MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH

(Deemed to be University U/S 3 OF UGC ACT, 1956)

12, Vembuliamman Koil Street, West K.K. Nagar, Chennai – 600 078

FACULTY OF DENTAL SCIENCES

MASTER OF DENTAL SURGERY (MDS) IN ORAL MEDICINE AND RADIOLOGY

REGULATIONS 2017 AND SYLLABUS

Effective from Academic year 2017-2018

Effective from the Academic Year 2017

MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH

MEENAKSHI AMMAL DENTAL COLLEGE AND HOSPITAL

(Affiliated to MAHER)

MASTER OF DENTAL SURGERY (MDS) IN ORAL MEDICINE AND RADIOLOGY REGULATIONS -2017

VISION AND MISSION OF

MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH

VISION

To be a world-class institution, transforming society through value-based diverse programs and healthcare advancements, leading to the all-around development of human resources, knowledge, innovation, entrepreneurship, and research.

MISSION

To become an institute of eminence by developing world-class professionals in the field of healthcare, science, liberal arts, technology and research with a focus on the societal good.

To create an enabling state-of-the-art infrastructure, intellectual capital and provide best-in- class learning experience with a freedom to innovate and invent.

To foster values and ethics so as to develop students and learners into responsible citizens of the Nation and the world.

MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH

MEENAKSHI AMMAL DENTAL COLLEGE AND HOSPITAL

(Affiliatedto MAHER)

MASTER OF DENTAL SURGERY (MDS) IN PUBLIC HEALTH DENTISTRY

REGULATIONS -2017

VISION AND MISSION OF

MEENAKSHI AMMAL DENTAL COLLEGE AND HOSPITAL

VISION

To create a center of excellence in all dental specialties by imparting quality education to undergraduate and postgraduate students and to deliver a quality dental care to the public. To raise the standard of dental education on par with the global standards and to perform high quality dental research that will benefit the public.

MISSION

To enhance the quality of dental education to world class standards

To train the students in basic and advanced techniques used in delivering dental care

To provide high quality dental treatment at affordable cost

To motivate the students to do ethical clinical practice

MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH MEENAKSHI AMMAL DENTAL COLLEGE AND HOSPITAL

(Affiliatedto MAHER)

MASTER OF DENTAL SURGERY (MDS) IN ORAL MEDICINE AND RADIOLOGY

REGULATIONS -2017

VISION AND MISSION OF

DEPARTMENT OF ORAL MEDICINE AND RADIOLOGY

VISION

To create a center of excellence of Oral Medicine and Radiology by imparting quality education to undergraduate and postgraduate students and delivering quality dental care to the public. Furthermore, to enable them to diagnose all the diseases of the oral and maxillofacial region, including the oral manifestations of the systemic diseases. Finally, to raise the standard of oral medicine and radiology education on par with the global standards and to perform high-quality dental research that will benefit the public.

MISSION

- To impart the ability to diagnose and manage common oral and maxillofacial diseases
- To train to diagnose and manage medical disorders involving mouth and jaws
- To provide dental care for medically-complex patients
- To provide advanced training in managing Oral mucosal diseases, Salivary gland disorders, and Facial pain syndromes
- To train in the production and interpretation of images and data produced by all modalities of radiant energy used for the diagnosis and management of diseases, disorders, and conditions of the oral and maxillofacial region

MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH MEENAKSHI AMMAL DENTAL COLLEGE AND HOSPITAL

(Affiliated to MAHER)

MASTER OF DENTAL SURGERY (MDS) IN ORAL MEDICINE AND RADIOLOGY

REGULATIONS -2017

PROGRAMME EDUCATION OBJECTIVES (PEOs)

PEO 1 - To prepare graduates for a successful technical and professional career in Oral Medicine and Radiology.

PEO 2 - To inculcate professional and ethical attributes in the students and to promote lifelong learning of attributes related to Oral Medicine and Radiology.

PEO 3 - To develop graduates with enhanced technical acumen, aptitude, communication and professional skills to deliver quality dental care to patients.

PEO 4 - To enable students understand the principles of diagnosis and management of oral conditions in all patients with/without systemic diseases.

MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH MEENAKSHI AMMAL DENTAL COLLEGE AND HOSPITAL

(Affiliated to MAHER)

MASTER OF DENTAL SURGERY (MDS) IN ORAL MEDICINE AND RADIOLOGY

REGULATIONS -2017

PROGRAM OUTCOMES (POs)

PO 1-	**Technical Skills-**	Ability to identify the normal structures of the oral cavity and diagnose the common dental/oral diseases
PO-2	**Diagnostic Skills**	Diagnose common dental disorders and also all the lesions of the oral and maxillofacial region Diagnose the oral manifestations of the systemic disorders Interpret all the images and data acquired by all imaging techniques Identify the potentially malignant disorders and their medical management and regular follow-up.
PO-3	**Knowledge Skills**	Adequate knowledge about medical complications that can arise while treating compromised patients and take prior precautions/ consent and coordination from the concerned medical specialist. Adequate knowledge about common laboratory investigations and interpretation of its results.
PO-4	**Advanced Skills**	Provide dental care for the patients with complex medical conditions with necessary oral health modifications Atleast with robust knowledge about recent advances in dentistry.

PO-5	**Communication Skills**	Skills of oral health promotion

MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH MEENAKSHI AMMAL DENTAL COLLEGE AND HOSPITAL

(Affiliated to MAHER)

MASTER OF DENTAL SURGERY (MDS) IN ORAL MEDICINE AND RADIOLOGY

REGULATIONS -2017

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO-1 The ability to take clinical history, perform thorough clinical examination, advice necessary investigations, do necessary referrals as and when required, arrive at the final diagnosis of the diseases of the oral and maxillofacial region

PSO-2 The ability to comprehend and put forth the treatment protocol taking into consideration the co-existing medical disorders with necessary oral health care modifications for that particular patient

PSO-3 To identify and treat the uncommon disorders of the oral cavity like the salivary gland disorders, oral mucosal lesions and the potentially malignant and malignant disorders.

MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH MEENAKSHI AMMAL DENTAL COLLEGE AND HOSPITAL

(Affiliated to MAHER)

MASTER OF DENTAL SURGERY (MDS) IN ORAL MEDICINE AND RADIOLOGY REGULATIONS -2017

In exercise of the powers conferred by the Board of Management, Meenakshi academy of higher education and research, deemed to be University, Chennai hereby makes the following Regulations:

1. SHORT TITLE

These Regulations shall be called "THE REGULATIONS FOR THE MASTER OF DENTAL SURGERY (MDS) DEGREE PROGRAM OF MEENAKSHI ACADEMY OF HIGHER EDUCATION AND RESEARCH" deemed to be University.

2. COMMENCEMENT

They shall come into force from the academic year 2019-20 onwards.

The Regulations and the Syllabus are subject to modifications by the Academic council and board of studies from time to time.

3. TITLE OF THE PROGRAM

The program shall be called Master of Dental Surgery (MDS) in Oral Medicine and Radiology

4. SYLLABUS

The syllabus for MDS PROGRAM includes both Applied Basic Sciences and subjects of pertaining to the department of Oral Medicine and Radiology

5. ELIGIBILITY FOR ADMISSION

(a) A candidate for admission to the Master in Dental Surgery Program, 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 rotatory 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:-

(b) The candidate is to get a temporary registration from the Dental Council of India 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:

(c) Provided further that temporary registration to such foreign national shall be subject to the condition that such person is duly registered as a dental 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. CRITERIA FOR SELECTION

There shall be a uniform NEET for admission to the post-graduate dental Programs 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. ADMISSION PROCEDURE

Admission shall be made as per the Government and University norms.

8. CUT-OFF DATES FOR ADMISSION TO EXAMINATION

The cut-off date for admission, even for stray vacancies, in the Master of Dental Surgery

Program shall be 31st of May, every year.

9. COMMENCEMENT OF THE PROGRAM

The academic session shall be commenced from 1st of May

10. DURATION OF THE PROGRAM

The period of training for the award of the MDS PROGRAM shall be of three years duration for three academic years as full time candidates in the institution including the period of examination. Provided that the time period required for passing out of the MDS PROGRAM shall be a maximum of six years from the date of admission in said Program

11. METHOD OF TRAINING

During the period of training, 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	Journal Clubs :	5 every year
b	Seminars:	5 every year
c	Clinical Case Presentations:	4 every year
d	Lectures taken for undergraduates:	1 every year
e	Scientific Paper / Poster Presentations:	4 papers/posters during In State / National Level Conferences / duing three years of training
f	Clinico 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:	commencement of the Program
i	Submission of Dissertation:	one dissertation within six months before appearing for the university examination

k	Submission of Library Dissertation:	one dissertation within eighteen months from the date of commencement of the program

12. MONITORING PROGRESS OF THE STUDIES

i. Every Post Graduate candidate shall maintain a record of skills [Log Book] he has acquired during the three years training period, certified by the various Heads of Departments he has undergone training.

ii. The candidate should record of his / her participation in the training programme conducted by the department such as journal reviews, seminars, etc. in the Log book.

iii. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.

iv. The Head of the Department shall scrutinize the Log Book every 3 months.

v. At the end of the Program, the candidate should summarize the contents and the Log Book certified by the Head of the Department and Head of the Institution.

vi. The Log Book should be submitted at the time of University practical / Clinical examination for the scrutiny of the board of Examiners.

13. MIGRATION

Under no circumstances, the migration or the transfer of students undergoing post-graduate degree/Diploma shall be permitted by the university or the authority.

No inter-change of the specialty in the same institution or in any other institution shall be permitted after the date of the commencement of session.

14. REQUIREMENTS FOR ADMISSION TO EXAMINATIONS

The following requirements shall be fulfilled by the candidate to become eligible for the final examination.

(i) **Attendance:** Every candidate shall secure (80% attendance during each academic year).

(ii) **Progress and conduct:** Every candidate shall participate in seminars, journal review meetings,

symposia, conferences, case presentations, clinics and didactic lectures during each year organized by the concerned department.

(iii) **Work diary and log book:** Every candidate shall maintain a work diary and log book for recording his or her participation in the training programmes conducted by the department. The work diary and log book shall be verified and certified by the Head of the Department of the institution. The certification of satisfactory progress is based on the work diary and log book.

15. SCHEME OF EXAMINATION

The University examination for M.D.S. Programs will be held at the end of the first academic year and at the end of the third academic year.The university shall conduct two examinations in a year, a Regular and an Arrear Examinations in the month of April and October respectively. The Final year MDS year examination (Theory and Practical) should not be conducted before April of each academic year.

16. PATTERN OF EXAMINATION & SUBJECTS OF STUDY

S.NO	Course code	Course name	No. of hours	External assesment	Total marks
1	**Course 6195**	**Applied basic sciences**	3	100	100
2	**Course 6196**	**Oral and Maxillofacial Radiology**	3	100	100
3	**Course 6197**	**Oral Medicine, therapeutics and laboratory investigations**	3	100	100
4	**Course 6198**	**Essay writing in Oral and Maxillofacial Radiology (Descriptive and analyzing)**	3	100	100

PART-I

COURSE 1: Course 6195 – Applied basic sciences

Applied Anatomy, Physiology, and Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics

PART II

COURSE 2: Course 6196 - Oral and Maxillofacial Radiology

History of radiology, structure of x – ray tube, production of x – ray, property of x – rays, Biological effects of radiation , Films and recording media , Processing of image in radiology , Design of x –ray department, dark room and use of automatic processing units, Localization by radiographic techniques , Faults of dental radiographs and concept of ideal radiograph , Quality assurance and audit in dental radiology , Extra – oral-imaging techniques , OPG and other radiologic techniques , Advanced imaging techniques like CBCT**,**CT Scan, MRI, Ultrasound , Basic Anatomy of sectional imaging with case interpretations of CT / CBCT / MRI , Radio nucleotide techniques , Contrast radiography in salivary gland, TMJ, and other radiolucent pathologies , Radiation protection and ICRP guidelines , Art of radiographic report, writing and descriptors preferred in reports , Radiograph differential diagnosis of radiolucent, radio opaque and mixed lesions , Digital radiology and its various types of advantages

COURSE 3: Course 6197 – Oral Medicine, therapeutics and laboratory investigations

Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissues including modern diagnostic techniques , Laboratory investigations including special investigations of oral and oro – facial diseases , Teeth in local and systemic diseases, congenital, and hereditary disorders , Oral manifestations of systemic diseases , Oro – facial pain , Psychosomatic aspects of oral diseases , Management of medically compromised patients including medical emergencies in the dental chair , Congenital and Hereditary disorders involving tissues of oro facial region , Systemic diseases due to oral foci of infection , Hematological, Dermatological, Metabolic, Nutritional, & Endocrinal conditions with oral manifestations , Neuromuscular diseases affecting oro –facial region

Salivary gland disorders , Tongue in oral and systemic diseases , TMJ dysfunction and diseases , Concept of immunity as related to oro – facial lesions, including AIDS , Cysts, Neoplasms, Odontomes, and fibro – osseous lesions , Oral changes in Osteo – dystrophies and chondro – dystrophies , Pre

malignant and malignant lesions of oro facial region , Allergy and other miscellaneous conditions, Therapeutics in oral medicine –clinical pharmacology , Forensic odontology , Computers in oral diagnosis and imaging , Evidence based oral care in treatment planning , Molecular Biology

COURSE 4: Course 6198 – Essay writing in Oral and Maxillofacial Radiology (Descriptive and analyzing)

Recent advances in the field of Oral and Maxillofacial Radiology**.**

TEACHING LEARNING METHODS (including Clinical Study)

(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.

(c) SEMINARS:

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

(d) SYMPOSIUM:

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

(e) CLINICAL POSTINGS:

Each trainee shall work in the clinics on regular basis to acquire adequate

professional skills and competency in managing various cases.

(f) CLINICO-PATHOLOGICAL CONFERENCE:

The clinico pathological conference shall be held once a month.

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 encourages taking part in undergraduate teaching

programmes either in the form of lectures or group discussion.

(i) DENTAL EDUCATION PROGRAMMES:

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

(j) CONFERENCES/WORKSHOPS/ADVANCED COURSES:

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

TEACHING / LEARNING ACTIVITIES:

The post graduate is expected to complete the following at the end of year Wise

ACTIVITIES WORKS TO BE DONE

Procedural and Operative Skills:

Module 1

(First 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

Module 2

(**Second 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 life saving drugs to the patients
3. Performing basic CPR and certification by Red Cross or similar authorized organization

Module 3

(**Third Year**)

All the above

- 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

ASSESSMENT EXAMINATION:

In addition to regular evaluation, log book etc., Assessment examination should be conducted after every 3 modules & progress of the student monitored.

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 is 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.

DISSERTATION

Every candidate appearing for the post-graduate degree examination shall at least six months prior to the

examinations, submit with his form for examination, four typewritten copies of the dissertation undertaken by the candidate, prepared under the direction and guidance of his/her guide.

It must be approved by the Institutional Review Board consisting of Principal, all the HOD's, an advocate, medical specialties and social worker within the first six months after the commencement of the Program. The application for registration of dissertation topic must be sent through the Principal duly forwarded by the Professor/ HOD. The University will register such dissertation topic. In case the students want to change the topic of dissertation, they can do it within the next three months. No change in the Guide/dissertation topic shall be made without prior approval of the University.

The aim of dissertation is to train a postgraduate student in research methodology. It includes identification of a problem with recent advances, designing of research study on collection of data, practical analysis and comparison of results and drawing conclusions.

The dissertation should be written under the following headings.

Introduction / Aims and objective / Review and literature / Materials & Methods /Results / Discussion Conclusion / Summary

The written text of dissertation shall not be less than 100pages. It should be neatly typed in double line spacing on one side (A4 size, 8. 27"x 11.69") and bounded properly. Photos, charts, tables, tables and graphs can be attached where ever necessary. Spiral binding should not be used. The dissertation shall be certified by the Guide and Head of the department and forwarded by the Principal to the University. The dissertation so submitted shall be referred to the examiners for their examination and acceptance of it shall be a condition precedent to allow the candidate to appear for the written part of the examination.

Provided that a candidate whose dissertation has been accepted by the examiner, but declared failed at the examination, shall be permitted to re-appear at the subsequent examination without a new dissertation.

Provided further that if the dissertation is rejected by the examiner, the examiner shall assign reasons thereof with suggestions for its improvement to the candidate and such candidate shall re-submit his/ her dissertation to the examiner who shall accept it before appearing in the examination.

Schemes of Examination:

A. **Theory:**

Part-I : COURSE -1:Basic Sciences Paper - **100 Marks**
Part-II : COURSE-II, COURSE-III & COURSE-IV- **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 PROGRAM. Part-II Examination will be

conducted at the end of Third year of MDS PROGRAM. Part-II Examination will consist of COURSE-I, COURSE-II & COURSE-III, each of three hours duration. COURSE-I & COURSE-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. COURSE III will be on Essays. In COURSE-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 COURSEs. Distribution of topics for each course will be as follows: *

PART-I :

COURSE 1: Applied Basic Sciences: Applied Anatomy, Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics

PART-II :

COURSE 2: Oral and Maxillofacial Radiology
COURSE 3: Oral Medicine, therapeutics and laboratory investigations
COURSE 4: Essays (descriptive and analyzing type questions)

** The topics assigned to the different COURSEs 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.

17. EXAMINERS

Part I: 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 number of students.

Part II: 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.

18. VALUATION OF ANSWER BOOKS

Part-I : Answer book/s shall be evaluated by the internal and external examiner/s

Part-II : Answer books shall be evaluated by four examiners, two internal and two external and the average marks shall be computed.

19. CRITERIA FOR PASS CERTIFICATES

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 the respective speciality.

20. AWARD OF DEGREE

A candidate who is declared successful in the examination shall be granted a Degree of Master

of Dental Surgery in the respective specialty.

COURSE SYLLABUS

COURSE DESCRIPTION

COURSE 1

Course code	Course name	Number of hours	External assesment	Total marks
Course 6195	**Applied basic sciences**	3	100	100

COURSE OBJECTIVES

1. Provide basic knowledge of anatomical structures in head & neck, and general physiology of human body.
2. Create understanding of the broad range of infection diseases affecting the oral cavity with knowledge about hospital acquired infections, infections in the compromised host and infection control protocols.
3. Generate knowledge of the appropriate use of antimicrobial drugs with thorough knowledge about their indications, contraindications and their interactions.
4. Incorporate basic knowledge on research methodology, biostatistics and be able to apply it in various research projects as well as dissertations.
5. Facilitate awareness of the contemporary principles and practices of laboratory diagnostic techniques and interpretation of laboratory reports.

COURSE I : APPLIED BASIC SCIENCES

Applied Anatomy:

1. Gross anatomy of the face: Muscles of Facial Expression and Muscles of Mastication, Facial nerve, Facial artery, Facial vein, Parotid gland and its relations, Sub mandibular salivary gland and its relations
2. Gross anatomy of Neck region: Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures, Fascial spaces, Carotid system of arteries, Vertebral Artery, and Subclavian arteries, Jugular system, Internal jugular, External jugular
3. Lymphatic drainage, Cervical plane, Muscles derived from Pharyngeal arches, Infratemporal fossa in detail and temporomandibular joint, Endocrine glands – Pituitary, Thyroid, Parathyroid. Exocrine glands – Parotid, Thyroid, Parathyroid.Sympathetic chain, Cranial nerves- V, VII, IX, XI, & XII 3. Oral Cavity:
4. Vestibule and oral cavity proper- Tongue and teeth, Palate – soft and hard
5. Nasal Cavity - Nasal septum, Lateral wall of nasal cavity, Paranasal air sinuses and Pharynx

6. Gross salient features of brain and spinal cord with references to attachment of cranial nerves to the brainstem, Detailed study of the cranial nerve nuclei of V, VII, IX, X, XI, XII

7. Comparative study of fetal and adult skull -Mandible: Development, ossification, age changes and evaluation of mandible in detail.

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

9. Histology: Study of epithelium of oral cavity and the respiratory tract, Connective tissue, Muscular tissue, Nervous tissue, Blood vessels, Cartilage, Bone and tooth, Tongue, Salivary glands, Tonsil, thymus, lymph nodes

Physiology:

1. General Physiology: Cell, Body Fluid Compartments, Classification, Composition, Cellular transport, RMP and action potential

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

3. Blood: RBC and Hb, WBC – Structure and functions, Platelets – functions and applied aspects , Plasma proteins, Blood Coagulation with applied aspects, Blood groups, Lymph and applied aspects

4. 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

5. Cardio-Vascular System: Cardiac Cycle, Regulation of heart rate/ Stroke volume / cardiac output / blood flow, Regulation of blood pressure, Shock, hypertension, cardiac failure

6. Excretory System:Renal function tests

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

8. Endocrine System: Hormones – classification and mechanism of action, Hypothalamic and pituitary hormones, Thyroid hormones, Parathyroid hormones and calcium homeostasis, Pancreatic hormones, Adrenal hormones

9. 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-Hormones 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

2. 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

3. Hypersensitivity: Anaphylaxis, Type II Hypersensitivity, Type III Hypersensitivity, Cell mediated Reaction and its clinical importance, Systemic Lupus Erythmatosus, Infection and infective granulomas

4. 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

Pharmacology:

Definition of terminologies used, Dosage and mode of administration of drugs, Action and fate of drugs in the body, Drugs acting on CNS, Drug addiction, tolerance and hypersensitive reactions, General and local anesthetics, hypnotics, antiepileptics and tranquilizers, Chemotherapeutics and antibiotics, Analgesics and anti – pyretics, Anti – tubercular and anti – syphilitic drugs, Antiseptics, sialogogues, and anti – sialogogues, Haematinics, Anti – diabetics, Vitamins – A, B Complex, C, D, E & k and Steroids.

COURSE OUTCOMES

COURSE 1: Applied basic sciences

CO1	Should have an understanding of the broad range of infection diseases affecting the oral cavity and factors to be considered in the appropriate use of antimicrobial drugs with knowledge about hospital acquired infections, infections in the compromised host and infection control protocols.
CO2	Be aware of the contemporary principles and practices of laboratory diagnostic techniques and interpretation of laboratory reports.
CO3	Should have a basic knowledge on research methodology, biostatistics and be able to apply it in various research projects as well as dissertations.

REFERENCES:

B D Chaurasia's Human Anatomy Head and Neck-Volume 3; Seventh edition.
Essentials of Medical Physiology- K Sembulingam;Sixth Edition
Textbook of Biochemistry- U Satyanarayana- Fourth edition
Textbook of Pathologic Basis of disease- Robbins & Corton-Tenth Edition
Textbook of Microbiology- Ananthanarayanan & Panicker-9th edition
Textbook of Manipal Manual of General Surgery-Rajagopal Senoy-Fourth Edition
Textbook of Clinical medicine for Dental Students-R Alagapan-Third edition
Textbook of essential s of pharmacology for dentistry- K D Tripathi-Fourth edition

MAPPING COURSE-1 OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	3	2	3	1	2	2	3
CO2	3	3	2	2	3	3	2
CO3	2	2	1	3	3	2	2
CO4	1	2	2	2	3	3	3
CO5	2	3	2	2	2	3	3
TOTAL	2.2	2.4	2	2.25	2.6	2.6	2.6

1- Low ; 2- Medium, 3 -High

COURSE 2

Course code	Course name	Number of hours	External assesment	Total marks
Course 6196	**Oral Medicine and Radiology**	3	100	100

COURSE OBJECTIVES

1. To perform a diagnostic evaluation,including patient interview and a physical examination.
2. To obtain, evaluate and assessing a patients's oral and overall health status is the obligation of the treating oral health care professional

COURSE SYLLABUS

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. Films and recording media
4. Processing of image in radiology
5. Design of x –ray department, dark room and use of automatic processing units
6. Localization by radiographic techniques
7. Faults of dental radiographs and concept of ideal radiograph
8. Quality assurance and audit in dental radiology
9. Extra – oral-imaging techniques
10. OPG and other radiologic techniques
11. Advanced imaging techniques like **CBCT,**CT Scan, MRI, Ultrasound
12. Basic Anatomy of sectional imaging with case interpretations of CT / CBCT / MRI
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

COURSE - 2 OUTCOMES

C2O1	Focuses on provision of dental care for medically complex patients.
C2O2	Should have an understanding about diagnosis and management of medical disorder involving the mouth, jaws and salivary glands.

C2O3	Should be able to offer care to patients seeking diagnosis and treatment is a responsibility that entails both broad and detailed knowledge and should only be provided with appropriate training and experience

REFERENCES

a) Oral Diagnosis, Oral Medicine & Oral Pathology

1. Burket'sOral Medicine
2. Scully's Oral and Maxillofacial Medicine
3. Hutchinson's Clinical Methods
4. Differential Diagnosis of Oral and Maxillofacial Diseases – Wood and Goaz
5. Shafer's Oral Pathology
6. Bell's Orofacial Pain
7. Okesan'sTemperomandibular Joint Disorders

b) Oral Radiology

1. White &Pharaoh – Oral Radiology
2. Eric Whaites – Esssentials of Dental Radiology

MAPPING COURSE-2 OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	2	1	2	3	3	2	3
CO2	3	2	3	3	2	3	2
CO3	2	3	2	2	1	3	2
CO4	2	2	3	1	2	3	3
CO5	3	2	3	2	2	2	3
TOTAL	2.4	2.25	2.6	2.2	2	2.6	2.6

1- Low ; 2 – Medium; 3 -High

COURSE 3

Course code	Course name	Number of hours	External assesment	Total marks
Course 6197	**Oral Medicine, Therapeutics and Laboratory Investigations**	3	100	100

COURSE OBJECTIVES

1.To expertise the initial encounter with a patient will influence all subsequent care.

2.To elicit the clinical, laboratory and necessary information required for an accurate diagnosis

3.It involves the process os information gathering, establishing a differential and final diagnosis, formulating a plan of action and initiating treatment and follow up.

COURSE SYLLABUS

Study includes seminars / lectures / discussion

1. Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissues including modern diagnostic techniques
2. Laboratory investigations including special investigations of oral and oro – facial diseases
3. Teeth in local and systemic diseases, congenital, and hereditary disorders
4. Oral manifestations of systemic diseases
5. Oro – facial pain
6. Psychosomatic aspects of oral diseases
7. Management of medically compromised patients including medical emergencies in the dental chair
8. Congenital and Hereditary disorders involving tissues of oro facial region
9. Systemic diseases due to oral foci of infection
10. Hematological, Dermatological, Metabolic, Nutritional, & Endocrinal conditions with oral manifestations
11. Neuromuscular diseases affecting oro –facial region
12. Salivary gland disorders
13. Tongue in oral and systemic diseases
14. TMJ dysfunction and diseases
15. Concept of immunity as related to oro – facial lesions, including AIDS
16. Cysts, Neoplasms, Odontomes, and fibro – osseous lesions
17. Oral changes in Osteo – dystrophies and chondro – dystrophies
18. Pre malignant and malignant lesions of oro facial region
19. Allergy and other miscellaneous conditions
20. Therapeutics in oral medicine –clinical pharmacology
21. Forensic odontology
22. Computers in oral diagnosis and imaging
23. Evidence based oral care in treatment planning

24. Molecular Biology

COURSE - 3 OUTCOMES

CO1	Should have a sound knowledge on the diagnosis and non-surgical treatment of orofacial problems. This includes oral mucosal disease, TMD and myofascial dysfunction, chronic jaw and facial pain, dental anomalies, jaw bone lesions, salivary hypofunction and disorders of oral sensation.
CO2	Should have an updated knowledge on the recent advancements and be able to modify their treatment accordingly
CO3	Develop knowledge and skill for dental treatment of patients with medical problems that affect the oral cavity for whom modification of standard dental treatment is required to avoid adverse effects.

REFERENCES

a) Oral Diagnosis, Oral Medicine & Oral Pathology

8. Burket'sOral Medicine
9. Scully's Oral and Maxillofacial Medicine
10. Hutchinson's Clinical Methods
11. Differential Diagnosis of Oral and Maxillofacial Diseases – Wood and Goaz
12. Shafer's Oral Pathology
13. Bell's Orofacial Pain
14. Okesan'sTemperomandibular Joint Disorders

b) Oral Radiology

1. White &Pharaoh – Oral Radiology
2. Eric Whaites – Esssentials of Dental Radiology

MAPPING COURSE-3 OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	3	2	3	3	2	2	3
CO2	2	3	2	3	3	2	2
CO3	2	3	2	2	3	3	3
TOTAL	2.3	2.6	2.3	2.6	2.6	2.3	2.6

1- Low ; 2 - Medium ; 3- High

COURSE 4

Course code	Course name	Number of hours	External assesment	Total marks
Course 6198	**Essay writing in Oral and Maxillofacial Radiology (Descriptive and analyzing)**	3	100	100

COURSE OBJECTIVES

The purpose is to provide detailed overview of evidence – based practice, types of research involving human subjects and the features of good clinical research , including ethical and regulatory considerations.

COURSE SYLLABUS

Descriptive and analyzing

Recent advances in the field of Periodontology focusing on diagnostic & therapeutic advances with emphasis on evidence based Periodontology.

COURSE - 4 OUTCOMES

CO1	Should be knowledgeable to provide technological advances that are influencing all aspects of patient interactions, from our initial contact with a patient, through medical history taking, diagnosis, and treatment options. Electronic health records afford a means for sharing health information.
CO2	Should be able to analyze various clinical scenarios, apply their knowledge accordingly and also on modern imaging techniques such as CT, MRI, USG & CBCT.
CO3	Should have abroad overview of the current research and methods used in studying problems in Oral Medicine and Radiology.

REFERENCES

a) Oral Diagnosis, Oral Medicine & Oral Pathology

15. Burket'sOral Medicine
16. Scully's Oral and Maxillofacial Medicine
17. Hutchinson's Clinical Methods
18. Differential Diagnosis of Oral and Maxillofacial Diseases – Wood and Goaz
19. Shafer's Oral Pathology
20. Bell's Orofacial Pain
21. Okesan'sTemperomandibular Joint Disorders

b) Oral Radiology

3. White &Pharaoh – Oral Radiology
4. Eric Whaites – Esssentials of Dental Radiology

MAPPING COURSE-4 OUTCOMES WITH PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	2	2	2	3	2	2	2
CO2	3	2	3	3	3	2	2
CO3	2	3	3	2	3	3	3
TOTAL	2.3	2.3	2.6	2.6	2.6	2.3	2.3

1- Low ; 2 - Medium ; 3 -High

MAPPING FUNCTION OF PO'S, CO'S & PSO'S

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**
Course 6195	2.2	2.4	2	2.25	2.6	2.6	2.6	2.2
Course 6196	2.4	2.25	2.6	2.2	2	2.6	2.6	2.4
Course 6197	2.3	2.6	2.3	2.6	2.6	2.3	2.6	2.3
Course 6198	2.3	2.6	2.3	2.6	2.6	2.3	2.6	2.3
CO, PO ATTAINMENT	2.3	2.4	2.3	2.4	2.45	2.45	2.6	2.3

1- Low ; 2- Medium; 3- High