Programme Structure

School of Dental Sciences

MDS

(Orthodontics and Dentofacial Orthopedics)

Programme Code: SDS0106

Batch : 2024-2027

1.1 Vision, Mission and Core Values of the University

Vision of the University

To serve the society by being a global University of higher learning in pursuit of academic excellence, innovation and nurturing entrepreneurship.

Mission of the University

Transformative educational experience
Enrichment by educational initiatives that encourage global outlook
Develop research, support disruptive innovations and accelerate entrepreneurship
Seeking beyond boundaries

Core Values

Integrity
Leadership
Diversity
Community

1.2 Vision, Mission and Core Values of the School

Vision of the School

To serve the society by being a global center in pursuit of academic and professional excellence in the field of dentistry.

Mission of the School

Creating a stimulating and flexible learning environment amongst the faculty and students

Strongly promoting research, innovation, clinical excellence

Promote and inculcate ethical values and continued betterment in the dental profession and in all facets of life.

Core Values

Integrity

Leadership

Diversity

Community

1.3 Programme Educational Objectives (PEO)

- PEO1- Be able to diagnose orthodontic problems and understand patients' needs in order to formulate optimum treatment plans.
- PEO2-- Be competent to manage different types of malocclusion with various treatment modalities maintaining high standards of professional ethics.
- PEO3- Be able to educate and motivate the patients in regard to various treatment modalities.
- PEO4-Be able to conduct research and contribute to the existing knowledge through scientific presentations and publications
- PEO5- Maintaining high standards of professional ethics and applying these in all aspects of professional practice.

1.3.2 Programme Articulation Matrix:

PEO Statements	School Mission 1	School Mission 2	School Mission 3
PEO1:	1	3	2
PEO2:	2	1	3
PEO3:	2	1	3
PEO4:	3	1	2
PEO5:	1	3	2

1. Slight (Low) 2. Moderate (Medium) 3. Substantial (High)

1.3.3 Programme Outcomes (PO's)

PO1: Problem analysis & **Communication**: Apply the knowledge of various aspects of craniofacial complex and various treatment modalities to formulate the treatment plan using all required investigations for diagnostic and prognostic evaluation and communicating efficiently to the patient

PO2:Life-long learning and Upgradation of Patient health care: Keep updated with the latest advances and upgrade the clinical care only after critical assessment based on sound scientific principles and also conduct research while applying ethical principles.

PO3:**Infection control and environmental safety**: Apply the principles of infection control and environmental safety to patient care and clinical operations.

PSO1: Obtain proper clinical history, conduct clinical examination of the patient; perform essential diagnostic procedures, analyze and interpret them to arrive at a reasonable diagnosis about the dentofacial deformities.

PSO2: Manage all types of orthodontic problems using different orthodontic appliances efficiently and also complex problems needing multidisciplinary approach as a member of the team while adopting ethical principles in orthodontic practice.

PSO3: Knowledge of the interaction of social, cultural, economic, genetic and environmental factors and their relevance to management of oro – facial deformities.

PSO4: Formulate individualized treatment plan and obtain a true informed consent from the patients for the most appropriate treatment available at that point of time after communicating various treatment options available based on the ethical principles.

1.3.4 Programme Articulation Matrix

	PEO1	PEO2	PEO3	PEO4	PEO5
PO1	3	-	2	1	-
PO2	-	2	1	-	3
PO3	-	-	1	2	3
PSO1	3	-	2	1	-
PSO2	2	1	-	3	-
PSO3	3	1	-	-	2
PSO4	1	-	-	2	3

1. Slight (Low) **2. Moderate (Medium)** **3. Substantial (High)**

1.3.5 Programme Articulation Matrix:

Course	Course Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	Applied Basic Sciences	3	2	2		2	2	3	2	1	1	1
CO2		3	2	3		2	1	3	2	1	2	1
CO1	Diagnosis and Treatment planning	2	3	2	3	2		1	3	1	2	3
CO2		2	3	2	3	1		2	2	2	1	3
CO1	Clinical Orthodontics	3		3		1		2	1	3	3	
CO2		3		3		3		2	2	3	2	
CO1	Long Essay	2	2		3	2		1	2			3
CO2		2	1	1		3	1		2	2	2	1

1. Slight (Low) 2. Moderate (Medium) 3. Substantial (High)

Programme Structure
School of Dental Sciences
Master of Dental Surgery (MDS)
Batch: 2024-2027

S. No.	Paper ID	Subject Code	Subjects	Teaching Load			
				L	T	P	Type of Course[1]: 1. CC 2. AECC 3. SEC 4. DSE
THEORY SUBJECTS							
1.	MDS305	MDS305	Orthodontics & Dentofacial Orthodontics	**0**	**3**	**45**	**CC**
Practical/Viva-Voce/Jury							
2.	MDS305	MDS305	Orthodontics & Dentofacial Orthodontics	**0**	**3**	**45**	**CC**

2.1 Module: Syllabus for Theory Subjects

CO	**SCHOOL OF DENTAL SCIENCES Batch: 2024-2027**	
Programme:	**MASTER OF DENTAL SURGERY-ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS**	
1	Course Code	MDS305
3	Credits	NA
4	Contact Hours (L-T-P)	0-3-45
	Course Type	Compulsory (Core)
5	Course Objective	1. The dynamic interaction of biologic processes and mechanical forces acting on the stomatognathic system during orthodontic treatment. The etiology, pathophysiology, diagnosis and treatment planning of various common orthodontic problems. 2. Various treatment modalities in orthodontics: preventive interceptive and corrective. Basic sciences relevant to the practice of orthodontics. Interaction of social, cultural, economic, genetic and environmental factors and their relevance to management of oro-facial deformities. 3. Factors affecting the long-range stability of orthodontic correction and their management. 4. 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.
6	Course Outcomes	**CO1 : Basic sciences**: The students should have a basic knowledge of growth and development of craniofacial structures and their applied anatomy, physiology, pathology, genetics, physical anthropology and dental materials used in orthodontics. **CO2**: **Research methodology and biostatistics**: The students will know about the study designs, hypothesis testing, sample size estimation, methods of data collection, analysis and

		interpretation and critical scientific appraisal of scientific literature **CO1: Concepts of occlusion and esthetics, etiology and classification of malocclusion:** Students will gain a knowledge of structure and function of all anatomic components of occlusion; anatomy, neuromuscular physiology and pathology related to TMJ and diagnosis of occlusal dysfunction. A comprehensive review of the local and systemic factors in the causation of malocclusion and various classifications of malocclusion. **CO2 Diagnosis & treatment planning in orthodontics.** The students will gain an acumen regarding the process of data gathering, synthesis and translating it into a treatment plan for various orthodontic problems. Students will be gaining knowledge of various imaging techniques, radiation hygiene, applications of cephalometrics, use of software and applications of CBCT and other imaging modalities for diagnosis and treatment planning. **CO1 Basic principles of mechanotherapy; Preventive and interceptive orthodontics and Contemporary Orthodontic appliances**: Students will gain knowledge regarding principles, design and manipulation, case selection and evaluation of all the appliances and application of basic fundamentals of biomechanics towards efficient treatment mechanotherapy. **CO2 Multidisciplinary orthodontics:** Students will learn about the principles of interdisciplinary patient treatment, common problems and their management; biomechanics and principles of treating adult patients in order to facilitate the dental procedures necessary to control disease, restore function and/or enhance appearance of the patient. **CO1 Recent Advances & Professional ethics and responsibilities:** Students will gain theoretical and practical knowledge regarding use of temporary anchorage devices , lasers , application of FEM, digital advancements, Distraction Osteogenesis, Lingual Orthodontics and Clear aligners and an understanding of ethical issues and an awareness of the ethical obligations inherent in the provision of health care and

		developing an attitude to adopt ethical principles in all aspects of Orthodontics. **CO2 Infection control, Practice management and Ergonomics**: Students will be encouraged to follow personal hygiene and infection control and also learn about ergonomics and dynamics of solo and group practices, personal management, materials management, public relations, professional relationship, office sterilization procedures, community-based orthodontics.	
7	Course Description	The programme 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	
8	Outline syllabus		
	Unit 1	**Applied basic sciences**	
	A	Applied anatomy, genetics	CO1
	B	Pathology, physiology, applied pharmacology, physical anthropology, dental materials	CO1
	C	Biostatistics, applied research methodology	CO2
	Unit 2	**Growth and development, child psychology and behaviour management**	
	A	Growth and development of prenatal and postnatal development of craniofacial structures.	CO1
	B	Stages of child development, Theories of psychological development, Management of child in orthodontic treatment, Management of handicapped child.	CO1
	C	Motivation and Psychological problems related to malocclusion / orthodontic, Adolescent psychology, Behavioral psychology and communication.	CO1, CO2
	Unit 3	**Etiology and classification of malocclusion, orthodontic history, Diagnostic procedures and treatment planning in orthodontics.**	
	A	History of orthodontics.	CO 305.2.1

	B	A comprehensive review of the local and systemic factors in the causation of malocclusion, various classifications of malocclusion.	CO 305.2.1
	C	Emphasis on the process of data gathering, synthesis and translating it into a treatment plan, problem cases - analysis of cases and its management, cephalometrics, instrumentation, image processing, radiation hygiene, advanced cephalometrics techniques, video imaging principles and application.	CO 305.2.2, CO 305.3.1
	Unit 4	**Practice management in Orthodontics**	
	A	Economics and dynamics of solo and group practices, personal management, materials management	CO2
	B	Public relations, Professional relationship, Dental ethics and jurisprudence.	CO2
	C	Office sterilization procedures, community-based orthodontics.	CO2
	Unit 5	**Clinical Orthodontics & Recent Advances**	
	A	Myofunctional orthodontics, dentofacial orthopedics	CO2
	B	Cleft lip and palate rehabilitation, biology of tooth movement, Orthognathic surgery, interdisciplinary orthodontics, interceptive orthodontics, retention & relapse, biology of tooth movement.	CO2, CO1, CO2
	C	Recent advances like implants, Lasers, FEM application, distraction osteogenesis.	CO2
	Mode of examination	Theory/Jury/Practical/Viva	
	Weightage Distribution	1st MDS 100	
		3rd MDS 600	
	Text book/s*	TITLE	AUTHOR
	1.	BIOMECHANICS AND ESTHETIC STRATEGIES IN CLINICAL ORTHODONTICS	NANDA, RAVINDRA
	2.	A DENTAL TREASURE CHEST	BUCKING, WOLFRAM
	3.	CLINICAL PROBLEM SOLVING IN ORTHODONTICS & PEDIATRIC DENTISTRY	MILLETT, D.
	4.	CONTEMPORARY ORTHODONTICS	PROFFIT,W.R.
	5.	GRABER'S TEXTBOOK OF ORTHODONTICS BASIC PRINCIPLES AND PRACTICE	PREMKUMAR, S.
	6.	TEXT BOOK OF ORTHODONTICS	SAMIR E. BISHARA
	7.	MCQS IN ORTHODONTICS	CHANDRA,SATISH
	8.	ORTHODONTICS 3RD EDI.	BHALAJHI, S. I.
	9.	ORTHODONTICS 4RTH EDI.	GRABER, TM

	10.	AN ATLAS ON CEPHALOMETRIC LANDMARKS 1ST EDI	BASAVARAJ SUBHASCHANDRA
	11.	REMOVABLE ORTHODONTIC APPLIANCES	ISAACSON,K.G.
	12.	REVIEWS IN ORTHODONTICS	JENA, ASHOK KUMAR
	13.	SYNOPSIS OF ORTHODONTIC TREATMENT	PURVA KUMAR
	14.	THE DESIGN CONSTRUCTION AND USE OF REMOVABLE ORTHODONTIC APPLIANCES	ADAMS, C.P.
	15.	TIP-EDGE ORTHODONTICS	TIP-EDGE ORTHODONTICS
	16.	W&H ORTHODONTIC NOTES	JONES, MALCOLM L.
	17.	CONTEMPORARY TREATMENT OF DENTOFACIAL DEFORMITY	PROFFIT,W.R.
	18.	DENTOFACIAL ORTHOPEDICS WITH FUNCTIONAL APPLIANCES	GRABER, TM
	19.	THE ALEXANDER DISCIPLINE	ALEXANDER.G. WICK
	20.	REMOVABLE ORTHODONTIC APPLIANCE	GRABER,T.M.
	21.	RAPID MAXILLARY EXPANSION	TIMMS, DONALD J
	22.	TWIN BLOCK FUNCTIONAL THERAPY	WILLIAN J CLARK
	23.	DIAGNOSIS AND TREATMENT PLANNING IN CRANIOFACIAL GROWTH	LINDEN,F.P.G.M VANDER
	24.	MANAGEMENT OF TM DISORDERS & OCCLUSION	JEJJREY P.OKESON
	25.	BIOMECHANICS IN ORTHODONTICS PRINCIPLES & PRACTICE	RAM S. NANDA
	26.	FIXED ORTHODONTIC APPLIANCE	WILLIAM,J.K.
	27.	ORTHODONTICS TREATMENT OF IMPACTED TEETH	ADRIAN BECKER
	28.	ORTHODONTICS RX WITH REMOVABLE APPLIANCE	W.J.B HOUSTON
	29.	ORTHODONTICS FOR DENTAL STUDENTS	DR.T.C.WHITE
	30.	MODERN BEGG: A COMBINATION OF BEGG &STRAIGHT WIRE APPLICATION &TECHNIQUES	THOMPSON, WILLIAM.J
	31.	RADIOGRAPHIC CEPHALOMETRY	JACOB ,ALEXANDER
	32.	TEXTBOOK OF ORTHODONTICS	GOURI SHANKER
	33.	CLINICAL ORTHODONTICS- CURRENT CONCEPT GOALS & MECHANICS	ASHOK KARAD
	34.	ORTHODONTICS- PRINCIPLE &PRACTICE	PHULARI
	35.	ORTHODONTICS- SHORT NOTES &MCQ	SANJAY KR.
	36.	ORTHODONTICS- PRINCIPLE &PRACTICE (FREE BOOKLET OF MCQ)	PHULARI

	37.	ORTHODONTICS CEPHALOMETRY	A.E. ATHANASIOU
	38.	LINGUAL ORTHODONTICS	SCUZZO & TAKE MOTO
	39.	REFINED BEGG FOR MODERN TIMES	VIJAY P. JAYADE
	40.	ORTHODONTICS MATERIALS	ORTHODONTICS MATERIALS
	41.	MASTERING BDS IIND YEAR	MASTERING BDS IIND YEAR
	42.	REMOVABLE ORTHODONTICS APPLIANCES	GRABER, NEUMANN
	Other References		

Mapping

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO 305.1.1	3	2	2	-	2	2	3	2	1	1	1
CO 305.1.2	3	2	3	-	2	1	3	2	1	2	1
CO 305.2.1	2	3	2	3	2	-	1	3	1	2	3
CO 305.2.2	2	3	2	3	1	-	2	2	2	1	3
CO 305.3.1	3	-	3	-	1	-	2	1	3	3	-
CO 305.3.2	3	-	3	-	3	-	2	2	3	2	-
CO 305.4.1	2	2	-	3	2	-	1	2	-	-	3
CO 305.4.2	2	1	1	-	3	1	-	2	2	2	1

1-Slight (Low)

2-Moderate (Medium)

3-Substantial (High)

Course Outcome

- **Course Outcomes**–What is it?

- Course outcomes (COs) are clear statements of what a student should be able to demonstrate on completion of a course.
- COs should be assessable and measurable knowledge, skills, abilities and attitudes that a student obtains by the end of the course.
- It is generally a good idea to identify between 4 to 6 outcomes.
- All courses in a particular programme shall have their own PO.
- Each CO is mapped to relevant PO.
- The teaching learning process and assessment process are to be designed in a way to achieve the COs.

Beginning words for Course Outcome:

The student will be able to _____

Active verbs developed based on Bloom's Taxonomy

Knowledge	Understand	Apply	Analyze	Evaluate	Create
define	explain	solve	analyze	reframe	design
identify	describe	apply	compare	criticize	compose
describe	interpret	illustrate	classify	evaluate	create
label	paraphrase	modify	contrast	order	plan
list	summarize	use	distinguish	appraise	combine
name	classify	calculate	infer	judge	formulate
state	compare	change	separate	support	invent
match	differentiate	choose	explain	compare	hypothesize
recognize	discuss	demonstrate	select	decide	substitute
select	distinguish	discover	categorize	discriminate	write
examine	extend	experiment	connect	recommend	compile
locate	predict	relate	differentiate	summarize	construct
memorize	associate	show	discriminate	assess	develop
quote	contrast	sketch	divide	choose	generalize
recall	convert	complete	order	convince	integrate
reproduce	demonstrate	construct	point out	defend	modify
tabulate	estimate	dramatize	prioritize	estimate	organize
tell	express	interpret	subdivide	find errors	prepare
copy	Identify	Manipulate	survey	grade	produce
discover	indicate	Paint	advertise	measure	rearrange
duplicate	Infer	Prepare	appraise	predict	rewrite
enumerate	relate	produce	Break down	rank	role-play

(Reference: Retrieved from http://www.teachthought.com/learning/249-blooms-taxonomy-verbs-for-critical-thinking/)

TEACHING / LEARNING ACTIVITIES:

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

S.No.	Year Wise	ACTIVITIES WORKS TO BE DONE
1.	**Module 1** **(First Year)**	Orientation to the PG programme Pre-clinical work (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.
2.	**Module 2** **(First Year)**	1. Bonwill Hawley Ideal arch preparation. 2. Construction of orthodontic models trimmed and polished. 3. Cephalometric tracing and various Analyses, also superimposition methods 4. Selection of topic for Library dissertation and submission of Dissertation Synopsis.
3.	**Module 3** **(First Year)**	1. 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 to other techniques. b) Typodont exercise a. Band making

		b. Bracket positioning and placement c. Different stages in treatment appropriate to technique taught 2. Clinical photography 3. Computerized imaging 4. Preparation of surgical splints, and splints for TMJ problems. 5. Handling of equipment like vacuum forming appliances and hydro solder etc.
4.	**Module 4 (Second Year)**	Each postgraduate 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. Cases should include: 1. Removable active appliances 2. Removable functional appliance cases like activator, Bionator, functional regulator, twin block and new developments
5.	**Module 5 (Second Year)**	1. Fixed functional appliances – Herbst appliance, jasper jumper etc 2. Dento-facial orthopedic appliances like head gears, rapid maxillary expansion, NiTi expander etc.
6.	**Module 6 (Second Year)**	1. Class-I malocclusion with Crowding 2. Class-I malocclusion with bi-maxillary protrusion 3. Class-II division – 1 4. Class-II division – 2 5. Class-III (Orthopedic, Surgical, Orthodontic cases)

7.	**Module 7** **(Third Year)**	1. Inter disciplinary cases 2. Appliance for arch development such as molar distalization 3. Fixed mechano therapy cases (Begg, PEA, Tip edge, Edgewise, lingual)
8.	**Module 8** **(Third Year)**	1. Retention procedures of above treated cases. 2. Publication of an article in a scientific journal. 3. Preparation for final exams.
9.	**Module 9** **(Third Year)**	1. Preparation for final exams. 2. University exam

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.