



Programme Structure and Course Details of

Bachelor of Dental Surgery

BATCH 2026 Onwards



M.S.Ramaih University of Applied Sciences
Faculty of Dental Sciences

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Bangalore - 560 054

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Kanitha Masal

University's Vision, Mission and Objectives

The M. S. Ramaiah University of Applied Sciences (MSRUAS) will focus on student-centric professional education and motivates its staff and students to contribute significantly to the growth of technology, science, economy and society through their imaginative, creative and innovative pursuits. Hence, the University has articulated the following vision and objectives.

Vision

MSRUAS aspires to be the premier university of choice in Asia for student centric professional education and services with a strong focus on applied research whilst maintaining the highest academic and ethical standards in a creative and innovative environment

Mission

Our purpose is the creation and dissemination of knowledge. We are committed to creativity, innovation and excellence in our teaching and research. We value integrity, quality and teamwork in all our endeavors. We inspire critical thinking, personal development and a passion for lifelong learning. We serve the technical, scientific and economic needs of our Society.

Objectives

1. To disseminate knowledge and skills through instructions, teaching, training, seminars, workshops and symposia in Health and Allied Sciences, Engineering and Technology, Art and Design, Management and Commerce, Physical and Life Sciences, Arts, Humanities and Social Sciences to equip students and scholars to meet the needs of industries, business and society
2. To generate knowledge through research in Engineering and Technology, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences, Arts, Humanities and Social Sciences to meet the challenges that arise in industry, business and society
3. To promote health, human well-being and provide holistic healthcare
4. To provide technical and scientific solutions to real life problems posed by industry, business and society in Engineering and Technology, Art and Design, Management and Commerce, Health and Allied Sciences, Physical and Life Sciences, Arts, Humanities and Social Sciences
5. To instill the spirit of entrepreneurship in our youth to help create more career opportunities in the society by incubating and nurturing technology product ideas and supporting technology backed business
6. To identify and nurture leadership skills in students and help in the development of our future leaders to enrich the society we live in
7. To develop partnership with universities, industries, businesses, research establishments, NGOs, international organizations, governmental organizations in India and abroad to enrich the experiences of faculties and students through research and developmental programmes

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Approved by the Academic Council at the 36th meeting held on 27th September 2025

Programme Specifications: Bachelor of Dental Surgery (BDS)

Faculty	Dental Sciences
Department	Dental
Programme Code	011
Programme Name	Bachelor of Dental Surgery
Dean of the Faculty	Dr. Kavitha Prasad

1. **Title of the Award:** Bachelor of Dental Surgery
2. **Mode of Study:** Full-Time
3. **Awarding Institution /Body:** M. S. Ramaiah University of Applied Sciences, Bengaluru
4. **Joint Award:** Not Applicable
5. **Teaching Institution:** Faculty of Dental Sciences, M. S. Ramaiah University of Applied Sciences, Bengaluru
6. **Date of Programme Specifications:** Sep 2025
7. **Date of Programme Approval by the Academic Council of MSRUAS:** 27th September 2025
8. **Next Review Date:** September 2030
9. **Programme Approving Regulating Body and Date of Approval:**
10. **Programme Accredited Body and Date of Accreditation:**
11. **Grade Awarded by the Accreditation Body:**
12. **Programme Accreditation Validity:**
13. **Programme Benchmark:**
14. **Rationale for the Programme**

The art and science of dentistry, though considerably advanced from where it began, is still in a progressive stage of research. Awareness of dental health amongst the population, is increasing by the day, even in semi urban and non-urban areas with increased demand for conservative and esthetic treatment. Dentists form a crucial component of the healthcare delivery system of the country. While the WHO states that the ideal ratio of dentist to population is 1:7500, the current proportions are at 1:13,500 in urban areas based on a report from the DCI. This gap is much more in rural areas where it can be as high as 1: 150,000. Therefore, the education of dentistry is in greater demand than ever before. At the same time, standards of healthcare and education of the healthcare provider have been escalating in India, to match world standards.

There are a large number of institutions world over which are producing dentists and yet, there is a shortage of quality dental graduates who have had exposure to patients, to state of art clinical equipment and faculty focused on research, or all.

The FDS at MSRUAS has state of art clinical equipment; such as CBCT, LASER, Microscope, Research Microscope, Cadaveric Lab, Immunohistochemistry lab, Skill labs and others; that is constantly upgraded to be at par and best in the country. This with excellent clinical exposure to patients in addition to our rural health programs, group research project and innovative teaching methodologies with stringent quality control protocols gives our students a competitive

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advantage. The value additions of patient safety, basic life support, ethics and jurisprudence, advanced information communication technologies, simulation labs and inter-university internships raise the bar of education for our students preparing them better for employment and future research.

The presence of other faculties of applied sciences on the campus enables the student to seek education beyond the conventional curriculum; for example, the use of 3D printing and rapid prototyping from the Faculty of Engineering and Technology, conduction of translational research with Faculty of Pharmacy to help encounter clinical problems with innovative solutions. The presence of a 1400 bed hospital on the same campus offers invaluable interdisciplinary clinical training. This enables our graduates to take an entrepreneurial route, management positions in hospitals, employment in the corporate sector or armed forces, and prepare them for higher education. Faculty of Dental Sciences at MSRUAS is well equipped to offer this Bachelor of Dental Surgery programme to address the oral health problems of society through highly motivated and well prepared graduates.

15. Programme Mission

The purpose of the programme is to create innovative problem solvers in multi-disciplinary settings, entrepreneurs and leaders who apply their knowledge, understanding, cognitive abilities, practical and transferable skills gained through systematic, flexible and rigorous learning in the chosen academic domain.

16. Graduate Attributes (GAs)

- GA-1. Health science knowledge:** Ability to apply knowledge of biological sciences to solve problems in oral health care
- GA-2. Problem Analysis:** Ability to analyze maxillofacial health care problems, interpret data and arrive at meaningful conclusions involving scientific inferences
- GA-3. Conduct Investigation of Complex Problems:** Ability to understand and solve complex oral health care problems by conducting experimental investigations, research or project
- GA-4. Modern Tool Usage:** Ability to apply appropriate tools and techniques and understand utilization of resources appropriately to oral health care solutions
- GA-5. Design and Development of Solutions:** Ability to design an oral health care system or establishment, or practice to meet desired needs considering public health and safety, and the cultural, societal, and environmental considerations
- GA-6. Oral Health Care Professionals and Society:** Ability to understand the effect of maxillofacial health care solutions on legal, cultural, social and public health and safety aspects. Ability to address oral health care issues at a community level
- GA-7. Environment and Sustainability:** Ability to develop sustainable solutions and understand their effect on society and environment
- GA-8. Ethics:** Ability to apply ethical principles to healthcare practices and professional responsibilities

GA-9. Individual and Teamwork: Ability to work as a member of a team, to plan and to integrate knowledge of various disciplines in health care and to lead teams in multidisciplinary settings

GA-10. Communication: Ability to make effective oral presentations and communicate technical ideas to a broad audience using written and oral means

GA-11. Project Management and Finance: Ability to lead and manage multidisciplinary teams by applying management principles

GA-12. Life-long learning: Ability to adapt to the changes and advancements in technology and engage in independent and life-long learning

17. Programme Outcomes (POs)

BDS graduates will be able to:

PO-1. Acquire knowledge on the development, structure and function of the stomatognathic system both in health and disease and to relate their effect to the general state of health of the patient

PO-2. Diagnose and manage various common dental problems encountered in general dental practice and demonstrate competence in pain control and anxiety management during dental treatment

PO-3. Perform and interpret required investigative procedures

PO-4. Select appropriate diagnostic or treatment methods based on scientific inferences to solve oral health problems

PO-5. Participate as a team member, in the implementation of interdisciplinary treatment solutions and National Health Programmes

PO-6. Empathize with the needs of the individual patient and the community and work together to bring about a positive change in society

PO-7. Establish dental practice to meet the oral health needs of the society within the norms of environmental safety

PO-8. Maintain high standard of professional ethics and conduct and apply these in all aspects of professional life

PO-9. Cope in various situations, irrespective of the different cultures or constraints involved and develop leadership skills by means of interaction with peers and leaders within and outside the University

PO-10. Present posters, papers in National and International forums

PO-11. Conduct research projects and experiments to solve complex oral health problems

PO-12. Develop an attitude to seek lifelong learning to update knowledge and professional skills

18. Programme Goal

The Programme Goal is to produce graduates with clinical expertise having critical, analytical and problem solving skills and ability to think independently to pursue a career in Oral health care profession.

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19. Program Educational Objectives (PEOs)

The objectives of the Bachelor of Dental Surgery Programme are to:

PEO-1. Apply knowledge of the development, structure and function of the teeth, oral cavity, jaws and associated tissues both in health and disease to restore oral and general health

PEO-2. Diagnose and manage various common dental problems encountered in general dental practice.

PEO-3. Maintain high standard of professional ethics and conduct and apply these in all aspects of professional life.

PEO-4. Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community.

20. Programme Specific Outcomes (PSOs)

At the end of the BDS (Bachelor of Dental Surgery) programme, the graduate will be able to:

PSO -1. Attain strong foundation in basic and applied medical and dental sciences to enable them to appraise oral health in the context of general health

PSO-2. Efficiently diagnose and treat common dental problems encountered in general dental practice

PSO-3. Keep abreast with recent advances in materials, technology, drugs and treatment approaches to ensure global standards of health care for the well-being and welfare of society

PSO-4. Imbibe strong human values and social, interpersonal and leadership skills required for professional success in evolving global professional environments

21. Programme Structure:

I Year BDS							
Sl. No.	Code	Course Title	Theory (h/W/Y)	Tutorials (h/W/Y)	Practical (h/W/Y)	Total Credits	Max. Marks
1	BDC101A	General Human Anatomy including Embryology, Osteology and Histology	3	--	5	10	400
2	BDC102A	General Human Physiology	2	--	2	8	200
3	BDC103B	Biochemistry, Nutrition and Dietetics	2	--	2	6	200
4	BDC104A	Dental Anatomy, Embryology and Oral Histology	3	--	8	10	400
5	BDC204A	Dental Materials	1	--	2	2	--
6	BDC205A	Preclinical Prosthodontics and Crown & Bridge	1	--	2	2	--
7	BDF101A	Law for Dental Professionals	1	--	0	1	50
Total			13	0	21	39	1250
Total number of contact hours per week			34				

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II Year BDS							
Sl. No.	Code	Course Title	Theory (h/W/Y)	Tutorials (h/W/Y)	Practical (h/W/Y)	Total Credits	Max. Marks
1	BDC201A	General Pathology	2	--	2	6	200
2	BDC202A	Microbiology	2	--	2	6	200
3	BDC203A	General and Dental Pharmacology and Therapeutics	2	--	2	5	400
4	BDC204A	Dental Materials	2	--	4	9	400
5	BDC205A	Preclinical Prosthodontics and Crown & Bridge	1	--	5	12	200
6	BDC206A	Preclinical Conservative Dentistry	1	--	5	8	200
7	BDC303A	Oral Pathology and Oral Microbiology	1	--	--	1	--
8	BDF201A	Basic Life Support	-	--	1	1	50
Total			11	0	21	48	1650
Total number of contact hours per week			32				
III Year BDS							
Sl. No.	Code	Course Title	Theory (h/W/Y)	Tutorials (h/W/Y)	Practical (h/W/Y)	Total Credits	Max. Marks
1	BDC301A	General Medicine	2	--	2	7	400
2	BDC302A	General Surgery	2	--	2	7	400
3	BDC303A	Oral Pathology and Oral Microbiology	2	--	2	8	400
4	BDF301A	Patient Safety Curriculum		--	1	1	50
5	BDF302A	Community Orientation Program	1	--	1	5	100
6	BDR301A	UG Group Research	1	--	1	8	200
7	BDC401B	Oral Medicine and Radiology	1	--	2.5	3	--
8	BDC402A	Pediatric and Preventive Dentistry	1	--	2.5	3	--
9	BDC403A	Public Health Dentistry	1	--	--	1	--
10	BDC404A	Orthodontics & Dentofacial Orthopedics	1	--	2.5	3	--
11	BDC405A	Oral & Maxillofacial Surgery	1	--	2.5	3	--
12	BDC406B	Periodontology	1	--	2.5	3	--
13	BDC407A	Prosthodontics and Crown & Bridge	1	--	2.5	3	--
14	BDC408A	Conservative Dentistry and Endodontics	1	--	2.5	3	--
Total			16	0	26.5	58	1550
Total number of contact hours per week			42.5				

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IV Year BDS							
Sl. No.	Code	Course Title	Theory (h/W/Y)	Tutorials (h/W/Y)	Practical (h/W/Y)	Total Credits	Max. Marks
1	BDC401B	Oral Medicine and Radiology	1	--	4	6	400
2	BDC402A	Pediatric and Preventive Dentistry	1	--	4	6	400
3	BDC403A	Public Health Dentistry	1	--	4	8	400
4	BDC404A	Orthodontics & Dentofacial Orthopedics	1	--	4	6	400
5	BDC405A	Oral & Maxillofacial Surgery	2	--	4	7	400
6	BDC406B	Periodontology	2	--	4	7	400
7	BDC407A	Prosthodontics and Crown & Bridge	2	--	4	8	400
8	BDC408A	Conservative Dentistry and Endodontics	2	--	4	8	400
9	BDF401A	Practice Observership	--	--	1	3	100
Total			12	0	33	59	3300
Total Number of Contact Hours per week			45				

Ability Enhancement Compulsory Courses (AECC):

Ability Enhancement Compulsory Courses (AECC) are offered to undergraduate students and is spread across from I Year to IV BDS. These courses are mandatory and will be assessed accordingly.

Sl.No.	Course Code	Course Title
1	BDF101A	Law for Dental Professionals
2	BDF201A	Basic Life Support
3	BDF301A	Patient Safety Curriculum
4	BDF302A	Community Orientation Program
5	BDF401A	Practice Observership

V Year BDS – Internship							
Sl. No.	Code	Course Title	Theory (h/W/Y)	Tutorials (h/W/Y)	Practical (h/W/Y)	Total Credits	Max. Marks
1	BDI401A	Oral Medicine and Radiology	--	--	4	3	100
2	BDI402A	Pediatric and Preventive Dentistry	--	--	4	3	100
3	BDI403A	Public Health Dentistry Including Comprehensive Oral Health	--	--	4	4	100
4	BDI404A	Orthodontics & Dentofacial Orthopedics	--	--	4	3	100
5	BDI405A	Oral & Maxillofacial Surgery	--	--	4	3	100
6	BDI406A	Periodontology	--	--	4	3	100
7	BDI407A	Prosthodontics and Crown & Bridge	--	--	4	5	100

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8	BDI408A	Conservative Dentistry and Endodontics	--	--	4	5	100
9	BDI409A	Oral Pathology and Oral Microbiology	--	--	4	1	100
10	BDI410A	Accident & Emergency	--	--	4	1	100
11	BDI411A	Rural Posting	--	--	4	4	100
12	BDE4XXA/B	Professional Core Elective 1	0.5	--	0.5	4	100
13	BDE4YYA/B	Professional Core Elective 2	0.5	--	0.5	4	100
14	BDO401A	Open Elective	1	--	--	3	--
Total			2	0	41	46	1300
Total number of contact hours per week			43				

V Year BDS: Internship: Professional Core Electives Group 1 - BDE4XXA				
Sl. No.	Code	Course Title	Total Credits	Max. Marks
1	BDE401A	Management of Oral Mucosal Lesions	4	100
2	BDE403A	Lasers in Periodontology	4	100
3	BDE405B	Advanced Pediatric Endodontics	4	100
4	BDE407A	Introduction to Implantology	4	100
5	BDE409A	Aesthetic Dentistry	4	100
6	BDE411A	Practice Management	4	100
7	BDE413A	Surgical Extraction	4	100
8	BDE415A	Orthodontics for General practice	4	100
9	BDE417A	Routine Tissue Processing	4	100

V Year BDS: Internship: Professional Core Electives Group 2 - BDE4YYA				
Sl. No.	Code	Course Title	Total Credits	Max. Marks
1	BDE402A	Basics of CBCT in Implant Dentistry	4	100
2	BDE404A	Periodontal Surgery for Clinician	4	100
3	BDE406A	Comprehensive Pediatric Rehabilitation	4	100
4	BDE408A	Basics of Fixed Partial Denture	4	100
5	BDE410A	Practice Based Endodontics	4	100
6	BDE412B	Advanced Data Analytics in Dental Research	4	100
7	BDE414A	Management of Medically Compromised Patients	4	100
8	BDE416A	Preventive Orthodontics	4	100
9	BDE418A	Exfoliative Cytology in Pathologic Diagnosis	4	100

Note:

- Students are required to select **two** Professional Core Elective Courses in the V year BDS during internship, one each from PCE-1 and PCE-2 Groups.

22. Audit Courses

Audit courses are offered by Faculty of Dental Sciences to undergraduate students these courses offer knowledge and skills that are slightly over and above the curriculum. These courses are not credited but are mandatory for the students to complete the course. These courses will be graded

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and appear in the Grade cards.

Sl.No.	Course Code	Course Title
1	BDA301A	Forensic Odontology
2	BDA302A	Dental Equipment and Technology
3	BDAI401A	Special care Dentistry

23. Open Elective Courses

A number of Open Elective Courses from Faculties of Dental Sciences, Engineering, Management and Commerce, Art and Design, Hospitality Management and Catering Technology, Pharmacy are offered as mentioned in the University's website. Students can also choose Open Electives of their own choice from online learning platforms like MOOC's, SWAYAM, NPTEL etc.

23.1. Innovation Courses in Lieu of Open Elective Courses

Students can take the following 3-credit innovation courses in lieu of Open Elective Courses.

- a) Design Thinking and Innovation (20INO250A)
- b) Skill Development (20INO251A)
- c) Industrial Problem Solving and Hackathons (20INO252A)

24. Course Delivery: As per the Timetable

25. Teaching and Learning Methods

1. Face to Face Lectures using Audio-Visuals
2. Workshops, Group Discussions, Debates, Presentations
3. Demonstrations
4. Guest Lectures
5. Assignments
6. Laboratory work/Clinical work/Field work/Workshop
7. Industry Visit
8. Seminars
9. Group Exercises
10. Project Work
11. Project
12. Exhibitions
13. Technical Festivals

26. Assessment and Grading (Subject to endorsement of revised unified academic regulations for 2022-23 – report submitted)

26.1. Components of Grading

There shall be **two Components** of grading in the assessment of each course:

Component 1, Continuous Evaluation (CE): This component involves multiple subcomponents (SC1, SC2, etc.) of learning assessment. The assessment of the

subcomponents of CE is conducted during the year at regular intervals. This subcomponent represents the formative assessment of students' learning.

Component 2, Year-End Examination (YEE): This component represents the summative assessment carried out in the form an examination conducted at the end of the year.

Marks obtained CE and YEE components have a weightage of CE: 10% and YEE: 90% in determining the final marks obtained by a student in a Course. The complete details of Grading are given in the Academic Regulations.

26.2. Continuous Evaluation Policies

Continuous evaluation depends on the type of the course as discussed below:

26.2.1 Course Having a Combination of Theory and Practical/Clinical

For a course that contains the combination of theory and practical/clinical sessions, the scheme for determining the CE marks is as under:

For a Course having a Combination of Theory and Laboratory Sessions				
SC1 (Theory)	SC2 (Theory)	SC3 (Assignment)	SC4 (Practical/ Clinical)	SC5 (Practical/ Clinical)
25 Marks	25 Marks	50 Marks	50 Marks	50 Marks

There shall be four subcomponents, each carrying 25 marks. Out of these, there shall be two term-tests and an assignment carrying 50marks to evaluate the students' performance in theory. The fourth and fifth subcomponent shall be set to evaluate the students' performance in the Practical / Clinical for 50 marks each.

The theory assignment can be of any of the following types:

- Online Test
- Problem Solving
- Field Assignment
- Open Book Test
- Portfolio
- Reports
- Case Study
- Group Task
- Any other

The Practical / Clinical subcomponent can be of any of the following types:

- Practical / Clinical Work Record
- Practical / Clinical Exercises
- Pre-Clinical Mannequin Simulation
- Computer Simulations
- Creative Submission
- Virtual Labs

- g) Viva / Oral Exam
- h) Lab Manual Report
- i) Any other (e.g. combinations)

After the four subcomponents are evaluated, the CE component marks are determined as:

CE Component Marks = 10% of the total CE marks scored

26.2.2 Pre- Clinical Laboratory Course

For Pre-Clinical laboratory courses, the scheme for determining the CE marks is as under:

Laboratory Course	
SC1	SC2
50 Marks	50 Marks

The subcomponents can be of any of the following types:

- a) Pre-Clinical laboratory Work Record
- b) Pre-Clinical laboratory Exercises
- c) Pre-Clinical Mannequin Simulation
- d) Computer Simulations
- e) Creative Submission
- f) Virtual Labs
- g) Viva / Oral Exam
- h) Lab Manual Report
- i) Any other (e.g. combinations)

After the subcomponents of CE are evaluated, the CE component Marks are determined as:

CE Component Marks = 20% of the total CE marks scored

25.2.3 Assessment for Internship, UG Group Project and Professional Core Elective

There are two components for assessment in these course:

- i. **Component 1** (CE) will be evaluation of case records, for 50% weightage.
- ii. **Component 2** will be evaluation of Assignment/Case presentation/Technical report for 50% weightage

The assessment questions are set to test the learning outcomes. In each component certain learning outcomes are assessed. The following table illustrates the focus of learning outcome in each component assessed

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Internship and Professional Core Elective	
SC1 Log Book	SC2 Assignment/ Case Presentation
50% weightage.	50% weightage.

25.2.4. Assessment for Ability Enhancement Compulsory Courses (AECC):

The assessment for AECC involves Theory/ Practical term test/Case/Project presentation. The assessment questions are set to test the learning outcomes. In each component certain learning outcomes are assessed. The following table illustrates the focus of learning outcome in each component assessed.

Ability Enhancement Compulsory Courses
SC1 Term Test/ Case/ Project Presentation
100%weightage

Student Support for Learning

1. Course Notes
2. Reference Books in the Library
3. Magazines and Journals
4. Internet Facility
5. Clinical / Super Specialty facility
6. Computing Facility
7. Laboratory Facility
8. Workshop Facility
9. Staff Support
10. Lounges for Discussions
11. Any other support that enhances their learning

27. Quality Control Measures

1. Review of Course Notes
2. Review of Question Papers and Assignment Questions
3. Student Feedback
4. Moderation of Assessed Work
5. Opportunities for students to see their assessed work
6. Review by external examiners and external examiners reports
7. Staff Student Consultative Committee Meetings
8. Student exit feedback
9. Subject Assessment Board (SAB)
10. Programme Assessment Board (PAB)

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28. Programme Map (Course-PO-PSO Map)

Year	Course Title	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
I	General Human Anatomy including Embryology, Osteology and Histology	3	2	1										3	2		
I	General Human Physiology	3	2	2										3	2		
I	Biochemistry, Nutrition and Dietetics	3	2	2										3	2		
I	Dental Anatomy, Embryology and Oral Histology	3	2	2										3	2		
I	Law for Dental Professionals						3	2	2								2
II	General Pathology	3	2	2										3	2		
II	Microbiology	3	2	2										3	2		
II	General and Dental Pharmacology and Therapeutics	3	2	2	1									3	2	2	
II	Dental Materials		2		1			2							2	2	
II	Preclinical Prosthodontics and Crown & Bridge		2		1			2							2	2	
II	Preclinical Conservative Dentistry		2		1			2							2	2	
II	Basic Life Support		2		2			2							2		
III	Oral Pathology and Oral Microbiology	3	2	2				2						3	2	1	
III	General Medicine	3	2	2				2						3	2	1	1
III	General Surgery	3	2	2				2						3	2	1	1
III	Patient Safety Curriculum					1	2	3	2						2		2
III	Community Orientation Program					3	3	1		3							2
III	UG Group Research					3			2	1	3	3	2			2	2
III	Practice Observership						2	3	1	1							2

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III	Forensic Odontology	3	2	2				2						3	2	1	
III	Dental Equipment & Technology	3	2	2			2	3	1	1							2
IV	Oral Medicine and Radiology	3	3	3	3	2	1	2	1	1	2	2	1	3	3	2	1
IV	Pediatric and Preventive Dentistry	3	3	3	3	2	1	2	1	1	2	2	1	3	3	2	1
IV	Public Health Dentistry	3	2		1	2	3	1	1	2	2	2	1	3	2	2	1
IV	Orthodontics & Dentofacial Orthopedics	3	2	1	1	2	1	1	1	1	2	2	1	3	1		1
IV	Oral & Maxillofacial Surgery	3	3	3	3	2	1	3	1	1	2	2	1	3	3	2	1
IV	Periodontology	3	3	3	3	2	1	3	1	1	2	2	1	3	3	2	1
IV	Prosthodontics and Crown & Bridge	3	3	3	3	2	1	3	1	1	2	2	1	3	3	2	1
IV	Conservative Dentistry and Endodontics	3	3	3	3	2	1	3	1	1	2	2	1	3	3	2	1
V	Oral Medicine and Radiology	3	3	3	3	2	1	2	1	1	2	2	1	3	3	2	1
V	Periodontology	3	3	3	3	2	1	3	1	1	2	2	1	3	3	2	1
V	Pediatric and Preventive Dentistry	3	3	3	3	2	1	2	1	1	2	2	1	3	3	2	1
V	Prosthodontics and Crown & Bridge	3	3	3	3	2	1	3	1	1	2	2	1	3	3	2	1
V	Public Health Dentistry Including Comprehensive Oral Health	3	2		1	2	3	1	1	2	2	2	1	3	2	2	1
V	Conservative Dentistry and Endodontics	3	3	3	3	2	1	3	1	1	2	2	1	3	3	2	1
V	Orthodontics & Dentofacial Orthopedics	3	2	1	1	2	1	1	1	1	2	2	1	3	1		1
V	Oral & Maxillofacial Surgery	3	3	3	3	2	1	3	1	1	2	2	1	3	3	2	1

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V	Oral Pathology and Oral Microbiology	3	2	2				2						3	2	1	
V	Accident & Emergency		2		2	2	2	1	1	2			1		2		1
V	Rural Posting					3	3	1		3							2
V	Management of Oral Mucosal Lesions	2	2	2	2	2	2	1			1	1	3	2	1		
V	Basics of CBCT in Implant Dentistry		2	2	2	2		1			1	1	3			3	
V	Lasers in Periodontics		2		2	2		1	1		1	1	3			3	
V	Periodontal Surgery for Clinician		2		2	1	1	1	1		1	1	3		2		
V	Advanced Pediatric Endodontics		3	2	2	3	3	1	3	1	1	1	3		2	1	
V	Comprehensive Pediatric Rehabilitation	1	2	2	2	2	2	1	1		1	1	3		2		
V	Introduction to Implantology		2	1	2	1		1	1		1	1	3			3	
V	Basics of Fixed Partial Denture		2	1	2	1	1	1	1		1	1	3		2	1	
V	Aesthetic Dentistry		2	1	2	1	1	1	1		1	1	3		2	1	
V	Practice Based Endodontics		2	1	2	1	1	1	1		1	1	3		2	1	
V	Practice Management							3		1			2			2	2
V	Advanced Data Analytics in Dental Research											2	1			1	1
V	Surgical Extraction		2	2	2	1	1	1	1		1	1	3		2		
V	Management of Medically Compromised Patients		2	2	2	1	1	1	1		1	1	3		2		
V	Orthodontics for General practice		2	1	2	1	1	1	1		1	1	3		2	1	
V	Preventive Orthodontics		2	1	2	1	1	1	1		1	1	3		2	1	
V	Routine Tissue Processing		2	3	2			1			1	1	3		2		
V	Exfoliative Cytology in Pathologic Diagnosis		2	3	2			1			1	1	3		2		

V	Special Care Dentistry	3	3	3	3	2	1	2	1	1	2	2	1	3	3	2	1
V	Open Elective												2				2
3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution																	

29. Co-curricular Activities

Students are encouraged to take part in co-curricular activities like seminars, conferences, symposia, table clinics, scientific paper writing and poster presentations, attending industry exhibitions, project competitions and related activities for enhancing their knowledge and networking.

30. Cultural and Literary Activities

Annual cultural festivals are held to showcase the creative talents in students. They are involved in planning and organizing the activities.

31. Sports and Athletics

Students are encouraged to take part in sports and athletic events regularly. Annual sports meet will be held to demonstrate sportsmanship and competitive spirit.


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Programme Structure and Course Details of Bachelor of Dental Surgery (BDS) 2026

Programme Content					
	COURSE CODE	COURSE TITLE	THEORY CREDITS	PRACTICAL / CLINICAL CREDITS	TOTAL CREDITS
I	CORE COURSES				
	BDC101A	General Human Anatomy including Embryology, Osteology and Histology	5	5	10
	BDC102A	General Human Physiology	6	2	8
	BDC103B	Biochemistry, Nutrition and Dietetics	4	2	6
	BDC104A	Dental Anatomy, Embryology and Oral Histology	5	5	10
	BDC201A	General Pathology	4	2	6
	BDC202A	Microbiology	4	2	6
	BDC203A	General and Dental Pharmacology and Therapeutics	4	1	5
	BDC204A	Dental Materials	6	5	11
	BDC205A	Preclinical Prosthodontics and Crown & Bridge	4	10	14
	BDC206A	Preclinical Conservative Dentistry	2	6	8
	BDC301A	General Medicine	4	3	7
	BDC302A	General Surgery	4	3	7
	BDC303A	Oral Pathology and Oral Microbiology	5	4	9
	BDC401B	Oral Medicine and Radiology	4	5	9
	BDC402A	Pediatric and Preventive Dentistry	4	5	9
	BDC403A	Public Health Dentistry	4	5	9
	BDC404A	Orthodontics & Dentofacial Orthopedics	4	5	9
	BDC405A	Oral & Maxillofacial Surgery	5	5	10
	BDC406B	Periodontology	5	5	10
	BDC407A	Prosthodontics and Crown & Bridge	6	5	11
	BDC408A	Conservative Dentistry and Endodontics	6	5	11
II	INTERNSHIP COURSES				
	BDI401A	Oral Medicine and Radiology	-	3	3
	BDI402A	Pediatric and Preventive Dentistry	-	3	3
	BDI403A	Public Health Dentistry Including Comprehensive Oral Health	-	4	4
	BDI404A	Orthodontics & Dentofacial Orthopedics	-	3	3
	BDI405A	Oral & Maxillofacial Surgery	-	3	3
	BDI406A	Periodontology	-	3	3
	BDI407A	Prosthodontics and Crown & Bridge	-	5	5

Programme Structure and Course Details of Bachelor of Dental Surgery (BDS) 2026

	BDI408A	Conservative Dentistry and Endodontics	-	5	5
	BDI409A	Oral Pathology and Oral Microbiology	-	1	1
	BDI410A	Accident & Emergency	-	1	1
	BDI411A	Rural Posting	-	4	4
III		Electives			
	BDE4XXA/B	Professional Core Elective 1	-	4	4
	BDE4YYA/B	Professional Core Elective 2	-	4	4
	BDO401A	Open Elective	3	-	3
IV		Research			
	BDR301A	UG Group Research			8
V		Ability Enhancement Compulsory Courses			
	BDF101A	Law for Dental Professionals			1
	BDF201A	Basic Life Support			1
	BDF301A	Patient Safety Curriculum			1
	BDF302A	Community Orientation Program			5
	BDF401A	Practice Observership			3
VI		Audit Courses			
	BDA301A	Forensic Odontology	-	-	-
	BDA302A	Dental Equipment and Technology	-	-	-
	BDAI401A	Special Care Dentistry	-	-	-


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Course Specifications

Course Title	Biochemistry, Nutrition and Dietetics
Course Code	BDC103B
Course Type	Core Course
Department	Biochemistry
Faculty	Dental Sciences

1. Course Summary

Biochemistry aims to help students learn about biochemical reactions in the human body in health and disease. The students learn about the molecular architecture of eukaryotic cell, chemical nature of biological macromolecules and enzyme dynamics. The students learn the metabolism of dietary and endogenous carbohydrates, lipids, and proteins, principles of bioenergetics and principles and mechanisms of metabolic control. The students are taught about actions of hormones, structure and constituents of DNA, RNA, inborn errors of metabolism and practical chemistry.

2. Course Size and Credits

Number of Credits	06
Credit Structure (Lecture: Tutorial: Practical)	3:0:1
Total Hours of Interaction	120
Number of Weeks in a term	20
Department Responsible	Biochemistry
Total Course Marks	200
Pass Criterion	As per the Academic Regulations
Attendance Requirement	As per the Academic Regulations

3. Course Outcomes (COs)

- After the successful completion of this course, the student will be able to:

CO-1. Describe metabolic processes

CO-2. Describe biochemical basis of diseases

CO-3. Perform quantitative tests on human samples and interpret the results

CO-4. Perform routine hematological investigations with empathy towards patients

CO-5. Interpret a case report based on the biochemical findings

CO-6. Suggest probable line of management of diseases

4. Course Contents

Course Content - Theory				
Sl no	Chapter		Lesson Topics	Ref
1	Introduction to Biochemistry	i	Definition and scope of Biochemistry	1 to 4, 7 to 9
2	Carbohydrates	i	Definition and classification, Isomerism of sugars	1 to 4, 7 to 9
3		ii	Physiologically important mono, di and poly saccharides	
4		iii	Mucopolysaccharides – hyaluronic acid, chondroitin sulphate, heparin	
5	Aminoacids and proteins	i	Amino acids: definition, classification, properties	1 to 4, 7 to 9
6		iii	Proteins – definition, functions, classification & structural organisation	
7		iv	Proteins –properties & biologically important peptides	

Programme Structure and Course Details of BDS Programme in Biochemistry 2026

8		v	Plasma proteins and their separation by electrophoresis	
9		vi	Hemoglobin and its abnormal forms	
10	Lipids	i	Definition and classification	1 to 4, 7 to 9
11		ii	Functions of lipids	
12		iii	Fatty acids, neutral fats and phospholipids	
13		iv	Cholesterol and lipoproteins	
14	Nucleic acids	i	Nucleic acid composition	1 to 4, 7 to 9
15		ii	Structure and functions of DNA and RNA	
16		iii	Nucleosides, nucleotides and their importance	
17	Vitamins	i	Vitamins: Definition & classification, Vitamin A - functions and deficiency manifestations	1 to 4, 7 to 9
18		ii	Vitamin D - functions and deficiency manifestations	
19		iii	Vitamin E and K- functions and deficiency manifestations	
20		iv	Thiamine and Riboflavin- functions and deficiency manifestations	
21		v	Niacin and pyridoxine- functions and deficiency manifestations	
22		vi	Folic acid, cyanocobalamine and pantothenic acid - functions and deficiency manifestations	
23		viii	Vitamin C- functions and deficiency manifestations	
24	Enzymes	i	Definition, classification & properties	1 to 4, 7 to 9
25		ii	Holoenzyme, co enzyme & mechanism of action	
26		iv	Factors influencing the enzyme activity & regulation	
27		v	Enzyme activation & inhibition – types and examples	
28		vi	Diagnostic enzymology	
29	Digestion and absorption	i	Digestion and absorption of carbohydrates	1 to 4, 7 to 9
30		ii	Digestion and absorption of amino acids	
31		iii	Digestion and absorption of lipids	
32	Carbohydrate metabolism	i	Glycolysis	1 to 4, 7 to 9
33		ii	Gluconeogenesis & Cori's cycle	
34		iv	Citric acid cycle & energetics of glucose oxidation	
35		v	Glycogen metabolism & HMP shunt pathway	
36		vii	Regulation of blood glucose	
37		viii	Biological oxidation	
38	Lipid metabolism	i	Beta oxidation of fatty acids and its energetics	1 to 4, 7 to 9
39		ii	Ketone body metabolism and ketosis	
40		iv	Fatty acid and triglyceride synthesis	
41		v	Fatty liver, lipotropic action & metabolism during starvation	
42	Protein metabolism	i	Introduction to protein metabolism	1 to 4, 7 to 9
43		ii	Transamination, deamination, fate of ammonia & urea cycle	
44		iii	Glycine, phenylalanine, tyrosine and methionine metabolism and disorders	
45		iv	Translation	
46	Nutrition and dietetics	i	Dietary factors, BMR, Biological value of proteins	1 to 4, 7 to 9
47		ii	Dietary fibers and balanced diet	
48		iii	SDA, PM, calorimetry	

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49	Mineral metabolism	i	Calcium- distribution, sources, functions, requirements and deficiency manifestations	1 to 4, 7 to 9
50		ii	Iron - distribution, sources, functions, requirements and deficiency manifestations	
51		iii	Iodine, fluorine, phosphorus - distribution, sources, functions, requirements and deficiency manifestations	
52	Liver function tests	i	Liver function tests	1 to 4, 7 to 9
53		ii	Vandenberg reaction, AG ratio, bromosulphathelin test	
54		iii	Liver enzymes	
55	pH and its biological importance	i	Acids, bases and buffers, Henderson Hasselbachs equation, acid base balance	1 to 4, 7 to 9
56		ii	Acidosis and alkalosis	
57	Renal function tests	i	Urea and creatinine clearance	1 to 4, 7 to 9
58	Blood constituents	i	Normal and abnormal variations of calcium, phosphorus, creatinine, alkaline and acid phosphatase	

Course Content - Practicals

1	Reactions of carbohydrates	Reactions of monosaccharides	5,6
2		Reactions of disaccharides	5,6
3		Preparation of osazones	5,6
4		Reactions of polysaccharides	5,6
5		Identification of unknown carbohydrate	5,6
6	Reactions of proteins	Colour reactions of proteins- albumin	5,6
7		Colour reactions of proteins – gelatin & peptone	5,6
8		Colour reactions of proteins- casein	5,6
9		Precipitation reactions of albumin	5,6
10		Precipitation reactions of gelatin & peptone	5,6
11		Precipitation reactions of casein	5,6
12		Identification of unknown protein	5,6
13	Reactions of non-protein nitrogenous compounds	Reactions of urea, uric acid and creatinine	5,6
14	Identification of physiologically important constituents	Identification of physiologically important constituents	5,6
15	Urine analysis	Urine analysis normal constituents	5,6
16		Urine analysis normal constituents	5,6
17		Urine analysis abnormal constituents	5,6
18		Urine analysis abnormal constituents	5,6
19	Determination of titrable acid and ammonia in urine	Determination of titrable acid and ammonia in urine	5,6
20	Colorimeter	Colorimeter	5,6
21	Quantitative tests	Determination of blood glucose	5,6
22		Determination of creatinine content in urine and calculation of creatinine clearance	5,6

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23	Demonstration tests	Electrophoresis & chromatography	5,6
24		Estimation of serum calcium and phosphorus	5,6
25		Estimation of bilirubin	5,6
26		Estimation of urea in blood	5,6
27		Estimation of total protein in serum	5,6
28		Preparation of hemin crystals	5,6
29		Discussion of practical charts	5,6
30	Case Reports	Glucose Tolerance Test Profiles	5,6
31		Serum Lipid Profiles	5,6
32		Profiles of Hypothyroidism and Hyperthyroidism	5,6
33		Profiles of Liver Function	5,6
34		Urea, Uric Acid Creatinine Profiles in Kidney Disorders	5,6
35		Blood gas Profiles in Acidosis/Alkalosis	5,6
36		Spotters	5,6

5. Course Map (CO-PO-PSO Map)

	Programme Outcomes (POs)												Programme Specific Outcomes (PSOs)			
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3	PSO-4
CO-1	3												3			
CO-2	3												3			
CO-3			3											3		
CO-4			3											3		
CO-5			3											3		
CO-6		2		2										2		

3: Very Strong Contribution, 2: Strong Contribution, 1: Moderate Contribution

6. Course Teaching and Learning Methods

Teaching and Learning Methods	Duration in hours	Total Duration in Hours
Face to Face Lectures	50	50
Demonstrations		10
1. Demonstration using Videos	00	
2. Demonstration using Physical Models /Patients	10	
Practical Work		45
Pre-Clinical laboratories/ Laboratory	40	
Clinical Area – FDS	00	
Workplace based assessment methods	00	
Hospital Setup – MSRHS	00	
Field work/dental camp	00	
Outreach centres	00	
Advanced Learning Centre	00	
Projects	00	
Innovative methods – DOPS, mini CEX, OSCE/OSPE	05	

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Others		05
1. Case Study Presentation	00	
2. Guest Lecture	00	
3. Industry / Field Visit	00	
4. Brain Storming Sessions	00	
5. Group Discussions	05	
6. Discussing Possible Innovations	00	
Term Tests, Laboratory Examination/Written Examination, Presentations		10
Total Duration in Hours		120

1. Course Assessment and Reassessment

The details of the components and subcomponents of course assessment are presented in the Programme Specifications document pertaining to the Bachelor of Dental Surgery Programme. The procedure to determine the final course marks is also presented in the Programme Specifications document. The evaluation questions are set to measure the attainment of the COs. In either component (CE or SEE) or subcomponent of CE (SC1, SC2, SC3, SC4 or SC5), COs are assessed as illustrated in the following Table.

Focus of COs on each Component or Subcomponent of Evaluation						
Subcomponent ►	Component 1: CE (10% Weightage)					Component 2: YEE (90% Weightage)
	SC1	SC2	SC3	SC4	SC5	
Subcomponent Type ►	Term Test	Term Test	Assignment	Clinical Term Test	Clinical Term Test	100 Marks
Maximum Marks ►	25*	25*	50*	50*	50*	
CO-1	X	X				X
CO-2	X	X				X
CO-3	X	X		X	X	X
CO-4				X	X	X
CO-5	X	X	X	X	X	X
CO-6	X	X	X	X	X	X
The details of SC1, SC2, SC3, SC4 or SC5 are presented in the Programme Specifications Document.						

Note *: Component 1 is conducted for 200 marks and reduced to 100 marks

The Course Leader assigned to the course, in consultation with the Head of the Department, shall provide the focus of COs in each component of assessment in the above template at the beginning of the year. Course reassessment policies are presented in the Academic Regulations document.

2. Achieving COs

The following skills are directly or indirectly imparted to the students in the following teaching and learning methods:

S. No	Curriculum and Capabilities Skills	How imparted during the course
1.	Knowledge	Classroom lectures
2.	Understanding	Classroom lectures, Self-study
3.	Critical Skills	Assignment
4.	Analytical Skills	Assignment

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5.	Problem Solving Skills	Assignment, Examination
6.	Practical Skills	Assignment
7.	Group Work	Assignment
8.	Self-Learning	Self-study
9.	Written Communication Skills	Assignment, Examination
10.	Verbal Communication Skills	Classroom lectures, Practical Sessions, Examination
11.	Presentation Skills	Classroom lectures, Practical Sessions, Examination
12.	Behavioral Skills	Classroom lectures, Practical Sessions, Examination
13.	Information Management	Assignment
14.	Personal Management	Assignment, Examination
15.	Leadership Skills	Classroom lectures, Assignment

3. Course Resources

a. Essential Reading

1. Class Notes
2. Sathyanarayana U, Chakrapani U. (2013), Text book of Biochemistry. 4th Edition, Elsevier Science Ltd.
3. Vasudevan DM, Sreekumari S. (2013), Text book of Biochemistry. 7th Edition, Jaypee publishers.
4. Naik P. (2007), Text book of Biochemistry. 2nd Edition, Jaypee publishers
5. Rao AVSR. (2002), Text book of Biochemistry. 9th Edition, UBS publishers.
6. Chawla R. (2003), Practical text book of Biochemistry. 3rd Edition, Jaypee publishers
7. Vasudevan DM, Sreekumari S. (2013), Practical text book of Biochemistry. 2nd Edition, Jaypee publishers

b. Recommended Reading

1. Champe PC, Harvey RA. (2011) Lippincott's illustrated review Biochemistry. 5th Edition, Wolters Kluwer
2. Murray RK. (2009), Harper's Illustrated Biochemistry. 28th Edition, McGraw-Hill.
3. Nelson DL, Cox MM. (2013), Lehninger Principles of Biochemistry. 6th Edition, Macmillan Publishers.

c. Magazines and Journals

d. Websites

1. www.pubmed.com

e. Other Electronic Resources

1. HELINET
2. EBSCO HOST

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