 long answer questions carrying 25 marks each and five questions carrying 10 marks each. In paper III, three questions will be given and student has to answer any two questions. Each question carries 50 marks. There shall be four examiners in each subject. Out of them, two (50%) shall be external examiners and two (50%) shall be internal examiners. Both external examiners shall be from a university other than the affiliating university and one examiner shall be from a university of different state. Answer books shall be evaluated by four examiners, two internal and two external and average marks shall be computed.

(2) Each theory paper examination shall be of three hours duration.

(3) Each theory paper shall carry maximum 100 marks.

(c) **Clinical / Practical and Oral Examination**

(1) Clinical / Practical (of 200 marks) and Oral Examination (of 100 marks) will be conducted by at least four examiners, out of which two (50%) shall be External examiners who shall be invited from other recognized Universities from outside the State. The practical/ clinical examination in all the specialties shall be conducted for 6 candidates in two days: provided that practical/ clinical examination may be extended for one day, if it is not complete in two days.

(2) A candidate will be required to secure at least 50% (viz. 150/300) marks in the Practical including clinical and viva voce examinations.

- A candidate shall be required to secure at least 50% marks in theory papers and 50% marks in practical (including clinical & viva voce) separately to pass MDS Examination.

GRACE MARKS:

- No grace marks will be provided in MDS examinations.

REVEALUATION/SCRUTINY:

- No Revaluation shall be permitted in the MDS examinations. However, the student can apply for scrutiny of the answer books.
- If a candidate fails in MDS Part-II examination in one or more theory paper(s) or practical, he/she shall have to reappear in all theory papers as well as practical.

APPOINTMENT OF EXAMINERS:

- Qualification and experience of Examiners

The qualification and experience for the appointment of an examiner shall be as under:-

(1) shall possess qualification and experience of Professor in a post graduate degree programme.

(2) A person who is not a regular post graduate teacher in the subject shall not be appointed as an examiner.

(3) The internal examiner in a subject shall not accept external examinership in a college for the same academic year.

(4) No person shall be appointed as an external examiner for the same institution for more than 2 consecutive years. However, if there is a break of one year, the person can be reappointed.

- Criteria for pass certificate

To pass the university examination, a candidate shall secure in both theory examination and in practical/ clinical including viva voce independently with an aggregate of 50% of total marks Allotted (50 out of 100 marks in part I examination and 150 marks out of 300 in part II examination in theory and 150 out of 300, clinical plus viva voce together). A

candidate securing marks below 50% as mentioned above shall be declared to have failed in the examination. A candidate who is declared successful in the examination shall be granted a Degree of Master of Dental Surgery in respective speciality.

ORAL MEDICINE AND RADIOLOGY (9560)

1. GOAL:

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

(1) Diagnose the common disorders of orofacial region by clinical examination and with the help of such investigations as may be required and medical management of oro-facial disorders with drugs and physical agents.

(2) Show competence in practicing and teaching the subject and incorporating further research as feasible.

2. OBJECTIVES:

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

(1) Diagnose all oral and maxillofacial pathologies
(2) Demonstrate treatment planning of the above
(3) Perform dental treatment of medically compromised patients
(4) Treat oromucosal diseases competently
(5) Demonstrate importance, role, use and techniques of radiographs/digital radiograph and other imaging methods in diagnosis.
(6) Interpret latest imaging modalities
(7) Demonstrate latest therapeutic approaches of the maxillofacial region
(8) Demonstrate knowledge of investigations pertaining to oro maxillofacial pathologies and relevant systemic diseases
(9) Perform basic chair side investigative procedures
(10) Refer appropriately and demonstrate professionalism

3. SYLLABUS:

3.1 Theory

Part- I (9561) Applied Basic Science

(Applied Basic Science, Applied Anatomy, Physiology, Biochemistry, Pathology Microbiology, Pharmacology, Research Methodology & Biostatistics)

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
    i. Internal jugular
    ii. 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
    i. Pituitary, thyroid, parathyroid
(j) Sympathetic chain
(k) Cranial nerves – V, VII, IX, XI, & XII
    I. Thyroid
    ii. Parathyroid
(l) Exocrine glands
    I. Parotid

(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:
(a) Gross salient features of brain and spinal cord with references to attachment of cranial nerves to the brainstem.
    i. Detailed study of the cranial nerve nuclei of V, VII, IX, X, XI, XII
    ii. Osteology: Comparative study of fetal and adult skull Mandible: Development, ossification, age changes and evaluation of mandible in 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
    I. Classification

ii. Composition
(c) Cellular transport
(d) 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 respiration with 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:
I. Saliva
ii. Gastric juice
iii. Pancreatic juice
iv. Bile and intestinal juice
v. 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
   (a) Disaccharides specifically maltose, lactose, sucrose
   (b) Digestion of starch / absorption of glucose
   (c) Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis
   (d) Blood sugar regulation
   (e) Glycogen storage regulation
   (f) Glycogen storage diseases
   (g) 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) In born errors of amino acid metabolism
   (f) Methionine and transmethylation

(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/Phosphorous 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 arachidonic acid and its metabolites in acute inflammation
   (d) Growth factors in acute inflammation
   (e) Role of molecular events in cell growth and intercellular signaling cell surface receptors
   (f) Role of NSAIDS in inflammation
   (g) Cellular changes in radiation injury and its manifestations

(2) Homeostasis
   (a) Role of Endothelium in thrombogenesis
   (b) Arterial and venous thrombi
   (c) Disseminated Intravascular Coagulation
(3) Shock
   (a) Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory disturbances, ischemic hyperemia, venous congestion, edema, infarction
(4) Chromosomal Abnormalities
   (a) Marfan's syndrome
   (b) Ehler'sDanlos Syndrome
   (c) Fragile X Syndrome
(5) Hypersensitivity
   (a) Anaphylaxis
   (b) Type II Hypersensitivity
   (c) Type III Hypersensitivity
   (d) Cell mediated reaction and its clinical importance
   (e) Systemic Lupus Erythmatosus
   (f) Infection and infective granulomas
(6) Neoplasia
   (a) Classification of Tumors
   (b) Carcinogenesis & Carcinogens – Chemical, Viral and Microbial
   (c) Grading and Staging of Cancer, Tumor Angiogenesis, Paraneoplastic Syndrome
   (d) Spread of tumors
   (e) Characteristics of benign and malignant tumors
(7) Others
   (a) Sex linked agammaglobulinemia
   (b) AIDS
   (c) Management of Immune Deficiency patients requiring surgical procedures
   (d) De George's Syndrome
   (e) Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis

Pharmacology

(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

Part-II Paper I (9562) - Oral and Maxillofacial Radiology

Study includes Seminars / Lecturers / 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, CBCT, MRI, Ultrasound & thermographic
(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.

Part-II Paper II (9563) - 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 like biopsies, FNAC, FNAB, cytosmears staining etc.
(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
(26) LASER Therapy

(27) TENS Therapy
(28) USG Therapy

Part-II Paper-III (9564) - Descriptive and analyzing type question.

3.2 Practical

Essential Knowledge
Basic medical subjects, Oral Medicine, Clinical Dentistry, Management of Medical Emergencies, Oral Radiology, Techniques and Inter-operation, Diagnostic 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 and interpretation – 500

3. Full mouth intra oral radiograph tracings – 3

4. Age estimation using radiographs – 10

2nd Year:

1. Dental treatment to medically compromised patients – 2

- Observe, assist, and perform under supervision

2. Extra oral radiographs, digital radiography – 20

- Observe, assist and perform under supervision, Interpretation

3. Extra Oral radiographs tracings – 3
4. CBCT Interpretations – 5

Operative skills:

1. Giving intra muscular and intravenous injections
2. Administration of oxygen and lifesaving drugs to the patients
3. Performing basic CPR and certification by Red Cross or similar authorized organization - Performed independently – Case history: Routine cases – 100

- Interesting Cases – 25
- OPG – 50
- Periapical view – 100
- Bitewing view – 50
- Occlusal view – 50
- Extra – oral radiographs of different views – **25**
- CBCT Interpretations – 10
- Treatment of mucosal lesions with LASER – 3

3rd Year
All the above

3.3 Monitoring Learning Progress:

The learning progress of each candidate will be monitored through continuous appraisal and regular assessment. The monitoring is to be done based on participation of students in various teaching / learning activities using structured checklists that assess various aspects.

4. SCHEME OF EXAMINATION

4.1 Theory : Total 400 Marks

Part-I : Basic Sciences Paper – 100 Marks
Part – II : Paper-I, Paper-II & Paper-III- 300 Marks (100 Marks for each Paper)

(1) Part-I : examination shall consist of Basic sciences paper of three hours duration and shall be conducted at the end of First year of MDS courses. Paper shall be of 100 marks and there shall be 10 questions of 10 marks each. The candidates shall have to secure a minimum of 50% in the Basic Sciences and shall have to pass the Part-I examination at least six months prior to the final (Part-II) examination.

(2) Part – II Examination shall be conducted at the end of Third year of MDS course and shall consist of Paper-I, Paper-II and 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 which 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.

Nomenclature of Papers

Part-I (9561) Applied Basic Science
(Applied Basic Science, Applied Anatomy, Physiology, Biochemistry, Pathology Microbiology, Pharmacology, Research Methodology & Biostatistics)

Part - II

Paper I (9562) Oral and Maxillofacial Radiology
Paper II (9563) Oral Medicine, therapeutics and laboratory investigations
Paper III (9564) Descriptive and analyzing type question.

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.

4.2 Practical Examination - 200 Marks

(1) Clinical Case Presentation - 100 Marks

2 Spotters	2 x 10 = 20 Marks (10 marks for interpreting Advance Imaging like CT Scan, CBCT,MRI etc.)
2 Short Cases	2 x 15 = 30 Marks (Incisional/excisional Biopsy in one of the short cases)
1 Long Case	1 x 50 = 50 Marks

(2) Radiology Exercise - 100 Marks

(a) i. One Intra Oral Radiograph : 10 Marks
ii. One Occlusal Radiograph : 30 Marks

(b) i. Two Extra Oral Radiograph including technique and interpretation : 2 x 30 = 60 Marks

(3) 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.

5. SECTION VI - ETHICS IN DENTISTRY

(1) Introduction

There is a definite shift now from 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 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.

(2) Course Content

(a) Introduction to ethics –
   i. What are ethics?
   ii. What are values and norms?
   iii. How to form a value system in one's personal and professional life?
   iv. Hippocratic oath.
   v. Declaration of Helsinki, WHO Declaration of Geneva, International Code of Ethics, D.C.I. Code of Ethics.

(3) Ethics of the Individual

(a) The patient as a person
(b) Right to be respected
(c) Truth and confidentiality
(d) Autonomy of decision
(e) Put a hyphen in between (Doctor - Patient) when describing their relationship

(4) Professional Ethics

(a) Code of conduct
(b) Contract and confidentiality
(c) Charging of fees, fee splitting
(d) Prescription of drugs
(e) Over-investigating the patient
(f) Malpractice and negligence

(5) Research Ethics

(a) Animal and experimental research / humanity
(b) Human experimentation
(c) Human volunteer research-informed consent
(d) Drug trials

(e) Ethical workshop of cases
(f) Gathering all scientific factors
(g) Gathering all value factors
(h) Identifying areas of value – conflict, setting of priorities
(i) Working out criteria towards decisions

6. BOOKS

Core Books

(1) Francis C.M., Medical Ethics, 2nd Edn, 2004, Jaypee Brothers, New Delhi.
(2) Ethical Guidelines for Biomedical Research on Human Subjects, Indian Council of Medical Research, New Delhi, 2000
(3) Burket, Lester W. Burker's oral medicine: Diagnosis and treatment, ED 10 2003.
(4) White, Stuart C and Pharoah, Michael J : Oral radiology: Principles and interpretation. Ed. 6, 2009.
(5) Wood, Norman K and Goaz, Paul, W. : Differential diagnosis of oral lesions. Ed. 3, 1989.
(6) John R, Pramod. Principles and practice of oral medicine and paticul evaluation. Ed. 1, 2003.
(7) Langland, Olaj E and Langlais, Robert P. Principles of dental imaging. 1997.
(8) Beechi, Brian. Interpreting dental Radiograph, Ed. 2, 1981.

Journals

(1) Journal of Oriofacial Pain.
(2) Oral Surgery, Oral Path, Oral Med., Oral Radio., and Endodontology.
(3) Oral Oncology
(4) BMC Oral Health.
(5) Oral Disease
(6) Journal of Oral Pathology and Medicine.
(7) Journal of Indian Academy of Oral Medicine and Radiology.

MODEL PAPER

M.D.S. Part-I **Bas.Sci.-I**
9561

Master of Dental Surgery Part-I Examination Month Year

ORAL MEDICINE AND RADIOLOGY

Applied Basic Sciences

(Applied Basic Science, Applied Anatomy, Physiology, Biochemistry, Pathology Microbiology, Pharmacology, Research Methodology & Biostatistics)

Time: Three Hours
Maximum Marks: 100

Attempt all Questions.
All the parts of one question should be answered at one place in sequential order.
Illustrate your answers with suitable diagrams, wherever necessary.

Q.1	Apoptosis.	10
Q.2	Calcium metabolism and its role in diseases of the jaws.	10
Q.3	Characteristics of benign and malignant tumors.	10
Q.4	Anticonvulsants.	10
Q.5	Paranasal air sinuses and their applied aspects.	10
Q.6	Applied aspects of the anatomy of the tongue.	10
Q.7	Mechanism of action of local anaesthetics.	10
Q.8	Oral biofilms in health and disease.	10
Q.9	Anaphylaxis.	10
Q.10	Innate immunity.	10

MODEL PAPER

M.D.S. **Oral.Max.Radio.-I**
9562

Master of Dental Surgery Part-II Examination Month Year
ORAL MEDICINE AND RADIOLOGY

Paper I
Oral and Maxillofacial Radiology

Time: Three Hours
Maximum Marks: 100

Attempt all Questions.
All the parts of one question should be answered at one place in sequential order.
Illustrate your answers with suitable diagrams, wherever necessary.

Q.1 Explain the principles of panoramic radiography. Discuss in detail working, artefacts, advantages, disadvantages and limitations of the technique. (25)

Q.2 Discuss in detail radiation protection. (25)

Q.3 Short Notes 5x10= 50

(a) Contrast radiography

(b) Multilocularradiolucencies

(c) Immunofluorescence

(d) Newer caries detection techniques

(e) Object localization in conventional radiology

MODEL PAPER

M.D.S. Part-II **Oral.Med.Ther.Lab.Inv.-II**
9563

Master of Dental Surgery Part-II Examination Month Year
ORAL MEDICINE AND RADIOLOGY

Paper II
Oral Medicine, Therapeutics and Laboratory Investigations

Time: Three Hours
Maximum Marks: 100

Attempt all Questions.
All the parts of one question should be answered at one place in sequential order.
Illustrate your answers with suitable diagrams, wherever necessary.

Q.1 Classify vesiculo-bullous lesions of the oral cavity. Describe etiology, clinical features and DD of Pemphigus vulgaris. Also mention various treatment modalities, complications and the management of the complications. (25)

Q.2 Discuss in detail management of a pregnant patient in routine dental care. (25)

Q.3 Short Notes 5x10= 50

(a) Investigations in oral cancer

(b) Treatment of MPDS and its rationale

(c) Treatment of aphthous ulcers

(d) Emergencies in a dental clinic

(e) Pre and post operative oral care of a patient subjected to radiation therapy.

MODEL PAPER

M.D.S. Part-II **Essay.-III**
9564

Master of Dental Surgery Part-II Examination Month Year
ORAL MEDICINE AND RADIOLOGY

Paper III
Descriptive and analyzing type question.

Time: Three Hours
Maximum Marks: 100

Answer any two questions.
All the parts of one question should be answered at one place in sequential order.
Illustrate your answers with suitable diagrams, wherever necessary.

Q.1	Lasers in Oral medicine clinics	50
Q.2	Cone beam computed tomography	50
Q.3	Therapeutics in oral medicine – clinical pharmacology	50