University of Health Sciences
Lahore

BDS Integrated Curriculum 2K25

Version 2.0

BDS Year-01

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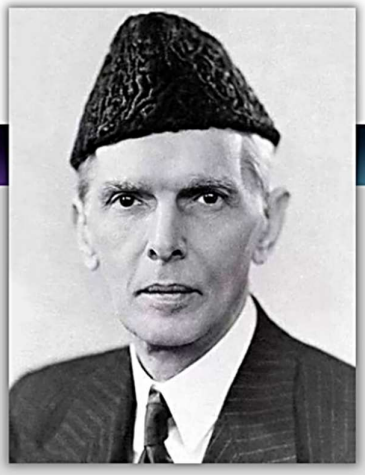
BDS Integrated Curriculum 2K25

Version 2.0

BDS YEAR-01

UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
Section-01
Curriculum 2025



Without education it is complete darkness and with education it is light. Education is a matter of life and death to our nation. The world is moving so fast that if you do not educate yourselves, you will be not only completely left behind, but will be finished up.

Quaid e Azam Muhammad Ali Jinnah
Islamia College Lahore 1945

University of Health Sciences Lahore

MEMENTO OF APPROVAL

This memento commemorates the formal approval and adoption of the following academic curricula – A historical transformation from traditional to modular syllabi:

MBBS Modular Integrated Curriculum 2K23

Final Version for Five-Year Programme

Integrated Modular Dental Curriculum

Second Revision Five-Year BDS Curriculum 2025–26

Approved by the Combined Meeting of the Boards of Studies (Medicine and Dentistry) and the Syndicate of the University of Health Sciences, Lahore, in accordance with the applicable statutes, regulations, and academic governance framework.

Issued under the auspices of the

Khawaja Salman Rafique

Honourable Pro-Chancellor, University of Health Sciences

Minister for Specialized Healthcare and Medical Education, Government of the Punjab.

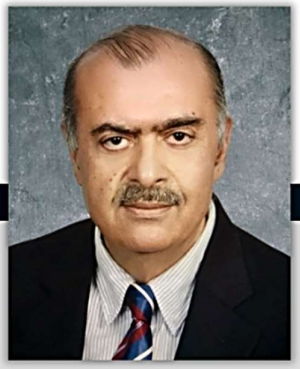
By order of

Professor Dr. Ahsan Waheed Rathore,

Vice Chancellor, University of Health Sciences Lahore /

Chairman Syndicate, UHS, Lahore

31 December 2025
Lahore, Pakistan



I am pleased to introduce our newly developed curriculum document, which embodies our commitment to providing quality education in dental undergrate program. This revamped curriculum is designed to foster a holistic learning experience, emphasizing community services, and adhering to international standards.

The new curriculum boasts an innovative integration of subjects, ensuring a seamless transition from theoretical foundations to practical applications. Our clerkship model provides students with hands-on experience, bridging the gap between academia and real-world practice.

As we continue to attract overseas students, our curriculum has been tailored to accommodate diverse learning needs, while maintaining the highest standards of dental education. Our competency-based approach ensures that graduates possess the requisite skills, knowledge, and attitudes to excel in their chosen careers.

This milestone achievement would not have been possible without the tireless efforts of our faculty, subject experts, Department of Medical Education . I extend my sincerest gratitude to everyone involved in this endeavor.

Together, let us embark on this exciting journey of 2K25 Dental Education.

Prof. Ahsan Waheed Rathore
Vice Chancellor
University of Health Sciences Lahore

It is a great pleasure for me that UHS announce the launch of our newly designed, integrated dental undergraduate curriculum. This milestone marks a significant shift in our approach to dental education, as we strive to provide our students with a comprehensive, holistic learning experience.

This curriculum incorporates the latest dental updates, ensuring that our students are equipped with cutting-edge knowledge and skills. We have undertaken a total revision of our traditional curriculum, which had not been updated for some time. This overhaul has enabled us to review some outdated content, streamline our courses, and foster a more cohesive learning environment.

At the heart of our new curriculum lies a focus on student training as future leaders. We recognize that our students are not just future dental professionals, but also individuals with unique needs, aspirations, and learning styles. Our integrated curriculum is designed to nurture the whole student, encompassing academic rigor, clinical excellence, and personal growth.

This innovative curriculum would not have been possible without the collaborative efforts of our esteemed faculty, Medical Education Department ,staff, and subject experts. I extend my sincerest appreciation to everyone involved in this endeavor.

Prof. Dr. Nadia Naseem
Pro Vice Cahncellor
University of Health Sciences Lahore

University of Health Sciences
Lahore

Vision Statement

UHS is a leading University aiming to keep its graduates apt with the ever emerging global health challenges evolving educational methodologies and emerging technological advancements to maintain its distinguishable position as a Medical University.

Mission Statement

UHS shall continue to strive for producing a human resource par at excellence to cater for the health needs of the people of Punjab and Pakistan.

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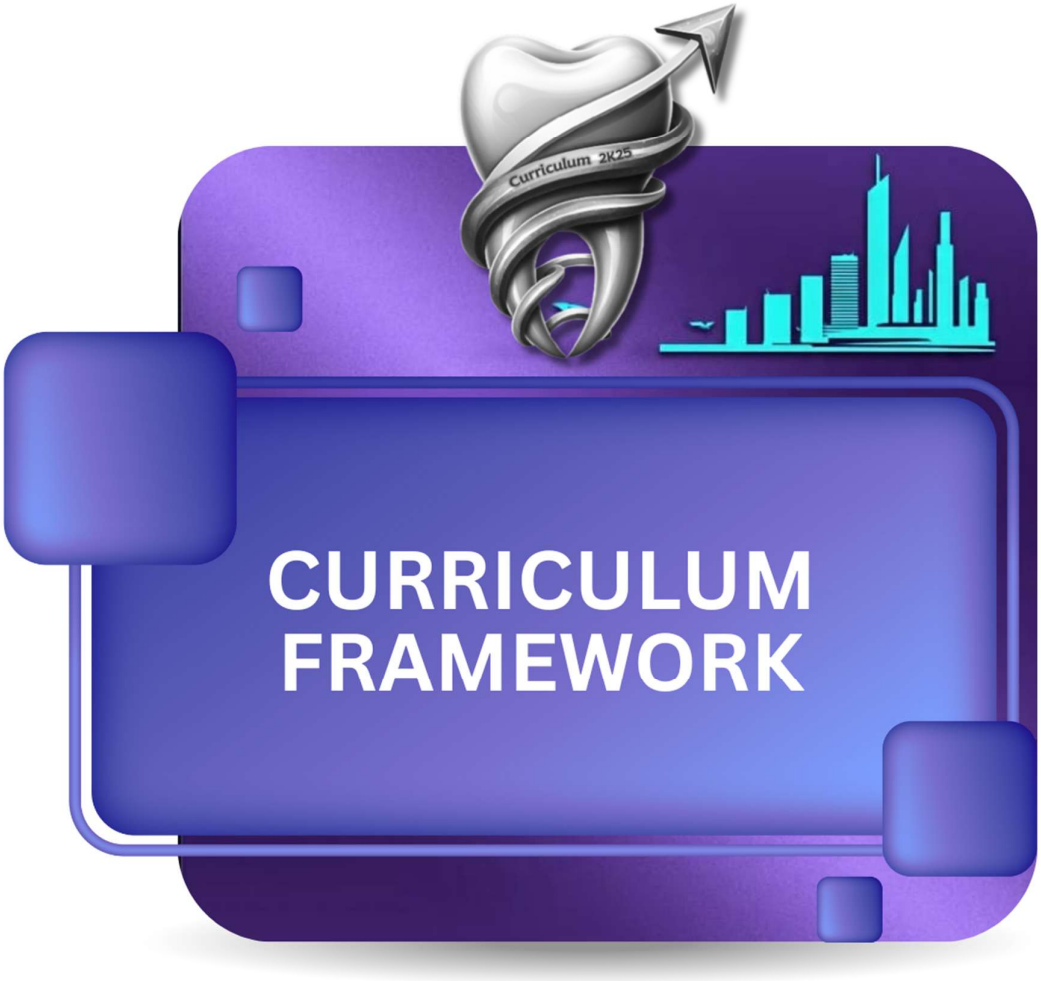


CURRICULUM FRAMEWORK

CURRICULUM FRAMEWORK

BDS Integrated Curriculum 2K25

Version 2.0

YEAR-1

MODULES

Block-1

1. Foundation-I
2. Craniofacial-I
3. Cariology-I

Block-2

4. Foundation-II
5. Craniofacial-II
6. Neurosciences-I
7. Alveo-Cemental Complex-I

Block-3

8. Blood & Cardiovascular System-I
9. Gastrointestinal Tract
10. Occlusion-I

PRISME (Year-1)

Professionalism, Research, Informatics (Dental), Social Responsibility, Management/Entrepreneurship and Evidence Based Dentistry)

CFRC (Year-1)

Clinical Foundation Rotation Clerkships

Islamiyat/Civics & Pakistan Studies

Curriculum 2K25
IMPLEMENTATION
GUIDELINES

Introduction

This manual provides a structured guide for implementing the integrated medical and dental curriculum across all affiliated institutions of the University of Health Sciences (UHS). It outlines how faculty and departments can translate curricular intent into effective educational practice through coordinated planning, teaching, and assessment.
With 45 medical and 17 dental constituent & affiliated colleges, UHS has designed this manual to ensure consistency in standards while allowing institutional autonomy in scheduling and implementation within the academic year.

The manual embodies the collective vision of promoting high-quality, student-centered, and outcome-oriented medical and dental education.

Purpose of the Manual

The manual serves as a foundational document to support the systematic integration of multiple disciplines in both teaching and assessment. It encourages alignment between learning outcomes, instructional strategies, and evaluation methods to ensure a coherent learning experience for students through proper implementation by the institutions.
Certificate courses in Health Professions Education (HPE) have significantly contributed to building faculty capacity, equipping educators with the understanding and skills required for implementing this curriculum effectively. Consequently, most medical and dental faculty are now well versed in applying the principles embedded within this manual as *2K23 Curriculum* is practiced since 2023.

Adhering to this manual will yield multiple benefits:

- Ensures alignment between outcomes, content, and assessment.
- Promotes horizontal and vertical integration of disciplines.
- Enhances student engagement through active, learner-centered approaches.
- Strengthens accountability and standardization across affiliated colleges.
- Encourages reflective and evidence-informed educational practice among faculty.

Guiding Principles

The manual is based on well-established educational principles that underpin modern health professions education. These include:

1. **Outcome-Based Education (OBE)**

   The curriculum emphasizes that *outcome matters*. Every discipline and topic is aligned with defined learning outcomes, ensuring that teaching and assessment are directed toward developing the competencies expected of a graduate.

2. **Student-Centered Learning**

   Learners are at the core of all educational activities. Teaching strategies should promote active participation, self-directed learning, and reflection, enabling students to become independent and lifelong learners.

3. **Integration of Disciplines**

   The first step toward true integration involves collaboration among multiple disciplines in both teaching and assessment. This fosters connections between basic and clinical sciences, allowing students to appreciate the relevance of foundational knowledge in patient care.

4. **Appropriate Responsibility**

Following Harden's principle of *"the right thing by the right person at the right time,"* teaching and assessment responsibilities should correspond to faculty expertise and the learner's developmental stage.

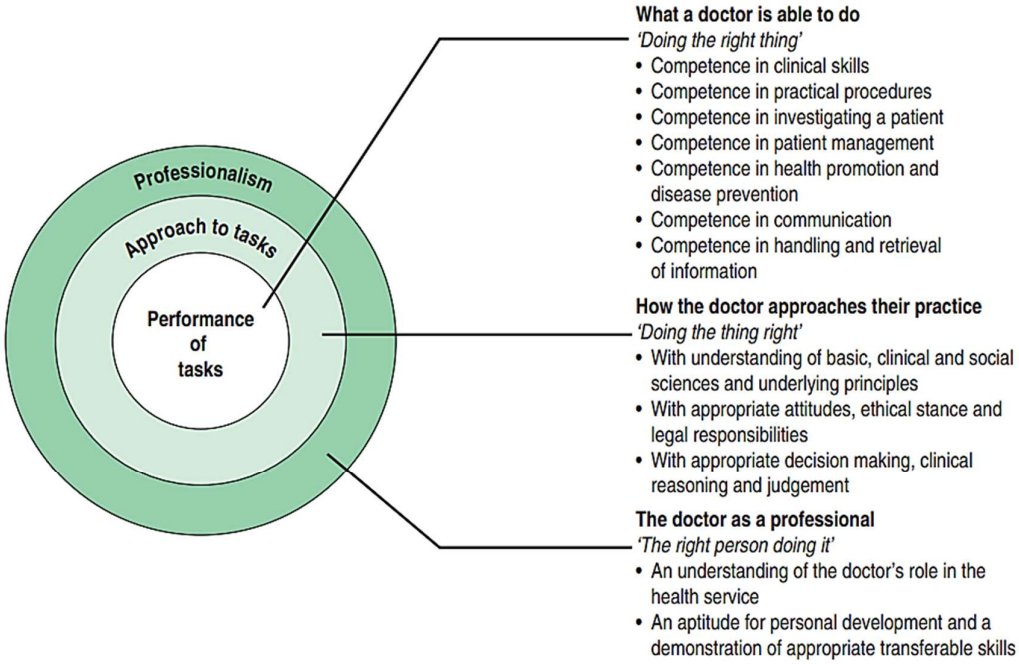


Fig. 9.2 The 12 learning outcomes of the Scottish Doctor (Simpson et al, 2002).

5. **Faculty Collaboration and Autonomy**

While the manual provides a standard framework, it also respects the diversity of institutional contexts. Each institution has the autonomy to design and plan within allocated timeframes while maintaining alignment with core learning outcomes and educational standards.

Implementation Guidelines

1. Establish an Implementation Team

Each college should constitute an internal Implementation Committee that includes:

- Academic Year Coordinator
- Head of Medical Education/ Dental Education
- Block in-charges
- Module In-charges
- Subject leads
- Assessment coordinator
- Timetable coordinator

This team will ensure the following components through-out the academic year:

i. Faculty Orientation & Development:

- Before starting the academic year:
  - Faculty must be briefed on learning outcomes, module structure, teaching strategies, and assessment formats.
  - Faculty are encouraged to be very careful for the Implementation of the Outcomes, as it is the outcome that matters the most (It's depth and breadth must be clearly defined as per the action verbs used)
  - Institutional heads are encouraged to assign DDE faculty to organize, conduct, and continue building faculty capacity through workshops, short courses, and reflective discussions on teaching and assessment.
- New faculty should go through a mandatory curriculum orientation workshop run by the DDE.

ii. Student Orientation:

- Before starting the academic year:

- Students must be briefed the full academics and they must be introduced with their year coordinator, module in-charges and mentors.

iii. Student Coaching & Mentoring:

Institutional Head must ensure coaching and mentoring of students when and where required.

iv. Curricular Mapping:

Align each topic and teaching activity with the intended learning outcomes. Timetable committees will be encouraged to design modular and blocks' content mapping by involving all the stakeholders and displayed on Institutional Website/Notice Boards for all the students & faculty.

v. Module Planning:

Develop module outlines specifying objectives, learning methods, and assessment tools. Faculty must map lectures, practical sessions and clinical exposure to specific learning outcomes.

vi. Integrated Teaching:

Ensure interdepartmental collaboration to ensure content relevance, and coherence. While planning timetable and allocation of subjects, only focus will be on achieving the outcomes and faculty can be engaged as per Institute's resources.

vii. Assessment Design:

- Integrate formative and summative assessments that evaluate knowledge, skills, and attitudes in alignment with outcomes. Internal exam schedules should be part of the academic calendar.
- Programmatic assessment is practiced worldwide. In the current system, internal assessment serves as the fundamental mechanism for monitoring students' academic progress. Institutions are therefore encouraged to plan regular formative assessments, including SEQs, assignments, MCQs, buzz group activities, student presentations, etc. This approach allows timely identification of areas requiring improvement related to attendance and academic performance, enabling early intervention. Recognizing the strengths of continuous assessment, the implementation team will ensure mid-block

identification of students who require attendance and/or academic support. Early detection helps prevent serious academic consequences and reduces the need for lengthy remedial or re-sit examination procedures. This approach conserves faculty time and effort while simultaneously empowering students to take ownership of their learning.

viii. Continuous Review:

Regularly gather feedback from students and faculty to revise and improve the implementation process. Each college must:

- Conduct monthly internal audits of teaching progress
- Collect student feedback after each module
- Institutes must keep a proper record and submit an implementation summary to DME, UHS via Vice Chancellor Office when requested.

2. Develop a Yearly Academic Plan:

Colleges must align their timetables with the approved academic weeks.
The academic plan should include:

- Weekly distribution of topics based on LOs
- Allocation of protected self-study hours
- Library time
- Skills workshops (Mandatory and others)
- PERLs/PRISME sessions
- Co-/Extra-curricular activities
- Electives (where needed)
- Evening Clinical Teaching & Training (as per need)
- Research Work
- Interdisciplinary seminars (Mandatory after every module in Pre-Clinical Years)
- Assessment (Quizzes/Buzz Groups/Student Presentations/Class Tests/Module End Exam/Mid-Block Exam/Block Exam)

Timetables must ensure there is **no overlap between modules** and **no duplication between different disciplines.**

3. Mandatory Clinical Skills Workshops

Each academic year coordinator will ensure implementation of all the mandatory workshops enlisted in the Curricular document for that specific class/year. Each workshop must include:

- Demonstration
- Supervised practice
- Logbook entry

4. Maintain Standardized PRISME Implementation

All the students will be well versed with the PRISME objectives/training and maintaining portfolio documents duly signed by the supervisor/mentor/whosoever relevant with the assigned activity.

5. Clinical Rotations

Colleges must ensure structured rotations:

- Rotations should align with module content.
- Students must complete logbooks signed by supervisors
- Community fieldwork reports (where needed).

Guidelines for Designing Academic Calendar:

A paradigm shift from traditional to integrated education requires a stronger focus on learning outcomes. Different disciplines are expected to align their teaching and learning strategies with student needs and curricular requirements. Keeping this vital element of student learning in view, the document has been designed to provide institutions with the autonomy to plan their academic activities according to available resources. A **broad general guideline** is provided to ensure the proper utilization of academic hours and activities

Sr. No.	Activity	Description / Purpose	Scheduling Guidance
1.	Routine Classes and Assessments (Islamiyat, Pakistan Studies, civics included)	Regular teaching sessions, tutorials, and formative/summative assessments as per the institutional timetable.	Distribute as per defined boundary of the LO
2.	Dedicated Library Time	Structured periods for literature review, reference work, and independent study.	Allocate weekly or bi-weekly slots.
3.	Protected Self-Study Hours & Research	Reserved time for students to revise, prepare assignments, or engage in reflective learning.	Must be included in monthly planner & it should not overlap with teaching hours.
4.	Clinical Rotations / PRISME/ Field Visits	Supervised clinical exposure in hospital and community settings.	Schedule as per departmental rotation plans/morning or evening and ER as per need/academic year.
5.	Co-curricular and Extra-curricular Activities	Activities promoting professional, ethical, and inter & intra personal development.	Integrate periodically throughout the academic year.
6.	Mandatory Clinical Skills Workshops	Hands-on sessions to practice core procedural and communication skills.	As per curricular document
7.	End-of-Module Supervised Interdisciplinary Student led-Seminars, Symposiums, and CPCs/Buzz Group/ Quizzes/ Student Presentations	Collaborative academic events to consolidate integrated learning.	Schedule at the conclusion of each module. (Mandatory)
8.	Elective Activities	Student-selected learning experiences for professional or personal enrichment.	As and where required

Monitoring and Quality Assurance

Institutions are responsible for ensuring that the implementation of the manual upholds educational standards and learning outcomes. Monitoring mechanisms may include internal audits, student evaluations, peer reviews, and regular reporting to the curriculum committee. The ME and DE departments should facilitate continuous quality improvement through data analysis, reflection, and dissemination of best practices.

This manual is both a guide and a shared commitment to excellence in medical and dental education. It emphasizes that *outcome matters*, integration strengthens learning, and collaboration enhances quality. Through collective efforts of faculty, curriculum planners, and institutional leadership, the curriculum can truly help students rise above, becoming competent, ethical, and socially accountable professionals ready to serve their communities.

UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
Section-03
Curriculum 2025

University of Health Sciences Lahore

BDS Integrated Curriculum 2K25

Version: 2.0

FOREWORD

Foreword to **BDS Integrated Curriculum 2K25**

Version 2.0

The University of Health Sciences (UHS), Lahore, has remained steadfast in its mission to transform medical and dental education through innovation, evidence-based practices, and alignment with international standards. Following the successful introduction of the **BDS Modular Integrated Curriculum 2K25 – Version 01**, which marked a major step toward integration and competency-based education in Punjab, Pakistan, the University now proudly presents **Version 02** of the curriculum. This updated version reflects an evolution—one grounded in systematic evaluation, stakeholders' input & feedback, and the continuous pursuit of educational excellence.

The **BDS Integrated Curriculum 2K25 – Version 02** builds upon the philosophy and foundations established in the first version while refining its structure, content, and flow for greater coherence and academic integrity. The guiding framework for curriculum design continues to be **Kern's Six-Step Approach to Curriculum Development in Figure 1**, ensuring a deliberate and scholarly process that begins with needs assessment and culminates in evaluation and revision.

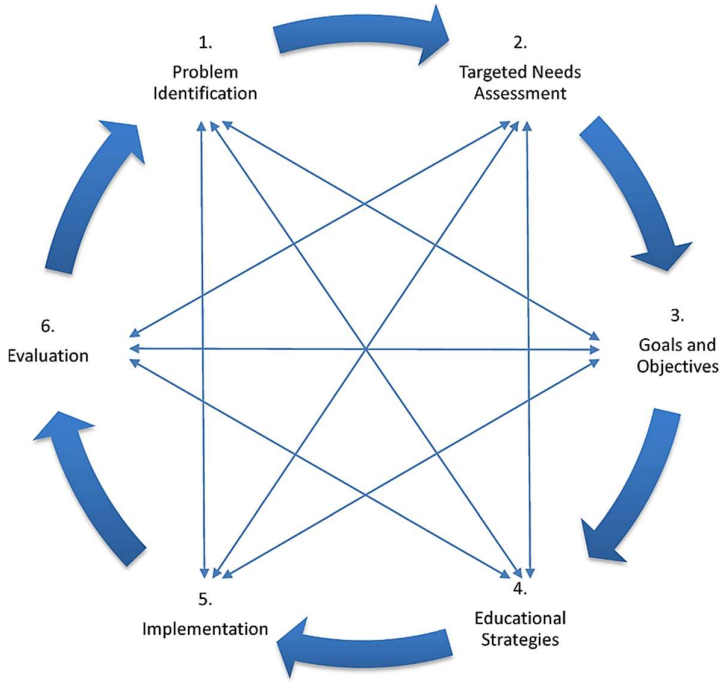
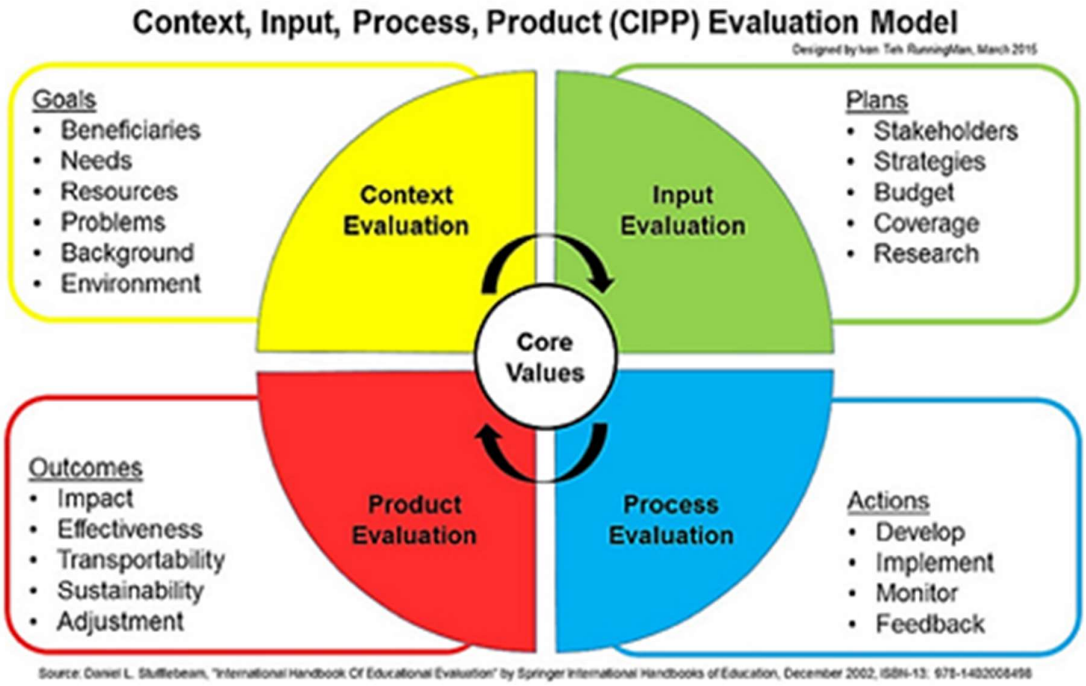


Figure. 1

Kern's Cycle of Medical Curriculum Development

The revision process has also been informed by the **CIPP (Context, Input, Process, Product) model** of curriculum evaluation, emphasizing ongoing monitoring and quality assurance.



The development of the **BDS Integrated Curriculum (Version 2)** has been a thoughtful and collaborative journey aimed at improving the first version based on extensive feedback and collective experience.

The process went through several stages to ensure that the revised curriculum truly meets the needs of both learners and educators:

1. The **Working Group** developed the first draft keeping in mind the subjects' importance and connecting the previous practice to the newly developing integrated model.
2. **Module In-charges** reviewed the first draft and aligned each module keeping in view the holistic approach of the curriculum.
3. **Subject Experts** reviewed the revised draft according to the revision guidelines provided by DME, UHS.
4. Third refined draft was presented to the invited **seasoned faculty from Basic & Clinical Sciences** of constituent/affiliated colleges at UHS to provide their input & feedback to align the learning outcomes/content within and across modules/blocks.

5. After all the above four-tiers, revisions and feedback, the document was shared with the **Steering Committee Members**, for final review and suggestions/feedback was incorporated with the consensus of members.
6. All the **relevant faculty members** from constituent/affiliated colleges were invited to review and refine the final document with mutual consensus before the publication. Over 100 faculty representatives have contributed in this academic activity.

This six-tier process reflects the dedication, teamwork, and shared vision of all contributors. The BDS Integrated Curriculum **(Version 2.0)** now stands as a refined and well-integrated framework.

A special attention has been given to managing the content in a logical and progressive flow, ensuring a smoother transition from basic and clinical sciences. The curriculum maintains its dual approach of horizontal and vertical integration, and **Version 2.0** strengthens these linkages.

Among the notable enhancements introduced in **Version 2.0** are refinements in learning outcomes and module mapping to ensure alignment with **Bloom's taxonomy** and the desired graduate competencies. The spiral integration model has been strengthened to enable the continuous revisiting of essential concepts, deepening understanding and reinforcing learning through repetition and contextual application. Clinical exposure has been expanded in the pre-clinical years through structured mandatory workshops.

Moreover, **faculty development and capacity building** remain at the heart of Version 2.0. The University continues to prioritize training programs, workshops, and mentorship initiatives through the **Department of Medical Education** to ensure that faculty members are fully equipped to implement and evaluate the integrated curriculum effectively.

In essence, the **BDS Integrated Curriculum 2K25 – Version 2.0** represents both continuity and advancement. It preserves the core vision of Version 01 to produce knowledgeable, skillful, and ethical healthcare professionals, while refining the organization, integration, and delivery of content to meet emerging needs.

As per international best practices, the University places strong emphasis on the regular review and updating of newly developed curricula. Once a complete academic program curriculum is developed, it enters a structured annual revision cycle. These revisions ensure vertical and horizontal alignment across all academic years. After completion of the initial program document, the curriculum will undergo annual review, refinement, and improvement over the subsequent five years.

"Quality improvement is a continuous process, not a one-time event." — *Joseph M. Juran*

LIST OF ABBREVIATIONS

LIST OF ABBREVIATIONS

Abbreviations	Subjects
UHS	University of Health Sciences
BDS	Bachelor of Dental Surgery
PRISME	Professionalism, Research, Informatics, Social Responsibility and Accountability, Management & Entrepreneurship, Ethics Evidence Based Dentistry
WHO	World Health Organization
A	Anatomy
AI	Artificial Intelligence
B	Biochemistry
Enr	Endocrinology
HR	Hepatorenal
GDC	General Dental Council
Ph	Pharmacology
P	Physiology
Pa	Pathology
PD	Prosthodontics
OB	Oral Biology
OP	Oral Pathology
CD	Community Dentistry
OD	Operative Dentistry
OM	Oral Medicine
ALC	Alveo-Cemental Complex
AMIA	American Medical Informatics Association
AMEE	Association of Medical Education in Europe
BhS	Behavioral Sciences
CNS	Central Nervous System
GIT	Gastrointestinal Tract
CVS	Cardiovascular System
TMJ	Temporomandibular Joint
CBC	Complete Blood Count
DR	Dental Radiology
DM	Dental Materials
ESR	Erythrocyte Sedimentation Rate

PCR	Polymerase Chain Reaction
ED50	Median Effective Dose
LD50	Median Lethal Dose
TD50	Median Toxic Dose
AUC	Area Under Curve
MCV	Mean Corpuscular Volume
MCH	Mean Corpuscular Hemoglobin
MCHC	Mean Corpuscular Hemoglobin Concentration
Na	Sodium
NS	Neurosciences
K	Potassium
DNA	Deoxyribonucleic Acid
TORCH	Toxoplasmosis, Other, Rubella, Cytomegalovirus, Herpes simplex
CF	Craniofacial
CFII	Craniofacial II
Car	Cariology
DEJ	Dentin enamel Junction
HERS	Hertwig's Epithelial Root Sheath
FDI	Fédération Dentaire Internationale
GAGs	Glycosaminoglycans
EFA	Essential Fatty Acids
Hb	Hemoglobin
HbA1c	Glycated Hemoglobin
ATP	Adenosine Triphosphate
RBC	Red Blood Cell
NMJ	Neuromuscular Junction
ID50	Median Infectious Dose
RCTs	Randomized Control Trials

UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
Section-04
Curriculum 2025

BDS Integrated Curriculum 2K25

Version 2.0

YEAR-01

Time Allocation and Academic Framework

The First Professional BDS academic year consists of a minimum of 1,200 teaching hours, conducted in affiliated colleges. The curriculum is structured into three blocks, each further divided into modules with defined learning outcomes for each subject.

YEAR-1

Blocks	Block 1	Weeks	Block 2	Weeks	Block 3	Weeks
Modules	Foundation I	5 weeks	Foundation II	3 weeks	Blood and CVS I	4 weeks
	Craniofacial I	4 weeks	Craniofacial II	3 weeks	GIT	4 weeks
	Cariology I	2 weeks	Neurosciences I	4 weeks	Occlusion I	2 weeks
			Alveolocemental Complex	2 weeks		
	PRISME/CFRC/Islamiyat / Civics and Pakistan studies	1 week	PRISME/CFRC/Islamiyat / Civics and Pakistan studies	1 week	PRISME/CFRC/Islamiyat / Civics and Pakistan studies	1 week
	Total (Includes Block assessment)	**12 weeks**	**Total** (Includes Block assessment)	**13 weeks**	**Total** (Includes Block assessment)	**11 weeks**
	PRISME (Professionalism, Research, Informatics (Dental), Social Responsibility and Accountability, Management/Entrepreneurship and Evidence Based Dentistry)					
	Clinical Foundation Rotation Clerkship -I (CFRC-I)					

Weekly Academic Commitment

Students are required to participate in **35 hours per week** of **teaching, learning, and assessments**. Beyond these scheduled academic hours, they are expected to invest additional time in **self-study and independent learning.**

Guidelines for Designing Academic Calendar:

A paradigm shift from traditional to integrated education requires a stronger focus on learning outcomes. Different disciplines are expected to align their teaching and learning strategies with student needs and curricular requirements. Keeping this vital element of student learning in view, the document has been designed to provide institutions with the autonomy to plan their academic activities according to available resources. A **broad general guideline** is provided to ensure the proper utilization of academic hours and activities

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UNIVERSITY OF HEALTH SCIENCES LAHORE
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BLOCK-01

UNIVERSITY OF HEALTH SCIENCES LAHORE

UHS

BDS Integrated Curriculum 2K25

Version 2.0

Curriculum 2K25

Module No:01

FOUNDATION-I

MODULE RATIONALE

The Foundation I module establishes the basic scientific framework necessary for understanding the structure and function of the human body in health and disease, with relevance to dental practice. It introduces students to the core principles of anatomy, histology, physiology, biochemistry, and oral biology, providing an integrated view of how the human body is organized and maintained.

Students also gain an early appreciation of pathology and community dentistry, fostering an understanding of disease processes and preventive strategies from a population perspective. By building connections between foundational biomedical sciences and their clinical applications, the module prepares students to approach oral health within the broader context of general health, patient care, and community well-being.

MODULE OUTCOMES

- Describe the normal structure and function of the human body, with emphasis on head and neck anatomy and oral tissues.
- Explain the basic physiological mechanisms that maintain homeostasis and support body function relevant to dental practice.
- Correlate biochemical structures and pathways with cellular functions, emphasizing their role in oral and systemic health.
- Identify microscopic features of cells, tissues, and organs, and relate them to their physiological and functional significance.
- Recognize the basic mechanisms of cell injury, necrosis, and apoptosis as foundations for understanding disease processes.
- Apply fundamental knowledge of community and preventive dentistry to concepts of health promotion and disease prevention at both individual and population levels.
- Integrate concepts from basic medical sciences to explain the relationship between general body function and oral health.
- Demonstrate professional attitudes and curiosity toward scientific learning, teamwork, and ethical conduct in foundational medical and dental sciences.

SUBJECTS INTEGRATED IN THE MODULE

- Anatomy
- Physiology
- Biochemistry
- Oral Biology & Tooth Morphology

- Community & Preventive Dentistry
- General Pathology & Microbiology
- Pharmacology & Therapeutics

Syllabus

THEORY		
GENERAL ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F1-A-001	Define the various branches of Anatomy.	Introduction to Human Anatomy: Definitions, Terminology, and Planes
	Describe the anatomical position, anatomical planes of the body, and anatomical terms related to position, movement, and laterality.	
F1-A-002	Classify bones based on region, size and shape providing examples of each from the head and neck	Osteology
	Discuss the structural characteristics of compact and spongy bones	
	Describe the structure of an adult long bone. Define ossification and rule of ossification. Describe the blood supply of various types of long bones	
F1-A-003	Describe the structural classification of Joints (fibrous, cartilaginous and synovial) along with their sub-classifications with examples of each Enlist the general characteristics of synovial joints Enlist the factors stabilizing a synovial joint Describe Hilton's Law	Joints
F1-A-004	Discuss and differentiate the gross features of hyaline, elastic and fibrocartilage	Cartilage
HISTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F1-A-005	List the membranous and non-membranous organelles of the cell, describe their structure, and correlate each with its function	Cell
	Describe the structure of different types of cell junctions	
F1-A-006	Classify and exemplify the epithelia with their histological structure, locations, and functions	Epithelia
	Describe apical specializations of epithelia (microvilli, stereocilia and cilia) and the basement membrane.	

	Classify and exemplify the exocrine glands on the basis of the shape of secretory portions and ducts, mode of secretion, and type of secretion	
F1-A-007	List the cells of connective tissue with their functions.	Connective Tissue
	Describe the composition of the ground substance and the types and structure of fibers in connective tissue.	
	Classify connective tissue and describe its functions and provide relevant examples.	
EMBRYOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F1-A-008	Briefly describe mitosis and meiosis.	Cell Division and Gametogenesis
	Describe oogenesis, spermatogenesis, spermiogenesis, and embryological basis of teratoma.	
F1-A-009	Define fertilization, phases of fertilization, capacitation and acrosomal reaction.	Fertilization and Early Development
	Explain outcomes of fertilization.	
	Describe cleavage, morula, blastocyst formation, and implantation.	
F1-A-010	Describe embryonic disc, amniotic cavity, yolk sac, and gastrulation.	Formation of the Embryonic Disc and Germ Layers
	Explain gastrulation and derivatives of the three germ layers.	
	Explain derivatives of ectoderm, mesoderm, and endoderm.	
PHYSIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F1-P-001	Define homeostasis and explain its importance in maintaining the internal environment.	Homeostasis : Control of Internal Environment
	Differentiate between extracellular and intracellular Fluids (with special emphasis on comparing the concentration of sodium, potassium, and calcium ions)	

F1-P-002	Explain the principles of positive, negative, and feed-forward control mechanisms with examples.	Control Systems of the Body
F1-P-003	Describe the functions of cell organelles, including nucleus, endoplasmic reticulum, Golgi apparatus, lysosomes, peroxisomes, mitochondria, and ribosomes.	Cell and its Organelles and their Functions
	Differentiate between the functions of smooth and rough endoplasmic reticulum	
F1-P-004	Enumerate the components and functions of the cytoskeleton	Cell Structure and Membrane Organization
	Describe the structure of the cell membrane and fluid mosaic model.	
F1-P-005	Explain the mechanisms of endocytosis and exocytosis, including pinocytosis and phagocytosis.	Functional Systems of Cell
F1-P-006	Describe the mechanisms of simple diffusion, facilitated diffusion, osmosis, and active transport, and ion channels	Transport of Substance through Cell Membrane
	Compare features of simple and facilitated diffusion with examples	
	Describe primary and secondary active transport with examples	
F1-P-007	Enlist the composition of blood, its cellular elements, and plasma. (Expanded with hematocrit, PCV, plasma proteins).	Composition and Properties of Blood
F1-P-008	Explain the structure, morphology, and lifespan of red blood cells, including factors affecting RBC production and destruction.	Red Blood Cells
F1-P-009	Classify anemia; describe mechanisms of iron deficiency anemia, hemolytic anemia, and megaloblastic anemia at a basic level.	Anemias and Polycythemias
	Define sickle cell anemia	
	Discuss the effects of anemia on circulation	
	Define and enlist types of polycythemias	
	Discuss the effects of polycythemias on circulation	
F1-P-010	Explain erythropoiesis and regulation by erythropoietin.	

	Enumerate and elaborate role of factors/nutrients that are required and regulate erythropoiesis	Erythropoiesis and Its Regulation
F1-P-011	Define blood indices mentioned as: MCV (mean corpuscular volume), MCH (mean corpuscular hemoglobin), and MCHC (mean corpuscular hemoglobin concentration). Give their normal values & enumerate the conditions in which these values are disturbed	Blood Indices and Diagnostic Interpretation

BIOCHEMISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
F1-B-001	Define and classify carbohydrates.	Carbohydrates
	Draw the straight chain and pyranose form of D-glucose.	
	Define and quote suitable examples of the followings: • Aldo-keto isomers • D & L isomers (Enantiomers) • Epimers • Alpha and beta Anomers	
	Define and quote suitable examples of: • Reducing sugars • Non-reducing sugars	
	Give sources, structure and importance of glucose, galactose, fructose and ribose. Give normal fasting blood sugar level. Enumerate types of Diabetes mellitus and give cause of hyperglycemia in each type.	
	Describe the formation, hydrolysis, naming and types of glycosidic bond (N and O -glycosidic bonds). Give importance of glycosidic bond.	
	Enumerate sources, linkages and building blocks of maltose, iso-maltose, lactose, lactulose and sucrose. Give importance of maltose, iso-maltose, lactose, lactulose and sucrose.	
	Give significance of oligosaccharides in cell membrane.	
	Give sources, structure and importance of dextrins and dextrans.	

	Enlist sources of starch. Elaborate the structure of starch. Give importance of starch in human diet.	
	Elaborate the structure of glycogen.	
	Give importance of glycogen in human body.	
	Give structure and sources of cellulose.	
	Appraise the role of dietary fiber in health and disease.	
	Elaborate the structure and enlist the functions of Glycosaminoglycans (GAGs).	
	Define glycemic index.	
	Evaluate the effect of various dietary carbohydrates on blood sugar level (BSL) and appraise their clinical significance.	
F1-B-002	Define lipids and give their Classification along with biological importance of main classes	Lipids
F1-B-003	Define vitamins and classify vitamins according to their solubility	Vitamins
F1-B-004	Describe the biochemical structures of cell membranes	Cell
	Explain biochemical compartmentalization.	
F1-B-005	Describe receptors and signal transduction pathways (Gs, Gq).	Signal Transduction Pathways

ORAL BIOLOGY & TOOTH MORPHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
F1-OB-001	Describe the oral tissues including oral mucosa, salivary glands, bones of the jaws, temporomandibular joint, enamel, dentin, cementum, and periodontal ligament.	Structure of Oral Tissues (A Brief Introduction)
F1-OB-002	Describe the structure, types, and functions of the cytoskeleton, including microfilaments, intermediate filaments, and microtubules, within oral tissues.	Cytoskeleton
F1-OB-003	Describe intercellular junctions, including tight junctions, adherens junctions, desmosomes, gap junctions, and the role of desmosomes and hemidesmosomes in oral epithelium.	Cell Junctions

F1-OB-004	Describe the structure, secretory functions, and role of fibroblasts in the maintenance of the extracellular matrix in oral tissues	Fibroblast
	Describe briefly collagen synthesis and assembly highlighting its importance in oral connective tissue.	
F1-OB-005	Name the three major functions of the human dentition	Introduction and Nomenclature of dentition
	Describe various ways of classifying human dentition.	
	Define the three dentition periods (deciduous, mixed, permanent). Identify each period's approximate time intervals, initiation, and termination events	
	Differentiate primary vs permanent dentition, including timing.	
	Describe the dental Formula for permanent and Deciduous dentition	
	Define "succedaneous" and identify succedaneous teeth	
	Describe the eruption pattern of primary and permanent dentition	
	Demonstrate understanding of various dental numbering systems (e.g., universal, FDI, Palmer).	

PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
F1-Pa-001	Define the terms: pathology, etiology & pathogenesis	Introduction
F1-Pa-002	Define cell injury. Differentiate between reversible and irreversible cell injury. Discuss mechanism of cell injury	Cell Injury
F1-Pa-003	Define necrosis with examples; classify; describe briefly morphological features of coagulative, liquefactive, caseous, and fat necrosis. give their pathway.	Cell Death
	Define apoptosis with examples; describe mechanisms and morphological features. give their pathway.	

COMMUNITY & PREVENTIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F1-CD-001	Define dental public health and describe its scope and importance.	Introduction to Dental Public Health
F1-CD-002	Describe the dimensions of health (physical, mental, social, etc.) and differentiate between illness and disease.	Concepts of Health and Disease
F1-CD-003	Differentiate between clinical dentistry and public health dentistry.	Public Health vs Clinical Practice
F1-CD-004	Describe criteria that make a disease important from a public health perspective.	Disease Importance in Public Health
F1-CD-005	Explain levels of prevention (primordial, primary, secondary, tertiary) with relevant dental examples.	Levels of Prevention
F1-CD-006	Define and explain the principles of health promotion and disease prevention strategies at individual and community levels.	Health Promotion Principles
F1-CD-007	Apply principles of health promotion and health education to oral and dental health contexts.	Health Education and Promotion
F1-CD-008	Describe methods of health education and communication in community dentistry; explain their importance and application.	Health Education and Communication
F1-CD-009	Describe school oral health programs and preventive strategies at the community level.	School and Community-Based Programs

PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F1-PH-001	Define pharmacology along with major branches and explain its scope, importance, and applications in dentistry and medicine.	General Pharmacology

	Describe sources of drugs and active principles. Enumerate advantages and disadvantages of various routes of administration.	
F1-PH-002	Define Pharmacokinetics. Briefly explain Mechanisms of Drugs Transport/ Permeation Sources of Drugs/ Active Principles Drugs Enumerate advantages and disadvantages of various Routes of drug Administration	Pharmacokinetics & Drug Transport/ Permeation
F1-PH-003	Define drug absorption & Bioavailability and factors affecting them. Define and explain Distribution and Volume of Distribution Define and explain Redistribution and Plasma Protein Binding	Drug Absorption & Bioavailability
F1-PH-004	Explain the concept of Metabolism & Biotransformation Describe the clinical significance of enzyme induction and enzyme inhibition with their examples	Drug Metabolism & Bio transformation
F1-PH-005	Define drug excretion. Enlist routes & processes of drug excretion through the kidneys Describe factors affecting glomerular filtration & tubular reabsorption Describe the Clinical Significance of Glomerular Filtration, Active Tubular Secretion and Passive Tubular	Drug excretion & its clinical significance of glomerular filtration
F1-PH-006	Describe Reabsorption of Drugs Explain steady state plasma concentration	Drug Reabsorption
F1-PH-007	Define & Explain Elimination and Orders of Elimination – First & Zero Order Kinetics with examples Order Kinetics	Drug Elimination
F1-PH-008	Define, explain & calculate maintenance dose and loading dose using appropriate formula Maintenance dose	Drug Maintenance

PRACTICALS / LAB WORK		
HISTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F1-A-011	Draw and label light microscopic diagram of epithelia	Epithelium
F1-A-012	Draw and label light microscopic diagram of different types of Connective Tissue	Connective Tissue
ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F1-OB-006	Identify, draw, and label structures of the tooth on models.	Structures of Tooth
F1-OB-007	Draw & label the diagram of cytoskeletal elements.	Cytoskeleton
F1-OB-008	Draw & label the diagram of tight junctions, desmosomes, hemidesmosomes, and gap junctions.	Junctions
PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F1-Pa-004	Identify necrosis.	Necrosis

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Curriculum 2K25
Version 2.0
Curriculum 2K25
Module
No:02
CRANIOFACIAL-I

MODULE RATIONALE

The Craniofacial I module lays the foundation for understanding the structural, developmental, and biochemical basis of the craniofacial region. It integrates anatomy, embryology, histology, biochemistry, oral biology, and pathology to help students appreciate how normal development and structure underpin oral and maxillofacial health. By studying the skull, mandible, tooth development, and related anomalies, students gain essential knowledge for clinical dental practice and future modules focusing on oral and systemic diseases.

MODULE OUTCOMES

- Describe the gross anatomy of the skull and mandible, including their foramina, sutures, and applied clinical relevance.
- Explain the embryological processes involved in the formation of the head, neck, skull, meninges, and craniofacial structures.
- Identify and interpret microscopic features of bone, cartilage, muscle, and skin.
- Describe and relate the biochemical pathways of carbohydrates, proteins, and vitamins to cellular function and oral health.
- Explain the stages of tooth development, formation of supporting tissues, and developmental anomalies of the craniofacial region.
- Recognize basic genetic principles, types of mutations, and chromosomal abnormalities relevant to craniofacial development and dental disorders.
- Correlate structural, developmental, and biochemical knowledge with common craniofacial and dental pathologies encountered in clinical practice.

SUBJECTS INTEGRATED IN THE MODULE

1. Anatomy
2. Biochemistry
3. Oral Biology & Tooth Morphology
4. General Pathology & Microbiology
5. Oral Pathology

Syllabus

THEORY		
GROSS ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF1-A-001	Describe the gross anatomy of the skull, its features, foramina, and applied aspects relevant to head and neck anatomy.	Skull
	Describe the features and structures of different views of skull (Anterior, Posterior, Superior, Inferior, Lateral)	
	Discuss the sutures and fontanelles of skull, their age changes and clinical significance.	
CF1-A-002	Describe the bony features of mandible.	Mandible
CF1-A-003	Enlist names of the cranial nerves.	Cranial Nerves
EMBRYOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF1-A-004	Describe neurulation, formation of the neural tube, and migration of neural crest cells.	Neurulation and Early Organogenesis
	Enlist derivatives of neural crest cells.	
	Describe development of the head and neck region, including contributions of pharyngeal arches, pouches, and cranial nerves.	
	Explain development of the skull and meninges (including craniosynostosis correlation), and vasculogenesis (basic).	
CF1-A-005	Discuss growth and differentiation of the embryonic disc, trophoblast development and anomalies (situs inversus, sirenomelia, holoprosencephaly).	Advanced Development and Anomalies
	Describe the embryological basis of hydatidiform mole and its pathological significance.	
	Describe common chromosomal anomalies related to early embryonic development.	

HISTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF1-A-006	Describe the microscopic and ultramicroscopic structure of all types of cartilages	Cartilages
	Draw and label light microscopic diagram of different types of cartilages	
CF1-A-007	List the bone cells and their origin along with their functions	Bones
	Describe the composition of bone matrix (organic, inorganic)	
	Describe the histology of compact and spongy bone	
CF1-A-008	Describe the microscopic structure and ultramicroscopic structure of skeletal, cardiac, and smooth muscles	Muscles
CF1-A-009	Describe the layers and microscopic structure of the epidermis and dermis of the skin.	Skin

BIOCHEMISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF1-B-001	Differentiate between anabolism and catabolism, and list the metabolic pathways associated with each process.	Overview of Metabolism
CF1-B-002	Explain metabolism: glycolysis and TCA cycle (steps, regulation, energetics).	Carbohydrate Metabolism
	Differentiate aerobic and anaerobic glycolysis.	
	Describe the transport systems for glucose entry into cells, including sodium- and ATP-independent (GLUTs) and sodium- and ATP-dependent cotransport.	
CF1-B-003	Define amino acids and classify standard amino acids according to side chain and nutritional importance.	Amino Acids: Structure, Classification, and Properties
CF1-B-004	Explain the levels of protein organization (primary, secondary, tertiary, and quaternary structures) and their relevance to protein function.	

	Define conjugated proteins and provide suitable examples of conjugated proteins in the human body (lipoproteins, glycoproteins, nucleoproteins, chromoproteins, and metalloproteins).	Protein Structure and Function
	Elaborate the role of chaperones in protein folding.	
	Differentiate between denaturation and coagulation.	
	Define limiting amino acids and provide suitable examples of limiting amino acids.	
	Understand the nutritional importance of proteins and correlate this information to protein energy malnutrition.	
	Compare and contrast the salient features of kwashiorkor and marasmus.	
CF1-B-005	Explain enzyme structure, classification with examples, properties, mechanisms of action, kinetics, regulation, and inhibitors.	Enzymes: Structure, Classification, Mechanism, and Regulation
	Add diagnostic and therapeutic roles of enzymes (ALT, AST, CK-MB, ALP, LDH).	
CF1-B-006	Describe vitamins (B1, B2, B3, B5, B7), their active forms, sources, RDA, biochemical roles, and deficiency manifestations.	Vitamins

ORAL BIOLOGY & TOOTH MORPHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
CF1-OB-001	Describe the primary epithelial band and explain its role in the initiation of tooth development.	Early Tooth Development
	Explain the mechanisms involved in initiation of tooth	
	Describe the process of regionalization of the oral epithelium and its significance in tooth development.	
	Explain the instructive signals for patterning and odontogenic potential	
CF1-OB-002	Explain the hard tissue formation through histodifferentiation	Tooth Development

	Explain nerve and vascular contributions to tooth development during early developmental stages.	
	Describe root development, Hertwig's epithelial root sheath, and supporting tissues.	
CF1-OB-003	Describe the embryonic development of the face, palate & tongue, contributions of key structures (lateral lingual swellings, tuberculum impar, and copula), muscle derivation, and sensory/motor innervation and Developmental Defects associated with it like Ankyloglossia.	Formation of the Face, Palate and Tongue
CF1-OB-004	Describe the role of Meckel's cartilage in mandibular development and the process of intramembranous ossification in forming the mandible and maxilla.	Development of the Mandible and Maxilla
	Define jaw size anomalies and their embryological basis and clinical impact (Micrognathia and Macrognathia).	
CF1-OB-005	Describe basic developmental anomalies relevant to craniofacial region (e.g., cleft palate, anomalies of tooth number and size).	Craniofacial anomalies
GENERAL PATHOLOGY & MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF1-Pa-001	Define genetic disorders and their causes.	Genetic Disorders: Introduction and causes
CF1-Pa-002	Describe types of mutations (point, insertions, deletions).	Types of Mutations
CF1-Pa-003	Explain Mendelian principles applied to autosomal and X-linked disorders.	Mendel principles and genetic disorders
CF1-Pa-004	Describe genetic testing methods: PCR, sequencing, karyotyping, biochemical tests, prenatal screening.	Genetic testing
ORAL PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**

CF1-OP-001	Discuss the clinical presentation of numerical and structural chromosomal abnormalities	Chromosomal abnormalities

PRACTICALS / LAB WORK		
GROSS ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF1-A-010	Demonstrate the ability to accurately orient a dry human skull in normal verticals, occipitalis, frontalis, lateralis, and basalis views; and identify key anatomical and surface landmarks, sutures, and foramina with their content relevant to each view	Skull
	Identify and describe the anatomical features, boundaries, and foramina of the anterior, middle, and posterior cranial fossae, including the grooves of the dural venous sinuses	
	Identify and enlist all the foramina of the skull along with their neurovascular contents	
CF1-A-011	Identify and locate the major anatomical landmarks, foramina (with their contents), and surface features of the mandible; articulate it the skull	Mandible
HISTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF1-A-012	Draw and label light microscopic diagram of compact and spongy bones	Bones
CF1-A-013	Draw and label light microscopic diagram of cartilage	Cartilage
CF1-A-014	Draw and label light microscopic diagram of muscle	Muscle
CF1-A-015	Draw and label light microscopic diagram of thick and thin skin	Skin
ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	SPECIFIC LEARNING OUTCOMES	**TOPIC**
CF1-OB-006	Identify congenital defects (cleft lip/palate, tongue anomalies).	Development of Human embryo with special

		emphasis on tooth-related structures.
CF1-OB-007	Draw and label stages of tooth development and root formation.	Tooth & Root Development

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Module No:03

CARIOLOGY-I

MODULE RATIONALE

Cariology I introduce students to the biological, structural, biochemical, and behavioral foundations of dental caries. This module integrates oral biology, oral pathology, biochemistry, operative dentistry, community dentistry, and behavioral sciences to help students understand how caries develops, progress, and can be prevented. Through microscopic, radiographic, and practical learning, students explore the interactions between host factors, diet, microorganisms, and behavior, forming the essential groundwork for clinical dental practice and patient-centered preventive care.

MODULE OUTCOMES

- Explain the biochemical basis of dental caries, including carbohydrate metabolism, acid production, and the role of fluoride in caries prevention.
- Describe the structure, composition, and developmental biology of enamel and dentin, and relate these features to caries susceptibility.
- Identify normal and abnormal enamel and dentin structures on slides, models, and radiographs.
- Describe the etiology, microbiology, and histopathology of dental caries and developmental defects such as enamel hypoplasia and amelogenesis imperfecta.
- Explain the types, clinical features, and progression of pit and fissure, smooth surface, and root caries, along with preventive and management approaches.
- Apply the principles of caries prevention at both individual and community levels through dietary counseling, oral hygiene practices, and fluoride use.
- Demonstrate effective communication, empathy, and professionalism while addressing behavioral aspects that influence oral health and patient cooperation.
- Correlate biological and behavioral concepts with preventive strategies to promote oral health across diverse populations.

SUBJECTS INTEGRATED IN THE MODULE

1. Biochemistry
2. Oral Biology & Tooth Morphology
3. Oral Pathology
4. Operative Dentistry
5. Community & Preventive Dentistry
6. Behavioral Sciences

Syllabus

THEORY		
BIOCHEMISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Car1-B-001	Explain cariogenic potential of carbohydrates.	Biochemical Role of carbohydrates in Dental Caries
Car1-B-002	Explain biochemical mechanism of fluoride in disrupting bacterial glycolysis and acid production.	Fluoride's Biochemical Mechanism
ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Car1-OB-001	Describe physical and chemical properties of enamel; explain their role in caries resistance and susceptibility.	Enamel
	Describe structural organization of enamel; identify enamel on radiographs.	
	Explain differentiation and life cycle of ameloblasts	
	Describe amelogenesis stages (pre-secretory, secretory, maturation), Tom's process, and pH regulation.	
	Describe enamel proteins; explain incremental lines, Hunter-Schreger bands, tufts, lamellae, spindles, and gnarled enamel.	
	Explain fluoride effects, enamel etching, age changes and repair	
Car1-OB-002	Describe the anatomical surfaces and land marks of both anterior and posterior teeth, including the roots, using standardized dental terminology.	Tooth Morphology
	Identify and name tooth surfaces and thirds of tooth surfaces from diagrams or descriptions	
	Differentiate between the crown surfaces of teeth by matching them with their correct general shape (triangular, trapezoidal, or rhomboidal), or by relating the shape to the specific function of the	

	tooth.	
	Identify and name line and point angles, embrasures and curves based on diagrams or descriptions.	
	Define elevations and depressions on the tooth surface.	
	Describe lobes, contact points, embrasures, cervical line, pits, and fissures and relate to caries susceptibility.	
	Describe the components, boundaries and functions of interproximal space and embrasures	

ORAL PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
Car1-OP-001	Describe etiology and pathogenesis of enamel hypoplasia.	Enamel Developmental Anomalies
	Explain Amelogenesis imperfecta (types, clinical and radiological features).	
Car1-OP-002	Describe etiology and pathogenesis of dental caries.	Microbiology and Pathogenesis of Caries
	Describe the microbiological aspect of caries; the role and characteristics of cariogenic bacteria.	
	Define plaque and stages of plaque development	
	Describe the changes that develop in enamel of erupted teeth in association with microorganisms.	
	Describe histopathological changes in enamel during dental caries, with emphasis on microbial invasion.	

OPERATIVE DENTISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
Car1-OD-001	Describe the anatomy of pits and fissures, explain their role in caries susceptibility, and outline preventive strategies such as sealant application and fluoride use.	Pit and Fissure Caries

Car1-OD-002	Describe etiology, risk factors, and clinical features of smooth surface caries; explain role of fluoride in prevention.	Smooth Surface Caries
Car1-OD-003	Describe etiology, clinical features, and progression of root caries.	Root Caries
Car1-OD-004	Differentiate active caries based on clinical features; explain clinical significance; outline management strategies. identify the factors that promote caries arrest.	Active and Arrested Caries
Car1-OD-005	Differentiate arrested caries; describe biological processes and contributing factors.	

COMMUNITY & PREVENTIVE DENTISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
Car1-CD-001	Explain the role of diet in dental caries, including the Stephen curve, cariogenic potential of sugars, and dietary modification strategies.	Diet and Dental Caries
Car1-CD-002	Describe the role of dental biofilm in demineralization and remineralization; explain oral hygiene measures and Keyes' triad in caries prevention.	Dental Biofilm and Caries Prevention
Car1-CD-003	Explain and apply the principles of dental caries prevention in individual and community settings.	Principles of Caries Prevention
Car1-CD-004	Explain the role of systemic and topical fluoride in the prevention of dental caries; apply knowledge of community-based preventive measures (e.g., water fluoridation, school programs).	Fluoride and Community-Based Caries Prevention
Car1-CD-005	Describe correct toothbrushing and flossing techniques in relation to caries prevention.	Oral Hygiene Practices and Caries Prevention

BEHAVIORAL SCIENCES

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
Car1-BhS-001	Explain the bio-psycho-social model and its relevance to holistic dental care.	Introduction to Behavioral Sciences
Car1-BhS-002	Describe how psychology, sociology, and anthropology contribute to understanding oral health behavior.	Determinants of Oral Health Behavior

Car1-BhS-003	Differentiate between normal and abnormal behavior and discuss their implications for dental care.	Understanding Human Behavior
Car1-BhS-004	Recognize the influence of emotions and behavior on patient–dentist interactions and oral health outcomes.	Emotional and Behavioral Factors in Dentistry
Car1-BhS-005	Demonstrate effective communication and interpersonal skills in clinical and community dental settings.	Communication Skills
Car1-BhS-006	Apply principles of empathy and emotional intelligence in role play.	Emotional Intelligence
Car1-BhS-007	Describe ethical principles, professional roles, and responsibilities of a dentist.	Professional Ethics and Responsibilities

PRACTICALS / LAB WORK		
ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Car1-OB-003	Identify major morphological features of teeth — including the lobes, contact areas, embrasures, height of contour, and the cervical and gingival lines — using models, and anatomical specimens.	Tooth Morphology and Structural Features
	Locate pits, fissures, and different types of embrasures on teeth through direct inspection of specimens/typodont models/clinical images.	
Car1-OB-004	Draw and label lifecycle of ameloblast	Enamel
	Draw and label Secretory stage ameloblast	
	Draw and label Maturation stage ameloblast	
	Draw and label different histological/organizational features of the enamel (enamel rods, striae of Retzius, Hunter-Schreger bands, gnarled enamel, DEJ, enamel tufts, lamellae, spindles, & neonatal lines.)	
ORAL PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Car1-OP-003	Observe prepared slides of plaque samples.	Microscopic Analysis of Plaque
Car1-OP-004	Identify amelogenesis imperfecta and fluorosis on e-slides.	Radiographic Identification of Tooth Structures and Developmental Anomalies
OPERATIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**

Car1-OD-006	Identify fluoride gel and demonstrate application procedure.	Prevention of Dental Caries
	Identify pits, fissures, smooth surface, and root caries on models, or images	
	Differentiate active versus arrested caries on prepared slides or images	

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Module
No:04
FOUNDATION-II

MODULE RATIONALE

The Foundation II module builds upon the basic biomedical concepts introduced in Foundation I, emphasizing the integration of anatomy, physiology, biochemistry, and pathology with oral biology and dental relevance. It focuses on understanding blood composition and functions, the vascular and nervous systems, tissue responses to injury, and early disease mechanisms. The module introduces key principles of microbiology, pharmacology, and dental radiology to establish a bridge between foundational medical sciences and their clinical applications in dentistry. Through theory and practical components, students develop the ability to connect normal structure and function with pathological and clinical outcomes—forming a strong base for subsequent clinical modules.

MODULE OUTCOMES

- Describe the organization and functional components of the vascular and nervous systems.
- Explain the composition, formation, and functions of blood and its cellular elements, including mechanisms regulating erythropoiesis.
- Interpret biochemical pathways related to hemoglobin synthesis, porphyrin metabolism, and red blood cell energy production, along with their clinical correlations.
- Describe the structure, formation, and age-related changes in dentin and pulp, and relate these to dental pathologies.
- Explain the basic pharmacological principles governing drug absorption, distribution, metabolism, and excretion, with relevance to dental therapeutics.
- Identify common cellular adaptations, inflammatory processes, and mechanisms of wound healing under light microscopy.
- Describe the structure, classification, and growth of microorganisms; explain principles of sterilization, disinfection, and infection control in dental settings.
- Relate oral microbiology concepts, such as biofilm formation and pathogenic mechanisms, to dental infections and antibiotic resistance.
- Interpret conventional dental radiographs to recognize normal structures and common developmental anomalies.
- Demonstrate safe laboratory practices, basic microscopy, staining techniques, and correct calculation of drug dosages in practical settings.

SUBJECTS INTEGRATED IN THE MODULE

- Physiology
- Biochemistry
- Oral Biology & Tooth Morphology
- Pharmacology

- & Therapeutics
- General Pathology & Microbiology
- Oral Pathology
- Dental Radiology

Syllabus

THEORY		
BIOCHEMISTRY		
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
F2-B-001	Describe the structure of heme and briefly describe the steps of heme synthesis with its regulation.	Structure, Synthesis, and Functions of Hemoglobin
	Explain the metabolism of iron, including its absorption, transport (transferrin), storage (ferritin, hemosiderin), and regulation.	
	How does heme combine with globin to form hemoglobin and enlist the functions of hemoglobin.	
	Enlist the types of hemoglobin along with their percentage and chain composition.	
	Understand the oxygen-binding mechanism of hemoglobin, including the concepts of cooperative binding and allosteric regulation.	
	Describe hemoglobin structure, functions, and oxygen dissociation curve. Include hemoglobinopathies (sickle cell anemia, thalassemia).	
	Explain the significance of HbA1c.	
	Describe the structure and functions of myoglobin; compare and contrast with hemoglobin in terms of oxygen-binding and clinical relevance (MI marker).	
F2-B-002	Define and explain the biochemical basis of porphyria along with its classification.	Porphyria
	Describe the oral and dental manifestations of porphyria, including erythrodontia, photosensitivity, mucosal lesions, and delayed healing.	
F2-B-003	Describe RBC metabolism (glycolysis, pentose phosphate pathway, G6PD deficiency) and role of trace elements (iron, selenium).	Red Blood Cell Metabolism and Energy Pathways
	Explain RBC metabolism, including glycolysis, pentose phosphate pathway, and G6PD deficiency.	
	Describe and outline the steps in hexose monophosphate pathway (HMP) and its significance in RBCs.	

	Compare and contrast glycolysis and the HMP shunt.	
	Explain hemolytic anemia due to pyruvate kinase and glucose 6 phosphate dehydrogenase deficiencies.	
F2-B-004	Describe vitamins (A, B6, B9, B12, E), their active forms, sources, RDA, biochemical roles, and deficiency manifestations.	Vitamins
ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F2-OB-001	Describe the composition and functions of dentin and pulp; correlate structural features with clinical conditions.	Pulp–Dentin Complex
F2-OB-002	Explain the structure, functions, and degradation of extracellular matrix in oral tissues.	Extracellular Matrix
F2-OB-003	Describe the process of dentinogenesis.	Dentin
	Differentiate between the three main types of dentin: primary, secondary, and tertiary, and describe their locations and formation.	
	Describe the mechanisms that control dentin mineralization, and differentiate between the pattern of mineralization in mantle dentin and circumpulpal dentin.	
	Explain the processes of secondary and tertiary dentinogenesis, including the stimuli that trigger their formation.	
	Describe the structure and function of dentinal tubules.	
	Differentiate between peritubular and intertubular dentin, and explain their respective compositions and roles.	
	Explain the formation and significance of sclerotic dentin and interglobular dentin.	
	Describe the structural features of dentin, including incremental growth lines and granular layer of Tom's.	
F2-OB-004	Describe the cellular contents and zones of the dental pulp.	Pulp
	Discuss the innervation, vascular supply, and lymphatic supply of the dentin–pulp complex.	

	Explain the mechanisms of dentin sensitivity, focusing on the hydrodynamic theory.	
	Describe the formation and clinical significance of pulp stones (denticles).	
	Explain the age-related changes that occur in the dentin–pulp complex.	
	Analyze the pulp's cellular response to dental caries and the mechanical trauma of cavity preparation.	
F2-OB-005	Develop a detailed timeline chart illustrating the calcification stages and eruption periods for deciduous and permanent dentition.	Developmental Timeline and Chronology of Dentition
F2-OB-006	Describe the anatomy of the pulp tissue and pulp cavities in teeth.	Pulp Anatomy
F2-OB-007	Explain the age-related morphological and physiological changes occurring in the pulp cavity.	Age-Related Changes in the Pulp
PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F2-Ph-001	Describe drug absorption and factors affecting it.	Drug Transport
	Describe drug distribution, including concepts of volume of distribution and plasma protein binding.	
F2-Ph-002	Describe drug metabolism (biotransformation, first-pass metabolism, phase I and II reactions, enzyme induction & inhibition, clinical relevance).	Drug Metabolism
F2-Ph-003	Describe drug excretion, elimination, and clearance mechanisms (renal, biliary, other routes) and factors affecting them.	Drug Excretion
F2-Ph-004	Define half-life, loading dose, maintenance dose, and steady-state concentration; explain their clinical relevance.	Plasma Half-Life
F2-Ph-005	Define pharmacodynamics: dose-response relationships, graded vs quantal response. Draw dose response curves.	Pharmacodynamics

	Define receptors & describe types of drug receptors, cell signaling and mechanisms of receptor action. Describe the Phenomenon of down regulation and up regulation of receptors	
	Explain Agonist & antagonists with its types. Differentiate between agonists, antagonists, and partial agonists with examples.	
	Define therapeutic index and/or therapeutic window, and explain its clinical significance. Define Median Effective (ED50), Median Toxic (TD50) & Median Lethal Dose (LD50) and its clinical relevance.	
F2-Ph-006	Illustrate various phases of Drug development. Describe Drug Interactions Identify factors that alter drug response (age, genetics, disease, pregnancy).	
	Describe adverse drug reactions and their classification. Define Desensitization, Tachyphylaxis, Tolerance, Resistance, super sensitivity, hypersensitivity, super infection, iatrogenic effect, idiosyncrasy, and give examples.	

GENERAL PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
F2-Pa-001	Describe intracellular accumulations (lipids, proteins, glycogen, pigments).	Intracellular Accumulations and Calcification
	Define calcification; differentiate between dystrophic and metastatic calcification.	
F2-Pa-002	Define pigmentation; describe endogenous (melanin, hemosiderin) and exogenous pigments (carbon, tattoos).	Pigmentation and Amyloidosis
	Define amyloidosis; describe pathogenesis and morphology.	
F2-Pa-003	Define and explain cellular adaptations: atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia.	Cellular Adaptations

F2-Pa-004	Define aging; describe theories of aging and morphological features.	Aging
F2-Pa-005	Define acute and chronic inflammation and enlist cardinal signs.	Inflammation
	Enumerate the differences between acute and chronic inflammation	
F2-Pa-006	Define wound healing (primary vs secondary intention).	Wound healing
MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F2-Pa-007	Define microbes and describe their role in health and disease.	Introduction to Microbiology
	Differentiate between prokaryotic and eukaryotic microorganisms.	
	Classify bacteria according to morphology and staining characteristics.	
	Describe bacterial structure, spores, and growth curve.	
	Describe the composition and types of culture media (selective, differential, enrichment).	
	Compare and contrast applications of different culture media used in microbiology and oral diagnostic labs.	
F2-Pa-008	Define aerobic and anaerobic growth and explain fermentation in oral bacteria.	Microbial Physiology and Genetics
	Discuss the role of iron metabolism in bacterial growth and virulence.	
	Define mutation and its types; explain recombination.	
	Discuss DNA transfer within and between bacterial cells (conjugation, transformation, transduction).	
	Explain the mechanisms of bacterial resistance to antibiotics.	

F2-Pa-009	Define sterilization, disinfection, cross infection and antisepsis.	Infection Control in Dentistry
	Describe common methods of sterilization and disinfection (physical and chemical).	
	Explain the application of these methods in dental clinical practice to prevent cross-infection.	
F2-Pa-010	Define normal flora, colonizer, and dysbiosis.	Normal Flora and Host Interaction
	Discuss the normal flora of different body sites, especially the oral cavity and skin.	
	Describe their distribution, beneficial roles, and contribution to opportunistic infections.	
F2-Pa-011	Define pathogen, pathogenesis, virulence factors, ID_{50}, and LD_{50}.	Bacterial Pathogenesis and Virulence
	Identify factors influencing microbial pathogenicity, including host and immune evasion mechanisms.	
	Discuss principles and stages of bacterial pathogenesis.	
	Explain determinants of pathogenesis: transmission, adherence, invasion, inflammation, toxin production, immune pathogenesis.	
	Discuss the role of biofilm and glycocalyx in infections, particularly dental plaque and chronic oral infections.	
	Enlist different bacterial strains that cause distinct diseases.	
	Define typical stages of an infectious disease.	
F2-Pa-012	Summarize the mechanism of action of major antimicrobial classes (e.g., β-lactams, aminoglycosides).	Antibiotic Agents
	Identify appropriate antibiotic agents for bacterial infections of dental relevance.	
	Explain mechanisms of bacterial resistance and their implications in dental practice.	
F2-Pa-013	Define osteomyelitis and list microorganisms commonly associated with it.	Oral Microbiology

	Discuss Actinomycetes with emphasis on epidemiology, virulence factors, and pathogenesis in cervicofacial infections.	and Related Infections
F2-Pa-014	Describe the structure and classification of viruses (DNA and RNA).	Introduction to Virology
	Explain basic principles of viral replication and its clinical relevance in oral infections.	
F2-Pa-015	Describe the structure and classify fungi.	Mycology
ORAL PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F2-OP-001	Describe developmental disturbances in dentin.	Dentinogenesis imperfecta
	Explain dentinogenesis imperfecta, regional odontodysplasia and dentin dysplasia (clinical, radiographic, histopathological).	
F2-OP-002	Describe dentinal caries.	Dentinal Caries
DENTAL RADIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F2-DR-001	Describe the basic principles of dental imaging and its role in diagnosis.	Introduction to Dental Radiology
	Identify the types and indications of conventional radiographs, including periapical, bitewing, and orthopantomogram (OPG).	

PRACTICALS / LAB WORK		
ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F2-OB-008	Draw and label dentin types (primary, secondary, tertiary), tubules, pulp zones, odontoblasts, interglobular dentin, dead tracts, pulp stones.	Dentin & Pulp
	Identify the dentin and pulp radiographically	
	Identify the Dento-enamel junction radiographically	
PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F2-Ph-007	Calculate drug dose & rate of infusion and unit conversions (Posology).	Dose calculation
	Apply dose calculation principles in labs.	
PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F2-Pa-016	Identify cellular adaptations (metaplasia) in pictures.	Microscopic Identification
ORAL PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F2-OP-003	Identify dentinogenesis imperfecta, pulp cavity, and dentin on radiographs.	Dentinogenesis Imperfecta
MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**

F2-Pa-017	Perform Gram staining on bacterial smears and identify Gram-positive and Gram-negative bacteria & ZN for MTB under the microscope.	Microscopic Identification
F2-Pa-018	Demonstrate appropriate disinfection methods for dental instruments and materials.	Disinfection
F2-Pa-019	Demonstrate appropriate sterilization methods (autoclave, dry heat, & moist heat) for dental instruments.	Sterilization
F2-Pa-020	Identify culture media used in Microbiology laboratory for identification of pathogens (blood agar, chocolate agar, Mc Conkey agar, Nutrient agar, SDA, LJ medium, TSI, Citrate, Urease).	Culture Media
DENTAL RADIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
F2-DR-002	Interpret basic dental radiographs to recognize normal anatomy and general radiological appearances of common pathology (radiolucency, radiopacity, and resorption).	Interpretation of Conventional Radiographs

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Module
No:05
CRANIOFACIAL-II

MODULE RATIONALE

Craniofacial II builds on foundational anatomical and physiological concepts introduced earlier, emphasizing the structure and function of the head and neck in relation to dental practice. The module integrates gross anatomy, physiology, biochemistry, and oral biology to provide students with a detailed understanding of cranial nerves, facial muscles, vascular supply, and sensory organs relevant to dentistry. Students also explore the physiology of nerve conduction and muscle contraction, as well as the biochemical and microscopic basis of muscle and bone integrity. Through dissections, laboratory work, and microscopic analysis, the module strengthens students' understanding of normal structure and function—laying the groundwork for clinical application, anesthesia, oral surgery, and pathology in later years.

MODULE OUTCOMES

- Describe the anatomy of the scalp, face, orbit, temporal, infratemporal, and pterygopalatine fossae, including their neurovascular and lymphatic components.
- Explain the anatomical basis and clinical significance of facial infections, scalp injuries, and fractures of the facial skeleton.
- Identify the muscles of facial expression, extraocular muscles, and muscles of mastication with their attachments, nerve supply, and actions.
- Describe the course, branches, and clinical implications of major cranial nerves, particularly the facial, trigeminal, oculomotor, trochlear, and abducent nerves.
- Explain the structure, vascular supply, and innervation of the ear, nose, paranasal sinuses, and their relevance in dental and ENT pathologies.
- Discuss the physiology of nerve impulse generation, conduction, and synaptic transmission, and relate these concepts to the mechanism of local anesthesia.
- Explain skeletal muscle structure and contraction, including the roles of sarcomere components, motor units, and energy systems in muscle physiology.
- Correlate biochemical pathways of energy production with muscle performance and fatigue, emphasizing ATP generation and glycogen metabolism.
- Describe the structure, composition, and function of collagen, elastin, and extracellular matrix in maintaining musculoskeletal integrity.
- Identify the microscopic structure of bone and explain the functions of osteoblasts, osteocytes, and osteoclasts in bone formation and remodeling.
- Demonstrate identification of major neurovascular structures and muscles in the head and neck on models or cadaveric specimens.

- Analyze histological slides of bone and muscle tissues, correlating microscopic features with physiological and biochemical functions.

SUBJECTS INTEGRATED IN THE MODULE

- Physiology
- Anatomy
- Biochemistry
- Oral Biology & Tooth Morphology
- General Pathology & Microbiology

Syllabus

THEORY		
GROSS ANATOMY		
CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
CF2-A-001	List the layers of the scalp and describe their anatomical features, including neurovascular supply and lymphatic drainage.	Scalp
	Give anatomical justification of spread of scalp infections, profuse bleeding in superficial scalp lacerations, gaping of scalp wounds	
	Define the routes of spread of infection from scalp to brain	
CF2-A-002	Enlist in tabulated manner the muscles of facial expression, giving their nerve supply and actions.	Face
	Describe the extracranial course, branches, and distribution of the facial nerve.	
	Explain the causes and clinical consequences of damage to the nerve.	
	Describe the vascular supply and lymphatic supply of face.	
	Describe the danger area of face with it its clinical significance.	
	Define the routes of spread of infection from face to brain	
CF2-A-003	Define the boundaries and openings of orbital cavity. List the structures traversing these openings.	Eye
	In a tabulated manner enlist the extraocular and intraocular muscles of eyeball and eyelid muscles giving their nerve supply and actions	
	List and define the movements of eyeball with special reference to the axis	
	List the parts of Lacrimal apparatus giving their location and anatomical features. Describe the nerve supply of lacrimal gland	

	Describe the extracranial course, distribution and branches of oculomotor, trochlear and abducent nerves. Describe the location, roots and distribution of ciliary ganglion	
	Give the clinical correlates of nerves supplying the muscles of the eyeball	
	Describe the course and branches of ophthalmic artery mentioning its origin and termination	
	Give the anatomical structure of eyeball emphasizing on its three coats and their neurovascular supply (including optic nerve and central retinal vessels).	
CF2-A-004	Describe the boundaries contents and primary communications of temporal, infratemporal and pterygopalatine fossa	Temporal, Infratemporal and Pterygopalatine fossa
	Describe the location, roots and distribution of pterygopalatine ganglion	
CF2-A-005	Describe the anatomical features and neurovascular supply of external ear	Ear
	Describe the boundaries, contents, neurovascular supply and communications of middle ear cavity	
	Describe the anatomical features of auditory tube.	
	Describe the parts, anatomical features and neurovascular supply of internal ear	
	Describe the course and distribution of vestibulocochlear nerve	
CF2-A-006	Describe the anatomical features and neurovascular supply of external nose	Nose
	Describe the boundaries of nasal cavity (nasal septum, lateral wall, roof and floor) with their anatomical features, olfactory and trigeminal nerve supply, and vascular supply.	
	Discuss the clinical correlates of nose: Epistaxis, Foreign body in the nose.	
CF2-A-007	Identify the paranasal sinuses (maxillary, frontal, ethmoidal, sphenoidal) and describe their location, neurovascular supply, relations, and drainage pathways.	Sinuses

	Explain the lining and basic functions of the paranasal sinuses.	
	Relate the maxillary sinus to posterior maxillary teeth and discuss its clinical importance in dentistry (e.g., extractions, implants, sinus lift).	
	Discuss the clinical features of sinusitis and its differentiation from odontogenic pain.	
CF2-A-008	Classify fractures of the maxilla based on anatomical patterns (Le Fort classification)	Fractures
	Classify fractures of the mandible based on anatomical regions	

PHYSIOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
CF2-P-001	Describe the physiological anatomy of a neuron, including its structure and function.	Membrane Potentials and Action Potentials (Nerve)
CF2-P-002	Enlist the neuroglia cells responsible for myelination in Central Nervous System (CNS) & Peripheral Nervous System (PNS)	Myelinated and Unmyelinated Nerve Fibers.
	Enlist the steps of myelination in peripheral nervous system.	
	Define Multiple sclerosis	
CF2-P-003	Explain Nernst potential of Na & K.	Membrane Potentials
	Derive the Nernst equation.	
	Explain the physiological basis of the Goldman equation and write the equation.	
CF2-P-004	Describe the resting membrane potential of a nerve fiber and the role of various ion channels.	Resting membrane potential
	Discuss Role of different channels in calculating Resting membrane potential of a nerve fiber	
CF2-P-005	Define Action potential and ionic basis.	Action Potentials

	Discuss the role of voltage-gated channels in generating action potentials	
	Define threshold stimulus	
	Define the All-or-None Law.	
	Define absolute refractory period, and relative refractory period also mention their physiological basis. Discuss the effects of hypocalcemia on nerve excitability.	
	Explain the mechanism of local anesthetics on nerve excitability	
CF2-P-006	Explain the propagation of action potentials	Propagation of the action potential
	Define Saltatory conduction and its benefits.	
	Explain mechanism of tetany	
CF2-P-007	Describe the physiological anatomy of skeletal muscles	Contraction of Skeletal Muscle
	Describe the structure of Sarcomere	
CF2-P-008	Explain general mechanism of skeletal muscle contraction (walk along theory)	General mechanism of muscle Contraction
CF2-P-009	Define and differentiate isotonic and isometric contraction with 2 examples of each	Characteristic s of whole muscle Contraction
	Give physiological basis of tetanization and multiple fiber summation	
	Define a motor unit and explain the mechanism of muscle contraction by illustrating the role of motor units in regulating force and precision of movement.	
	Give physiological basis of Rigor mortis Explain muscle fatigue	

	Describe physiology of muscle contraction, including sliding filament theory, excitation–contraction coupling, neuromuscular junction, end-plate potential, and muscle fatigue.	
CF2-P-010	Describe the types of smooth muscle and explain their functional properties, including the latch phenomenon.	Smooth Muscles
BIOCHEMISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF2-B-001	Describe the structure, types, biosynthesis, and functions of collagen and elastin, and explain their roles in maintaining the mechanical strength and elasticity of muscle connective tissue.	Biochemistry and Structural Basis of Muscle Function and Integrity
	Identify disorders associated with collagen and elastin defects, particularly those affecting muscle support structures and connective tissue integrity.	
	Explain the composition and function of the extracellular matrix (ECM) in muscle tissue, including the roles of proteoglycans, collagen, fibronectin, and integrins in muscle cell adhesion, signaling, and repair.	
CF2-B-002	Explain the structure and basic function of the electron transport chain (ETC) and describe how oxidative phosphorylation generates ATP in muscle cells.	Energy Production in Muscles
	Explain the processes of glycogenesis and glycogenolysis in muscle tissue, including their regulation, the role of key enzymes, and their contribution to ATP production during exercise.	
	Discuss the role of muscle glycogen as an energy source during different exercise intensities, its depletion and recovery, and how regular exercise influences glycogen storage capacity and muscle adaptation.	
	Describe the ATP–phosphocreatine (ATP-PC) system and its role in providing immediate energy during short-term, high-intensity muscle activity.	
	Differentiate muscle fiber types (Type I, IIa, IIb) based on structure, metabolism, and functional properties.	
CF2-B-003	Describe vitamin C and its active forms, sources, RDA, biochemical roles, and deficiency manifestations.	Vitamins

ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF2-OB-001	Describe the chemical composition of bone.	Bone
	Describe the functions of osteoblasts, osteocytes, and osteoclasts in Bone Formation and Remodeling	
	Describe the process of intramembranous and endochondral ossification	
	Describe the microscopic Structure of Bone: (Osteon, central canal, lamellae, lacunae, canaliculi, and blood vessels).	
	Explain of regulation of bone cell formation	

MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF2-Pa-001	Define microbial teratogens, Define TORCH infections and identify the impact of maternal infections (TORCH complex) on embryonic development and their dental implications.	Microbial Teratogens
CF2-Pa-002	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Staphylococci.	Staphylococci
CF2-Pa-003	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Mucormycosis	Mucormycosis
CF2-Pa-004	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Streptococci	Streptococci
CF2-Pa-005	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Actinomyces	Actinomyces
CF2-Pa-006	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Corynebacterium diphtheriae	Corynebacterium diphtheriae
CF2-Pa-007	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Porphyromonas	Porphyromonas
CF2-Pa-008	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Fusobacterium	Fusobacterium

CF2-Pa-009	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Candida	Candida

PRACTICALS / LAB WORK		
GROSS ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF2-A-009	Demonstrate and systematically identify major arteries, veins, and nerves on anatomical models or cadaveric dissections; locate their course, branches, and anatomical relations; and correlate their clinical significance with surrounding structures	Surface Anatomy
CF2-A-010	Identify and demonstrate the origin, insertion, nerve supply, and actions of the muscles of facial expression on models or cadaveric specimens	Jaw Muscles
CF2-A-011	Demonstrate surface marking of extracranial branches of the facial nerve and trigeminal nerve in relation to relevant structures, and identify their anatomical pathways and clinical relevance.	Neurovascular Supply of face
ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF2-OB-002	Draw and label osteoblasts, osteocytes, and osteoclasts and correlate each with its function.	Bone
CF2-OB-003	Draw and label the stages / histological features of intramembranous and endochondral ossification.	Ossification

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No:06
NEUROSCIENCES-I

MODULE RATIONALE

The Neurosciences module introduces students to the structural and functional organization of the nervous system and its direct relevance to dental practice. Understanding neural control of sensory, motor, and autonomic functions is critical for interpreting pain pathways, reflexes, and neuromuscular coordination in the head and neck region. This module integrates anatomy, physiology, biochemistry, pharmacology, pathology, and microbiology to provide a comprehensive understanding of neuronal signaling, neurotransmission, autonomic regulation, and common neurological disorders. Students also explore clinical conditions such as trigeminal neuralgia, facial nerve palsy, meningitis, and neuropathies to strengthen their ability to correlate theoretical knowledge with clinical application. The learning experience combines lectures, models, cadaveric demonstrations, and practical sessions to develop a foundation for neurological understanding essential in anesthesia, pain management, and oral surgery.

MODULE OUTCOMES

- Describe the gross and microscopic organization of the central and peripheral nervous systems, including neurons, neuroglia, receptors, and effectors.
- Explain the structural and functional components of spinal cord, brainstem, cerebellum, cerebrum, and cranial nerves.
- Identify the major ascending and descending tracts and correlate their lesions with clinical signs and symptoms.
- Differentiate upper and lower motor neuron lesions based on anatomical and physiological principles.
- Discuss the formation, circulation, and absorption of cerebrospinal fluid (CSF) and its role in maintaining intracranial homeostasis.
- Explain the physiological basis of synaptic transmission, neural conduction, sensory processing, and reflex mechanisms.
- Interpret somatosensory and pain pathways with emphasis on trigeminal sensory systems and dental pain physiology.
- Relate motor control to the organization and function of the motor cortex, cerebellum, and basal ganglia.
- Describe the biochemical basis of neurotransmitter synthesis, release, and inactivation, and relate disorders such as Parkinson’s disease and Alzheimer’s to molecular mechanisms.
- Explain the pharmacodynamics of drugs acting on the autonomic nervous system, including neurotransmitter regulation and receptor types.

- Discuss major neuropathologies such as meningitis, multiple sclerosis, and demyelinating diseases, along with their microbiological and pathological aspects.
- Perform basic cranial nerve examinations and demonstrate clinical localization of neurological function relevant to dentistry.

SUBJECTS INTEGRATED IN THE MODULE

- Anatomy
- Physiology
- Biochemistry
- Pharmacology & Therapeutics
- General Pathology & Microbiology

Syllabus

THEORY		
ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
NS-A-001	Enlist various parts of nervous system, identify location of each part of nervous system. Recognize functions of each part of nervous system	Nervous System Overview
NS-A-002	Define neuron and discuss its structure	Neuron
NS-A-003	Classify neurons morphologically and functionally with examples	Neuron Classification
NS-A-004	Discuss components of central and peripheral nervous system	CNS & PNS Overview
NS-A-005	Give the supporting cells in central and peripheral nervous system	Neuroglia
NS-A-006	Define & classify receptors and effectors	Receptors and Effectors
NS-A-007	Highlight major subdivisions of ANS into sympathetic and parasympathetic nervous system with comparison of anatomical differences.	Sympathetic vs. Parasympathe tic System
NS-A-008	Enlist all cranial nerves and their distribution.	Cranial Nerves
NS-A-009	Give the classification, structure, and functions of peripheral nerve fibers in a typical spinal nerve.	Spinal Nerve Anatomy
NS-A-010	Define dermatome	Dermatome
NS-A-011	Enlist the parts of the brain. Enumerate their major functions.	Brain Regions & its functions
NS-A-012	Identify the location, extent, coverings, and blood supply of spinal cord	Spinal Cord Overview
NS-A-013	Tabulate nuclear organization at different levels of spinal cord	Spinal Cord Nuclei
NS-A-014	Draw & label the transverse section of spinal cord at mid cervical level showing ascending & descending tracts	Spinal Cord Cross-Section

NS-A-015	Define gray & white matter and differentiate amongst Fasciculus tract & Lemniscus tract	Spinal Cord Gray & White Matter
NS-A-016	Give the external feature of brain stem	Mid brain, Pons, Medulla & its blood supply
NS-A-017	Draw & Label cross-sections of the brainstem at the levels of the midbrain, pons, and medulla	Brainstem Cross Sectional Anatomy
NS-A-018	Discuss the location of cranial nerve nuclei, their functional components, and distribution, and its exit from respective skull foramina.	Cranial Nerve Nuclei and Pathways
NS-A-019	Identify the lobes of cerebellum	Cerebellar Lobes
NS-A-020	Define important clinical correlates, vermis syndrome, ataxia, dysarthria, dysdiadochokinesia, nystagmus, and vertigo.	Cerebellar Clinical Correlates
NS-A-021	Discuss internal structure of cerebral hemisphere (white matter, basal ganglia, lateral ventricle)	Cerebral Hemisphere Structure
NS-A-022	Briefly explain ventricular system (Lateral, 3rd & 4th ventricles)	Ventricular System
NS-A-023	Briefly explain various parts of internal capsule	Internal Capsule
NS-A-024	Draw and label the formation of Circle of Willis	Circle of Willis
NS-A-025	Explain meninges of the brain	Meninges
NS-A-026	Give the location, origin and termination of dural venous sinuses.	Dural Venous Sinuses
NS-A-027	Discuss the important structures associated with the cavernous sinus and its clinical significance in relation to the danger area of the face	Cavernous Sinus
NS-A-028	Discuss the anatomical basis of extradural, subdural and subarachnoid hemorrhages	Intracranial Hemorrhages
NS-A-029	Explain the formation, circulation and absorption of CSF (Cerebrospinal fluid)	CSF Physiology
NS-A-030	Discuss the origin, course, branches and distribution of internal carotid and vertebral artery	Brain Blood Supply

NS-A-031	Enlist the nuclei of thalamus and hypothalamus along with its functions & connections	Thalamus & Hypothalamus Connections
PHYSIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
NS-P-001	Classify synapse and explain the physiological anatomy of chemical synapse.	Organization of the Nervous System, Basic Functions of Synapses, and Neurotransmitters
	Elaborate the role of synapse in processing information.	
	Classify the substances that act as neurotransmitters or synaptic transmitters. Enlist functions related to dentistry of each group.	
	Define Excitatory and inhibitory postsynaptic potential and explain their mechanism of generation.	
	Explain spatial and temporal summation.	
	Explain the mechanism of synaptic fatigue (its significance) and synaptic delay.	
	Discuss the effects of hypoxia, acidosis and alkalosis on synaptic transmission	
NS-P-002	Define and classify the sensory receptors in the body on the basis of stimuli they detect.	Sensory Receptors, Neuronal Circuits for Processing Information
NS-P-003	Discuss tonic and phasic receptors with 2 to 3 examples of each.	
NS-P-004	Classify the nerve fibers on the basis of diameter and speed of conduction	Receptors Transduction of sensory stimuli into nerve impulses
NS-P-005	Classify somatic sensations.	Somatosensory cortex
	Explain two main ascending pathways (DCML and Anterolateral system) for transmitting sensation to CNS.	
	Enlist sensations carried by dorsal column medial Lemniscal system and Anterolateral Pathway with special reference to Trigeminal sensory system.	

	Trace these pathways from receptors to sensory cortex and compare their features.	
	Give location and functions of Primary somesthetic area and sensory association area of sensory cortex. Name the sensations perceived by these areas.	
	Describe the sensations lost when there is damage to somesthetic areas.	
	Discuss representation of body parts in sensory cortex	
NS-P-006	Tabulate the sensory nerve endings, and anatomical sites of first, second, third order neurons of ascending tracts.	Ascending Tracts
NS-P-007	Trace the descending tracts.	Descending Tracts
NS-P-008	Differentiate clearly between upper and lower motor neuron lesions	UMN vs. LMN Lesions
NS-P-009	Identify the lobes, sulci & gyri	Cerebral Cortex Anatomy
NS-P-010	Describe functional areas of cerebrum	Functional Cortex
NS-P-011	Define and give physiological basis of referred pain with two examples.	Referred Pain & Trigeminal Neuralgia
	Define Trigeminal Neuralgia.	
NS-P-012	Name the motor areas of cerebral cortex and give representation of body parts.	Cortical and Brain Stem Control of Motor Function
	Discuss the functions of motor areas	
	Enlist the functions of brain stem	
	Name the descending motor tracts. Describe the functions of corticospinal tract.	
NS-P-013	Give Functional organization of spinal cord.	Spinal Cord Motor Functions and Reflexes
	Define reflex action and identify the components of a reflex arc.	

	Define, classify and enlist components of stretch reflex with special reference to jaw reflex).	
NS-P-014	Define and give types of cerebrovascular accident along with their salient features.	Effect of Lesions in the Motor Cortex or in the Corticospinal Pathway
NS-P-015	Enlist the components of limbic system and its general functions.	The Limbic System and the Hypothalamus
	Enlist functions of different portions hypothalamus.	
	Explain the physiological basis and features of Alzheimer 's disease	
NS-P-016	Define memory.	Memory
	Classify memory on the basis of duration and information stored.	
NS-P-017	Define retrograde and anterograde amnesia	The Autonomic Nervous System and the Adrenal Medulla
	Explain the effects of sympathetic and parasympathetic on various organs/ system of body	
	Enlist types of autonomic receptors present in heart, blood vessels, smooth muscles, GIT, & EYE.	
	Give features of Alarm or stress response	
NS-P-018	Enlist the functions of CSF	Cerebral circulation
NS-P-019	Give functional divisions of cerebellum along with their functions.	Cerebellum and Basal Ganglia Contributions to Overall Motor Control
	Enlist cerebellar nuclei	
	Enlist features of cerebellar dysfunction	
NS-P-020	Enlist components of basal ganglia in relation to other structures of the brain	Contributions to Overall Motor Control

	Discuss functions of basal ganglia	
	Discuss pathophysiology and features of Parkinson's disease.	
NS-P-021	Enlist the primary taste sensations.	The Chemical Senses— Taste and Smell
	Trace the taste pathway	
	Enlist the primary sensations of smell	
	Describe the physiological anatomy and location of olfactory membrane and olfactory receptors	

BIOCHEMISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
NS-B-001	Elaborate the structure of mannitol & give its clinical uses.	Osmotic diuretic
NS-B-002	Discuss neuropathies associated with deficiency/ toxicity of B1, B6 & B12.	Neuropathies
NS-B-003	Explain the biosynthesis, mechanism of action, and physiological role of acetylcholine, and discuss the clinical consequences of its deficiency	Neurotransmitters
	Outline the reactions involved in biosynthesis of catecholamines.	
	Elaborate the mechanism of action of catecholamines.	
NS-B-004	Briefly describe the cause, clinical features & management of Phenylketonuria.	Inherited disorders of amino acid metabolism
	Outline the metabolism of branched chain amino acids (BCAA).	
	Briefly describe the cause, clinical features & management of maple syrup urine disease (MSUD).	
NS-B-005	Briefly describe the consequences of protein misfolding (Alzheimer's disease and prion diseases).	Protein misfolding

PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
NS-Ph-001	Describe the synthesis, storage, release and degradation of acetylcholine and norepinephrine of the ANS	Introduction to ANS
	Classify types of autonomic receptor (adrenergic and cholinergic) along with their location, actions and post receptor mechanism	
NS-Ph-002	Classify and name the prototype drugs acting on the autonomic nervous system according to their site and mechanism of action.	Classification

GENERAL PATHOLOGY & MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
NS-Pa-001	Define meningitis.	Infections of CNS
	Identify different types of meningitis according to etiology.	
	Differentiate between the CSF findings of different types of meningitis	
	Define encephalitis. Describe its etiology and pathogenesis	
	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Streptococcus pneumoniae	
	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Treponema pallidum	
	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of herpes simplex virus	
	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of varicella zoster virus	

	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Clostridium tetani and Clostridium botulinum	
	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Spirochetes	
NS-Pa-002	Define concussion and contusion. Enlist their clinical features	Trauma to CNS
NS-Pa-003	Enumerate various demyelinating diseases of CNS Enlist clinical features and diagnosis of Multiple Sclerosis & Guillain-Barre syndrome	Demyelinating diseases of CNS

PRACTICALS / LAB WORK		
NEUROANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
NS-A-036	Demonstrate gross neuroanatomical knowledge of the brain and brainstem with particular focus on the cranial nerves, including identification of their origin, course, nuclei, associated foramina, functional components, and clinical correlations using anatomical models and dissected cadaveric specimens	Nervous system
PHYSIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
NS-P-022	Examination of trigeminal nerve.	CN V
NS-P-023	Examination of facial nerve.	CN VII
NS-P-024	Examination of 9th, 10th, 11th & 12th nerve.	CN IX, X, XI, XII
NS-P-025	Demonstrate Plantar reflex.	Motor System
NS-P-026	Demonstrate deep tendon reflex.	

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No:07
ALVEOLOCEMENTAL
COMPLEX-I

MODULE RATIONALE

The Alveolo-Cemental Complex module provides students with an integrated understanding of the structures that anchor and support teeth within the jaws. It explores the anatomy, histology, physiology, and pathology of the periodontium—including cementum, periodontal ligament, alveolar bone, and gingiva—and their collective role in maintaining oral health and function. Students also learn about tooth eruption, movement, and shedding, emphasizing the developmental and adaptive processes that sustain the dentition throughout life. By linking biological foundations with clinical disciplines such as periodontology, radiology, and community dentistry, this module equips students to recognize the early signs of periodontal disease, interpret radiographic changes, and apply preventive and therapeutic principles in dental practice.

MODULE OUTCOMES

- Describe the structure, composition, and functions of the periodontium and its components—cementum, periodontal ligament, alveolar bone, and gingiva.
- Explain the development, maturation, and age-related changes of supporting dental tissues.
- Differentiate between cellular and acellular cementum and discuss their roles in tooth attachment and repair.
- Identify the organization and fiber groups of the periodontal ligament and relate their orientation to masticatory function and tooth movement.
- Describe the histology and functional characteristics of gingival tissues, including epithelial zones and dentogingival and mucogingival junctions.
- Explain the mechanisms and phases of tooth eruption, movement, and shedding, and recognize factors causing abnormalities.
- Discuss the vascular, neural, and biochemical components of the supporting structures and their relevance to dental practice.
- Describe the pathological basis of acute and chronic inflammation as it relates to periodontal disease, and identify key microorganisms involved.
- Recognize the microbial and biochemical factors contributing to plaque and calculus formation, and their roles in periodontal disease progression.
- Demonstrate mechanical plaque control techniques such as brushing and flossing, emphasizing prevention and maintenance of periodontal health.
- Interpret radiographic features of the normal periodontium and identify radiological signs of periodontal disease.
- Apply periodontal and oral health indices (Plaque Index, Gingival Index, CPI, CPITN) to assess and monitor oral health status in community settings.

SUBJECTS INTEGRATED IN THE MODULE
• Oral Biology & Tooth Morphology • General Pathology & Microbiology • Periodontology • Dental Radiology • Community & Preventive Dentistry

Syllabus

THEORY		
ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
ALC-OB-001	Define the alveolo-cemental complex (periodontium) and explain its role in dental support.	Periodontium Overview
ALC-OB-002	Identify its components (cementum, PDL, alveolar bone, gingiva) and their diagrammatic arrangement around the tooth.	Components of Periodontium
ALC-OB-003	Define cementum and explain its biochemical properties Classify, explain and differentiate between different types of cementum and its properties	Cementum
ALC-OB-004	Describe the process of cementogeneis Explain molecular factors associated with cemenotogenesis	Cementogenesis
ALC-OB-005	Classify and explain the structure of different types of cementum and their properties.	Types of Cementum
ALC-OB-006	Explain age-related changes of cementum.	Age-related changes of cementum
ALC-OB-007	Describe cementoenamel junction (CEJ) and attachment of cementum onto dentin	CEJ
ALC-OB-008	Differentiate between the structure of cellular and acellular cementum.	Cellular vs Acellular Cementum
ALC-OB-009	Describe the structure and functions of alveolar bone.	Alveolar Bone Structure and Function
ALC-OB-010	Elaborate its changes with age and its clinical considerations.	
ALC-OB-011	Outline the chronological stages of healing in an Extraction Socket, from the formation of the blood clot to the final replacement by lamellar bone.	Bone Repair and Remodeling in the Extraction Socket
ALC-OB-012	Discuss the development of Periodontal Ligament (PDL)	Development of PDL

ALC-OB-013	Enlist the structure and function of the periodontal ligament.	PDL Structure & Function
ALC-OB-014	Describe the cellular component of PDL	PDL cellular component
ALC-OB-015	Describe the principal fiber bundles of PDL.	PDL Fiber Bundles
ALC-OB-016	Describe the adaptation of the periodontal ligament to the functional demands.	Functional Adaptation of Periodontal Ligament
ALC-OB-017	Describe the blood supply and nerve supply of PDL	Blood and Nerve Supply of PDL
ALC-OB-018	Describe the mechanisms of PDL cell recruitment during tissue turnover and repair.	PDL remodeling and regeneration.
ALC-OB-019	Describe the histological aspects of gingiva.	Gingival Histology
ALC-OB-020	Enumerate gingival fibers & their functions.	Gingival Fibers
ALC-OB-021	Tabulate blood and nerve supply of gingiva.	Gingival Blood and Nerve Supply
ALC-OB-022	Describe the structural and functional characteristics of different areas of Gingival epithelium	Gingival Epithelium
ALC-OB-023	Describe gingival sulcus and explain the development and structure of dentogingival junction (DEJ)	Dentogingival Junction
ALC-OB-024	Explain the histological mechanisms of repair at the DEJ	Healing and Regeneration of the DEJ
ALC-OB-025	Explain the structure of mucogingival junction.	Mucogingival junction.
ALC-OB-026	Describe eruption and phases of tooth movement.	Tooth Eruption Phases Pre-eruptive Tooth Movement
	Elaborate pre-eruptive tooth movement.	

ALC-OB-027	Discuss the mechanism and factors responsible for eruptive tooth movement.	Eruptive Tooth Movement Mechanisms
ALC-OB-028	Describe the types of movement a tooth makes post- eruption to maintain its functional position in the jaw in terms of mechanism and significance.	Post-eruptive Tooth Movements
ALC-OB-029	Discuss histology and causes of tooth shedding.	Tooth Shedding
PATHOLOGY & MIRCOBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
ALC-Pa-001	Define acute inflammation and its pathological basis relevant to dental conditions.	Acute Inflammation in Dental Conditions
ALC-Pa-002	Enlist stimuli for acute inflammation, including microbes, trauma, and chemical irritants relevant to oral infections.	Stimuli of Acute Inflammation in Oral Health
ALC-Pa-003	Classify chemical mediators of acute inflammation and their role in dental diseases such as dental abscess formation.	Chemical Mediators of Acute Inflammation in Dentistry
ALC-Pa-004	Explain vascular and cellular events in acute inflammation and its relation to dental conditions like pulpitis and periodontitis.	Vascular and Cellular Events in Acute Inflammation
ALC-Pa-005	Describe systemic effects of acute inflammation, such as fever and leukocytosis, and their impact on dental treatment.	Systemic Effects of Acute Inflammation
ALC-Pa-006	Identify and explain the role of microbes causing acute inflammation in dental infections, such as Streptococcus mutans and Porphyromonas gingivalis.	Microbes Causing Dental Infections
ALC-Pa-007	Analyze morphological patterns of acute inflammation, such as purulent or fibrinous types, in oral diseases.	Morphological Patterns of Acute Inflammation in Oral Diseases

ALC-Pa-008	Define chronic inflammation and its significance in persistent oral and systemic conditions.	Chronic Inflammation and Its Oral/Systemic Significance
ALC-Pa-009	Identify chronic inflammatory cells, such as macrophages and lymphocytes, and mediators like TNF-a and IL-1.	Chronic Inflammatory Cells and Mediators
ALC-Pa-010	Discuss Porphyromonas and Fusobacterium with its pathogenesis.	Pathogenesis of Porphyromonas and Fusobacterium
PERIODONTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
ALC-Pe-001	Define key terminologies related to periodontal diseases: Gingivitis, periodontitis, periodontal pockets, clinical attachment level and periodontal bone loss	Periodontal Disease Terminology
ALC-Pe-002	Define & Classify Periodontal Diseases	Periodontal Disease
ALC-Pe-003	Identify the microbial composition of healthy gingival and periodontal tissues.	Healthy Microbial Composition and Periodontal Homeostasis
ALC-Pe-004	Enlist key red complex bacterial species involved in periodontal disease (e.g., Porphyromonas gingivalis, Tannerella forsythia, Treponema denticola).	Pathogenic Bacterial Species in Periodontal Disease
ALC-Pe-005	What is Plaque biofilm and how is it formed and what is its role in periodontal diseases.	Plaque Biofilm Formation and Role in Disease
ALC-Pe-006	Describe dental plaque biofilm as the major factor contributing to development of periodontal disease, and its relationship with host, genetic and local predisposing factors in exacerbating periodontal conditions.	
ALC-Pe-007	Explain the adherent nature of dental plaque and why it is not easily visualized. Describe the importance of plaque disclosure and justify the need for mechanical plaque removal by both the patient and oral health professionals.	Plaque Visualization, Disclosure, and

		Mechanical Removal
ALC-Pe-008	Explain the role of dental calculus in periodontal disease. Differentiate between supragingival and subgingival calculus, Describe the formation, mineralization, and microbial composition of calculus, and explain how calculus acts as a plaque-retentive surface contributing to periodontal disease progression.	Dental Calculus Formation, Composition, and Role in Disease
ALC-Pe-009	Enlist other predisposing factors (other than calculus) that predispose to plaque formation and consequent periodontal disease like gingivitis.	Other Predisposing Factors for Plaque Formation
ALC-Pe-010	Describe the etiology and pathogenesis of scurvy with emphasis on the biochemical role of Vitamin C in collagen synthesis and its clinical implications on periodontal tissue integrity	Scurvy and Vitamin C Role in Periodontal Health
ALC-Pe-011	Enlist methods of plaque removal techniques	Plaque removal techniques
DENTAL RADIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
ALC-DR-001	Define the role of radiology in diagnosing and assessing periodontal diseases. Explain radiological features of healthy periodontium.	Role of Radiology in Periodontal Disease
ALC-DR-002	Interpret key radiographic signs of periodontal disease, including crestal bone loss, widening of the periodontal ligament space, and calculus deposits.	Interpretation of Radiographic Signs in Periodontal Disease
COMMUNITY & PREVENTIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
ALC-CD-001	Define and explain the key periodontal indices used in epidemiological studies (Gingival Index, Plaque Index, OHI-S, CPI, CPITN).	Periodontal Indices
ALC-CD-002	Differentiate between various periodontal conditions based on pathophysiology and clinical signs.	Periodontal Conditions

ALC-CD-003	Describe the stages and progression of gingivitis and periodontitis.	Disease Progression
ALC-CD-004	Explain the principles and methodology for measuring gingivitis and periodontitis; interpret findings using standard indices.	Measurement Methods in Periodontal Health
ALC-CD-005	Perform and interpret the Community Periodontal Index of Treatment Needs (CPITN) to assess periodontal status and identify treatment needs.	CPITN and Treatment Needs Assessment
ALC-CD-006	Conduct dietary history for caries risk assessment and demonstrate use of indices (Gingival Index, Plaque Index, CPI, CAL) in oral health surveys.	Oral Health Assessment and Risk Evaluation

PRACTICALS / LAB WORK		
PATHOLOGY & MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
ALC-Pa-011	Identify histological slides of acute, chronic & granulomatous inflammation.	Histological Identification
PERIDONTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
ALC-Pe-011	Demonstrate plaque removal techniques including proper brushing and flossing.	Brushing and Flossing Techniques
DENTAL RADIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
ALC-DR-003	Identify normal periodontal structures on radiographs (OPG and periapical).	Normal Periodontal Structures on Radiographs
ALC-DR-004	Observe alveolar bone and assess bone levels.	Alveolar Bone Observation and Level Assessment
ALC-DR-005	Identify the periodontal ligament (PDL) space on radiographs.	Periodontal Ligament Space Identification
ALC-DR-006	Identify the lamina dura on radiographs.	Lamina Dura Identification
ALC-DR-007	Recognize the cementoenamel junction (CEJ) on radiographs.	Cementoenamel Junction Recognition
ALC-DR-008	Differentiate between cortical and cancellous bone on radiographs.	Cortical vs. Cancellous Bone Differentiation

ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
ALC-OB-030	Draw and label the differentiation of cementoblasts from ectomesenchymal cells & the fragmentation of Hertwig's epithelial root sheath.	Cementoblast
ALC-OB-031	Draw and label the types of cementoenamel junction	CEJ
ALC-OB-032	Draw and label cellular cementum.	Cellular Cementum
ALC-OB-033	Draw and label the alveolar and bundle bone	Alveolar & Bundle Bone
ALC-OB-034	Draw and label the periodontal ligament in a cross-section between teeth	PDL cross-section
ALC-OB-035	Draw and label the arrangement of principal fiber group within the periodontium.	Principal fibers group of PDL
ALC-OB-036	Draw and label the gingival group of fibers (gingival ligament).	Gingival group of fibers
ALC-OB-037	Draw and label different anatomical zones of gingiva; mucocutaneous junction, mucogingival junction, & dentogingival junction.	Gingiva & its Junctions

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Module No:08

BLOOD & CARDIOVASCULAR SYSTEM-I

MODULE RATIONALE

The Blood & CVS module introduces the foundational knowledge of blood and the cardiovascular system—key to understanding how the human body maintains homeostasis, immunity, and tissue perfusion. Students explore the structure and function of the heart, blood vessels, and blood components through an integrated approach that links anatomy, physiology, biochemistry, pathology, pharmacology, and microbiology. Emphasis is placed on correlating normal mechanisms with disease processes and on understanding clinical relevance in dental practice, such as managing bleeding disorders, cardiovascular emergencies, and infections. The learning experiences in this module aim to help students develop a sound understanding of circulatory physiology and its application to oral and systemic health.

MODULE OUTCOMES

- Describe the structure and organization of the cardiovascular and lymphatic systems and relate them to their functional roles in maintaining circulation and tissue health.
- Explain the composition and functions of blood, mechanisms of hemostasis, and the physiological basis of immunity and inflammation.
- Correlate biochemical aspects of plasma proteins, lipoproteins, cholesterol metabolism, and eicosanoids with cardiovascular and systemic health.
- Identify and interpret basic hematological and cardiovascular physiological parameters such as blood grouping, bleeding and clotting times, and ECG tracings.
- Recognize the pathophysiological basis of common hematologic and cardiovascular disorders, including bleeding tendencies, shock, thrombosis, and immunologic abnormalities.
- Discuss the pharmacological classification and mechanisms of major drugs acting on the cardiovascular system.
- Apply microbiological and pathological knowledge to understand the link between oral infections and cardiovascular diseases, ensuring safe dental practice and infection control.
- Integrate foundational concepts across disciplines to appreciate how the cardiovascular system influences overall and oral health, and how systemic alterations can affect dental treatment outcomes.

SUBJECTS INTEGRATED IN THE MODULE

- Anatomy
- Physiology
- Biochemistry
- General Pathology & Microbiology
- Pharmacology & Therapeutics

Syllabus

THEORY		
ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CVS-A-001	Describe the general organization of the vascular system, including the structure and functions of arteries, veins, and capillaries.	Organization of the Vascular System
CVS-A-002	Describe the general organization of the nervous system, including the central nervous system and peripheral nervous system overview.	Organization of the Nervous System
CVS-A-003	Describe and exemplify various types of anastomoses Describe three circulatory routes	Circulatory system
	Define portal system and describe its two varieties	
	Describe how the walls of blood vessels receive their blood supply, including the role of vasa vasorum and diffusion from the lumen.	
	Describe various components of lymph vascular system	
HISTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CVS-A-004	Describe the structure of lymphoid organs.	Lymphoid organs
PHYSIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CVS-P-001	Describe the blood components.	Blood: White Blood Cells and Body Defense Mechanisms
	Enumerate the types of white blood cells along with their normal blood count.	
	Discuss their site of genesis.	

	Describe the characteristics and functions of neutrophils.	
	Explain the process of phagocytosis and lysis of invading agents by neutrophils.	
	Explain the process of phagocytosis and lysis of invading agents by macrophages.	
	Explain the process of opsonization.	
	Describe the process of inflammation.	
	Enlist different lines of defense during inflammation.	
	Explain the process of migration of neutrophils from the blood into inflamed tissue.	
	Explain the functions of eosinophils and basophils.	
	Give normal lifespan of white blood cells.	
	Classify lymphocytes.	
	Classify T lymphocytes and enlist their salient functions.	
CVS-P-002	Define immunity.	Immunity
	Describe innate immunity.	
	Describe and classify acquired immunity.	
	Define passive immunity.	
	Discuss the role of T cells and B cells in acquired immunity.	
	Define plasma cells.	

	Describe the structure of antigen and immunoglobulin.	
	Enlist types of immunoglobulins.	
	Describe the mechanism of direct action of antibodies.	
CVS-P-003	Enumerate different blood group types.	Blood Types and Transfusion
	Explain the basis of ABO and Rh blood systems.	
	Discuss the features and complications of mismatched blood transfusion reaction.	
CVS-P-004	Define hemostasis.	Hemostasis and Blood Coagulation
	Enlist and explain the mechanisms that secure hemostasis.	
	Give characteristics and functions of platelets.	
	Mention normal platelet count in blood and life span of platelets.	
	Explain the steps involved in formation of primary platelet plug to seal small vascular holes.	
CVS-P-005	Define thrombocytopenia.	Conditions Causing Excessive Bleeding
	Enlist causes of thrombocytopenia.	
	Explain consequences of thrombocytopenia.	
	Enlist the clotting factors in blood.	
	Name vitamin K–dependent clotting factors.	
	Explain the intrinsic and extrinsic clotting pathways.	

	Describe mechanism of clot formation after injury.	
	Name and give mechanism of anticoagulants (heparin, oxalate, citrate) used in laboratory.	
	Enlist and explain the conditions that cause excessive bleeding (Vitamin K deficiency, Hemophilia, Thrombocytopenia).	
	Define prothrombin time and mention its significance.	
CVS-P-006	Describe the structure of heart and functioning of heart.	Heart: Cardiac Muscle, Pump Function, and Heart Valves
	Classify and exemplify various types of blood vessels.	
	Explain the physiological anatomy of cardiac muscle.	
	Describe and draw the phases of action potential of ventricle.	
CVS-P-007	Describe and draw the phases of action potential of SA node and explain mechanism of self-excitation.	Rhythmical Excitation of the Heart
	Draw and explain the conducting system of heart.	
	Describe the mechanism of excitation–contraction coupling in cardiac muscle.	
	Draw and explain pressure and volume changes of left ventricle during cardiac cycle.	
	Define and give the normal values of cardiac output, stroke volume, end diastolic volume, end systolic volume, and venous return.	
	Describe the Frank–Starling mechanism.	
	Describe the autonomic regulation of heart pumping.	
	Describe the effect of potassium, calcium ions, and temperature on heart function.	
CVS-P-008	Define electrocardiogram.	Fundamentals of

	Enlist, draw, and explain the physiological basis and durations of waves, intervals, and segments of normal ECG.	Electrocardiography
CVS-P-009	Define tachycardia and enlist its causes.	Cardiac Arrhythmias
	Define bradycardia and enlist its causes.	
	Define sinus arrhythmia and its physiological basis.	
CVS-P-010	Explain the functional parts of circulation (arteries, arterioles, capillaries, veins, venules).	Circulation
	Mention the pressures in systemic and pulmonary circulation.	
	Describe nervous regulation of blood vessels and functioning of vasomotor centers.	
	Explain vasovagal syncope.	
CVS-P-011	Identify vessels constituting microcirculation.	Microcirculation and Lymphatic System: Capillary Exchange and Lymph Flow
	Enumerate Starling forces (hydrostatic and osmotic) and explain their role in capillary filtration and interstitial fluid formation.	
	Define edema.	
CVS-P-012	Describe local control of blood flow in response to tissue needs.	Local and Humoral Control of Tissue Blood Flow
	Discuss role of humoral factors in control of blood flow.	
	Explain acute mechanism of local blood flow control (tissue metabolism & oxygen demand).	
	Describe autoregulation of blood flow during changes in arterial pressure (metabolic and myogenic mechanisms).	
CVS-P-013	Define blood pressure and its two primary determinants (cardiac output and total peripheral resistance).	Arterial Blood Pressure: Measurement and Clinical Significance
	Define pulse pressure and mean arterial pressure.	

	Give normal blood pressure and mean arterial pressure values.	
CVS-P-014	Define hypertension.	Primary (Essential) Hypertension
CVS-P-015	Define cardiac output and venous return and give their normal values.	Cardiac Output, Venous Return, and Their Regulation
CVS-P-016	Enlist and explain factors that affect cardiac output and venous return.	
CVS-P-017	Describe role of the nervous system in rapid control of arterial pressure.	Nervous Regulation of Circulation and Rapid Control of Arterial Pressure
	Enumerate nervous reflex mechanisms for regulation of blood pressure.	
	Explain the role of baroreceptors in regulation of arterial blood pressure.	
	Explain the role of chemoreceptors in regulation of arterial blood pressure.	
	Explain CNS ischemic response.	
	Explain Cushing reaction.	
CVS-P-018	Describe role of renin–angiotensin–aldosterone mechanism in blood pressure regulation.	Role of Kidneys in Long-Term Control of Arterial Pressure
	Explain stress relaxation and capillary fluid shift.	
	Enlist immediate, intermediate, and long-term mechanisms of blood pressure regulation.	
CVS-P-019	Define and enlist different types of shock.	Circulatory Shock and Its Treatment
	Explain the causes, features, and pathophysiology of hypovolemic/hemorrhagic shock.	
	Explain the causes, features, and pathophysiology of septic shock.	
	Explain the causes, features, and pathophysiology of neurogenic shock.	

	Explain the causes and features of anaphylactic shock.	
	Explain cardiogenic shock.	
	Explain stages of shock.	
	Enlist and explain compensatory mechanisms during non-progressive shock.	
CVS-P-020	Define angina pectoris and myocardial infarction.	Coronary Circulation and Ischemic Heart Disease
CVS-P-021	Enlist the different types of heart sounds and explain the physiological basis of each.	Heart Valves and Heart Sounds
	Enlist the causes of 3rd and 4th heart sounds.	
	Define murmur.	

BIOCHEMISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
CVS-B-001	Define zwitter ion and isoelectric pH.	Chemistry and classification of amino acids
CVS-B-002	Understand the principle, procedure and uses of electrophoresis (demonstration only).	Electrophoresis
CVS-B-003	Describe the types of plasma proteins and explain their general functions.	Plasma proteins
	Enlist the functions and give the clinical importance of plasma proteins (albumin, fibrinogen, and transferrin).	
	Describe serum albumin and globulins and explain their biological roles in the human body.	
CVS-B-004	Describe the general structure of an antibody and identify its key components.	Immunoglobulin classes and their functions
	Enlist five major types of immunoglobulins and give functions/significance of each class separately.	

CVS-B-005	Define eicosanoids.	Eicosanoids
	Outline classification and biomedical importance of eicosanoids.	
	Enlist functions of prostaglandins, leukotrienes and thromboxanes.	
	Explain how low-dose aspirin therapy helps in the management of patients with IHD.	
CVS-B-006	Describe the structure, functions, metabolism & biomedical importance of cholesterol.	Cholesterol
CVS-B-007	Describe the structure, functions, metabolism & biomedical importance of plasma lipoproteins.	Plasma lipoproteins
CVS-B-008	List the components of a lipid profile and describe the significance of cardiac enzyme markers (TropT, CK-MB) in cardiovascular health.	Lipid profile
CVS-B-009	Describe vitamin K, its active forms, sources, RDA, biochemical roles, and deficiency manifestations.	Vitamins
PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CVS-Ph-001	Classify the major drugs acting on the CVS system according to their site, mechanism of action and their side effects: Classify antihypertensive drugs. Classify anti anginal drugs. Classify antiarrhythmic drugs. Classify drugs used in cardiac failure management.	Classification - CVS drugs
CVS-Ph-002	Classify anticoagulants. Describe their mechanisms of action ,clinical uses and side effects. Expalin pharmacokinetic and pharmacodynamics drug interactions of warfarin.	Classification - Blood drugs
PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CVS-Pa-001	Define white blood cell (WBC) disorders and classify them into benign and malignant types.	Disorders of WBCs

	Recognize the causes of reactive leukocytosis (infections, stress, inflammation) that result in elevated WBC counts and its impact on planning and post- operative healing.	
	Differentiate between reactive and neoplastic WBC disorders based on clinical and laboratory findings.	
	Explain the pathophysiology of leukemoid reactions and leukemias.	
CVS-Pa-002	Define the clinical aspects of innate and acquired immunity, including active and passive immunity.	Immunity
	Enlist the types of immune cells, such as phagocytes, T cells, B cells, and NK cells, and explain their roles in immunity and disease progression.	
	Describe the complement activation pathways (classical, alternative, and lectin)	
	Enlist the types of antibodies (IgG, IgA, IgM, IgE, IgD) and discuss their relevance in hypersensitivity reactions.	
CVS-Pa-003	Explain the types and pathogenesis of hypersensitivity reactions (Type I–IV).	Hypersensitivity reactions
CVS-Pa-004	Define the principles of ABO and Rh blood grouping systems.	Blood grouping & complications of blood transfusion
	State the importance of compatibility testing, including crossmatching, for safe transfusions.	
	Enlist the Hazards of blood transfusion.	
	Identify scenarios in dentistry where blood grouping knowledge is essential, such as surgeries or trauma management.	
	Describe the pathophysiology, features and treatment of Rh incompatibility.	
CVS-Pa-005	Define thrombosis, embolism, infarction, and hemorrhage as hemodynamic disorders relevant to systemic health.	Hemodynamic disorders
	Describe the types of thrombosis, including arterial and venous, and their potential impact on dental procedures, such as delayed healing or increased bleeding risks.	
	Discuss the pathophysiology of thrombosis, focusing on Virchow's triad (endothelial injury, stasis, and hypercoagulability).	

	Explain the mechanisms and clinical features of embolism, including pulmonary and systemic embolism.	
	Explain the pathophysiology of embolism, including detachment of thrombi and subsequent vascular occlusion.	
	Outline the types of infarctions (white and red) and their effects on oral tissues, such as necrosis or ischemic lesions.	
	Describe the pathophysiology of infarction, focusing on ischemia and necrosis in systemic context.	
CVS-Pa-006	Define bleeding disorders.	Hemodynamics Platelets & Bleeding disorders
	Classify bleeding disorders into vascular, platelet, coagulation, and mixed types.	
	Enlist causes of thrombocytopenia, such as decreased production, increased destruction, or sequestration of platelets.	
	Enlist first-line laboratory investigations for bleeding disorders, including complete blood count (CBC), platelet count, bleeding time (BT), clotting time (CT), prothrombin time (PT), activated partial thromboplastin time (aPTT), and international normalized ratio (INR).	
	Discuss interpretation of laboratory findings and their clinical correlation in diagnosing bleeding disorders (platelet & coagulation related disorder).	
CVS-Pa-007	Identify and enlist the microorganisms responsible for infective endocarditis, particularly those originating from oral infections and dental procedures	Microbiology of Blood: Relevance and Implications in Dentistry
	Apply knowledge of Streptococcus viridans and Staphylococcus aureus and epidermidis to recognize their role in infective endocarditis and bacteremia, and their implications for dental care.	
	Discuss HIV with its virulence factors, pathogenesis, lab diagnosis & prevention, recognize oral manifestations of HIV, including candidiasis, and periodontal disease, in immunosuppressed patients.	
	Identify oral ulcerations caused by Cytomegalovirus and Epstein-Barr Virus (Oral Hairy leukoplakaia, candidias, oral ulceration) in immunocompromised individuals.	

	Identify the role of enterococcus in infective endocarditis and bacteremia, and their implications for dental care.	
	Describe the dengue virus, its mode of transmission, key clinical features, and preventive measures, with emphasis on bleeding risk and implications for dental care.	
	Apply infection control protocols to prevent cross- contamination and transmission of bloodborne pathogens and parasites	
CVS-Pa-008	Define and classify types of shock (hypovolemic, cardiogenic, septic) and evaluate their pathophysiology.	Shock
CVS-Pa-009	Identify and enlist the microorganisms responsible for Myocarditis, particularly those originating from oral infections and dental procedures	Microbiology related to CVS & dentistry
	Correlate septicemia caused by cardiovascular pathogens (e.g., Staphylococcus aureus, Pseudomonas aeruginosa) with oral manifestations such as petechiae or splinter hemorrhages.	
	Identify microbial causes of myocarditis, such as Coxsackievirus and their systemic effects influencing dental care.	
	Assess the role of oral pathogens like Treponema denticola and Porphyromonasgingivalis in contributing to cardiovascular diseases, including atherosclerosis, and integrate this knowledge into periodontal therapy.	

PRACTICALS / LAB WORK		
ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CVS-A-005	Identify under light microscope/ draw and label arteries	Arteries
CVS-A-006	Identify under light microscope/ draw and label veins and capillaries	Veins
HISTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CVS-A-007	Draw and label light microscopic diagram of lymphoid organs	Lymphoid Organs
PHYSIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CVS-P-022	Observe the demonstration of blood grouping procedure and explain its clinical relevance in dental practice, including its role in managing medical emergencies.	Blood Grouping
CVS-P-023	Observe the demonstration of bleeding time measurement and explain its importance in assessing bleeding risk in dental procedures.	Bleeding Time
CVS-P-024	Observe the demonstration of clotting time measurement and explain its relevance to safe dental practice.	Clotting Time
CVS-P-025	Observe and identify the normal waveforms and intervals on a sample ECG tracing.	ECG Waveform Recognition
CVS-P-026	Calculate heart rate from a provided normal ECG tracing and describe its clinical significance.	ECG-Based Heart Rate Calculation
CVS-P-027	Demonstrate how to locate and palpate the apex beat on a simulation model or peer under supervision.	Cardiac Examination
CVS-P-028	Demonstrate the correct method to auscultate the precordium for heart sounds under supervision.	Cardiac Auscultation

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Module
No:09
GASTROINTESTINAL
TRACT (GIT)

MODULE RATIONALE

This module provides an integrated understanding of the structure and function of the gastrointestinal system, beginning from the oral cavity to the esophagus and extending into the physiology and biochemistry of digestion. Students explore how the GIT supports nutrition, metabolism, and oral-systemic health. Emphasis is placed on the interrelationship between oral structures and the rest of the digestive system, including the role of saliva, taste, swallowing, and gastrointestinal secretions. Through anatomy, physiology, biochemistry, pathology, pharmacology, microbiology, and oral biology, students gain a holistic view of digestive processes, their regulation, and related clinical disorders such as GERD, peptic ulcers, and xerostomia. The module also connects these concepts to dental relevance, emphasizing how oral health reflects systemic digestive health.

MODULE OUTCOMES

- Describe the gross and microscopic anatomy of the oral cavity, tongue, palate, pharynx, salivary glands, and upper GIT with their vascular and neural supply.
- Explain the physiological functions of the GIT, including motility, secretion, digestion, absorption, and their regulation by neural and hormonal mechanisms.
- Discuss the biochemical composition and function of digestive juices and their role in the digestion and absorption of carbohydrates, proteins, and lipids.
- Recognize the developmental origins of key oral and gastrointestinal structures, including the tongue and salivary glands.
- Identify and interpret histological features of oral tissues, salivary glands, and tongue under the microscope.
- Discuss common gastrointestinal and oral pathologies such as GERD, peptic ulcer disease, and xerostomia, linking them to underlying biochemical and physiological disturbances.
- Classify major drugs used in the management of acid-peptic diseases, emesis, and motility disorders, and explain their mechanisms, uses, and adverse effects.
- Relate microbial and viral agents (e.g., HPV, EBV) to oral and gastrointestinal lesions, emphasizing their diagnosis and prevention.
- Explain the process of mastication, swallowing, and taste perception, and correlate these with their clinical significance in dental and systemic contexts.
- Integrate knowledge from basic and oral sciences to understand the interplay between digestion, nutrition, and oral health, forming the foundation for future clinical learning.

SUBJECTS INTEGRATED IN THE MODULE

- Anatomy

- Physiology
- Biochemistry
- Pharmacology & Therapeutics
- Oral Biology & Tooth Morphology
- General Pathology & Microbiology
- Oral Pathology

Syllabus

THEORY		
ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
GIT-A-001	Describe the parts and boundaries of oral cavity.	Oral Cavity Anatomy
GIT-A-002	Describe the anatomical features of tongue with emphasis on its musculature, vascular supply and lymphatic drainage.	Tongue Structure and Vascular Supply
GIT-A-003	Describe the anatomical features of hard and soft palate with their neurovascular supply.	Palate Anatomy and Neurovascular Supply
GIT-A-004	Describe the attachments of muscles of soft palate along with their actions and nerve supply.	Muscles of Soft Palate
GIT-A-005	Describe anatomical features, blood supply, and nerve supply of salivary glands.	Salivary Glands Anatomy and Neurovascular Supply
GIT-A-006	Discuss the clinical correlates of parotid gland: Mumps, Frey's syndrome.	Parotid Gland Clinical Correlates
GIT-A-007	Describe the location, roots and distribution of submandibular and otic ganglia.	Submandibular and Otic Ganglia
GIT-A-008	Name the parts of pharynx giving their extent, anatomical features, structure and neurovascular supply.	Pharynx Anatomy and Neurovascular Supply
GIT-A-009	Describe the attachments of muscles of pharynx along with their actions and nerve supply.	Muscles of Pharynx
GIT-A-010	Discuss the location, anatomical features and vascular supply of palatine tonsils.	Palatine Tonsil Anatomy and Vascular Supply
GIT-A-011	Discuss the clinical correlates of piriform fossa and tonsils: Adenoids, Quincy, Tonsilitis.	Piriform Fossa and Tonsils Clinical Correlates
GIT-A-012	Enlist the structures forming the Waldeyer's ring of lymphatic tissue.	Waldeyer's Ring of

		Lymphatic Tissue
GIT-A-013	Describe the anatomical features of cervical part of esophagus with its neurovascular supply.	Cervical Esophagus Anatomy and Neurovascular Supply
HISTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
GIT-A-014	Describe the light microscopic structure of lip	Oral Cavity
	Describe the light microscopic structure of tongue	
EMBRYOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
GIT-A-015	Describe the development of tongue	Tongue
PHYSIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
GIT-P-001	Describe physiologic anatomy of gastrointestinal tract. Discuss electrical activity of smooth muscles of GIT.	General Principles of GIT Function - Motility, Nervous Control
	Describe the mechanism of excitation of smooth muscle of gastrointestinal tract.	
	Discuss the factors that depolarize and hyperpolarize GI membrane.	
GIT-P-002	Describe the role of autonomic nervous system in regulation of GIT's function.	Neural and Hormonal Regulation of Gastrointestinal Function
	Describe enteric nervous system.	
	Describe the Meissner's plexus and differentiate between myenteric and Meissner's plexuses	

	Enlist the gastrointestinal reflexes & explain the functions of these reflexes.	
	Give the stimuli, site of release and actions of cholecystokinin, Gastrin, Secretin & Motilin (enteroendocrine cells)	
	Differentiate between sympathetic and parasympathetic modulation of the enteric nervous system and the effector organs of the GI tract	
GIT-P-003	Discuss functional movements of GIT (propulsive & mixing)	Functional types of movements in the GI tract
GIT-P-004	Discuss the pathophysiology& features of achalasia & Mega esophagus.	Esophagus
GIT-P-005	Describe the stages of vomiting act. Appraise the location and function of vomiting center/ chemoreceptor trigger zone in the brain	Vomiting Reflex
GIT-P-006	Explain motor function of stomach. Explain factors which regulate stomach emptying	Motor function of Stomach
GIT-P-007	Describe characteristics & functions of the gastric secretions.	Gastric secretion
	Discuss the role of Intrinsic factor from gastric parietal cells	
GIT-P-008	Define and discuss basic causes of gastritis and Pernicious anemia.	Pathophysiology of Stomach
	Define & enumerate the causes and pathophysiology of peptic ulcer	
GIT-P-009	Enumerate the types of movements taking place in small intestine and mention their function.	Movements of the small intestine General
	What is peristaltic rush and enteritis?	
GIT-P-010	Enumerate the types of movements taking place in colon and give their functions	Movements of the Colon
BIOCHEMISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**

GIT-B-001	Elaborate the composition and functions of saliva.	Saliva
GIT-B-002	Give composition and functions of gastric juice. Correlate chronic use of NSAIDs with development of peptic ulcer	Gastric secretions
GIT-B-003	Give composition and functions of pancreatic juice, bile and succus entericus	Pancreatic juice, bile and succus entericus
GIT-B-004	Describe the mechanism of digestion and absorption of dietary carbohydrates	Digestion and absorption
GIT-B-005	Give cause,clinical features, diagnosis and management of lactose intolerance.	
GIT-B-006	Describe the mechanism of digestion and absorption of dietary proteins.	
GIT-B-007	Explain the process of digestion and absorption of dietary lipids.	
PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
GIT-Ph-001	Classify the drugs used for the treatment of Acid- Peptic Disease (APD)	Acid Peptic disease
	Explain their mechanism of action, uses and adverse effects	
	Correlate chronic use of NSAIDS with development of peptic ulcer.	
	Write down Tripple and Quadruple regimen for APD	
GIT-Ph-002	Classify antiemetics	Antiemetics and Prokinetics
	Describe the mechanism of action, clinical uses, and adverse effects of metoclopramide	
	Compare metoclopramide and Domperidone	
	Name the drugs used in the prevention of chemotherapy- or radiation-induced emesis	

GIT-Ph-003	Classify Laxatives and antidiarrheals	Classification of laxatives & antidiarrheals

ORAL BIOLOGY & TOOTH MORPHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
GIT-OB-001	Define oral mucosa	Oral Mucosa
	Explain the histological structure of oral mucosa with elaboration of keratinized and non-keratinized epithelium.	
	Explain the cellular events in maturation of oral mucosa	
	Enumerate and discuss the details of the non- keratinocytes in the oral epithelium and lamina propria.	
	Describe the blood supply and nerve supply of oral mucosa	
	Explain the structural variation in oral mucosa.	
	Explain the mucocutaneous junctions in the oral mucosa.	
	Describe the biological stages of wound healing in the oral mucosa, highlighting the role of the inflammatory response and granulation tissue formation.	
	Describe the age-related changes in oral mucosa	
GIT-OB-002	Describe the process of taste perception and identify the major systems involved in supporting the sense of taste.	Physiology of Taste
	Describe the structure, location, and function of taste buds along with the mechanism of taste sensations	
	Identify the basic taste modalities and recognize the major conditions that affect the sense of taste	
GIT-OB-003	Define saliva, describe its composition and function.	Salivary Glands
	Classify salivary glands	

	Describe the development of salivary glands.	
	Elaborate its changes with age and its clinical considerations	
	Describe the histological structure of salivary glands along with acini and ducts	
	Explain the role of myoepithelial cells	
	Explain the microscopic structure of the salivary glands	
	Describe the connective tissue of salivary glands	
GIT-OB-004	Discuss the mechanism of saliva formation and its ductal modification.	Saliva

PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
GIT-Pa-001	Define heartburn and describe its pathophysiology as a symptom of gastroesophageal reflux disease (GERD).	GERD
	Enumerate the etiology and clinical features of GERD and peptic ulcer disease.	

MICROBIOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOPIC
GIT-Pa-002	Enlist different organisms causing oral lesions.	Microbial Agents Associated with Oral Lesions
	Briefly discuss HPV, as disease causing organisms, their epidemiology, virulence factors, pathogenesis, lab diagnosis & prevention.	
GIT-Pa-003	Enlist different organisms causing diarrhea.	Microbial Agents Associated with Diarrhea
	Discuss E. coli, Salmonella, C. difficile, C. botulinum, Intestinal Protozoa, shigella & vibrio cholera as disease causing organisms, their epidemiology, virulence factors, pathogenesis, lab diagnosis & prevention.	

GIT-Pa-004	Briefly discuss Helicobacter pylori with its epidemiology, virulence factors, pathogenesis, lab diagnosis & prevention.	Helicobacter pylori Infection
ORAL PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
GIT-OP-001	Discuss clinical abnormalities of Salivary secretions.	Abnormalities of salivary secretions
	Describe the etiology and clinical features of xerostomia.	
	Explain the management options available for patients suffering from xerostomia.	
	Explain the biochemical mechanisms that contribute to the development of rampant caries in patients with xerostomia	
GIT-OP-002	Define and enlist the types and salient features of ulcers (acute, chronic and recurrent)	Aphthous ulcers
GIT-OP-003	Describe the anomalies of tongue (ankyloglossia, aglossia, macroglossia, microglossia) and Lips	Anomalies of tongue and lips

PRACTICALS / LAB WORK		
HISTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
GIT-A-016	Identify under light microscope and draw and label the light microscopic structure of lip.	Lip
GIT-A-017	Identify under light microscope and draw and label the light microscopic structure of tongue.	Tongue
ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
GIT-OB-006	Draw and label the keratinized and non-keratinized oral epithelium, specialized mucosa including tongue papillae and mucocutaneous junction.	Oral Epithelium and Specialized Mucosa
GIT-OB-006	Draw and label the histological structure of the taste bud, and mention the specificity of the tongue for different taste sensations.	Taste Bud Structure and Tongue Sensory Map
GIT-OB-007	Identify in images or slides the histological section of the tongue showing different tongue papillae and the location of taste buds.	Tongue Papillae and Taste Bud Identification
GIT-OB-008	Draw and label the histological section of major salivary glands, showing serous and mucous acini, serous demilunes, and cells of intercalated, striated, and excretory ducts.	Salivary Gland Histology

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Module No:10

OCCLUSION-I

MODULE RATIONALE

The Occlusion I module introduces students to the anatomical, physiological, and functional foundations of occlusion, mastication, and temporomandibular joint (TMJ) dynamics. Understanding occlusion is central to all aspects of dental practice—from diagnosis and restorative procedures to orthodontics and prosthodontics. The module integrates anatomy, oral biology, tooth morphology, physiology, and microbiology to build a comprehensive understanding of jaw movements, neuromuscular coordination, and occlusal relationships. Through theoretical learning and hands-on practice, students develop the skills to recognize normal and abnormal occlusal patterns, identify TMJ structures, and understand their clinical implications. The integration of forensic odontology further helps students appreciate the medico-legal significance of dental anatomy in human identification.

MODULE OUTCOMES

- Describe the anatomical features and functional movements of the temporomandibular joint, along with its supporting muscles, ligaments, and nerve supply.
- Explain the sensory innervation of the maxillofacial region, emphasizing the course and clinical relevance of the trigeminal nerve and its branches.
- Correlate the structure and biomechanics of the TMJ with normal mandibular movements and common functional disorders.
- Identify the origin, insertion, action, and innervation of the muscles of mastication and demonstrate their role in various jaw movements.
- Describe and illustrate the morphology, root structure, and pulp anatomy of deciduous and permanent incisors and canines, and recognize common structural anomalies.
- Interpret periapical radiographs of anterior teeth, differentiating normal anatomical features from pathological findings.
- Define and differentiate between centric and eccentric occlusion, overjet, and overbite, and discuss their clinical relevance in dental practice.
- Explain the physiology of mastication, including stages of the chewing cycle and neuromuscular coordination of masticatory movements.
- Demonstrate carving, drawing, and identification of anterior teeth, as well as the preparation and microscopic evaluation of tooth ground sections.
- Discuss microbial teratogens and infections relevant to craniofacial and dental anomalies.
- Recognize the significance of forensic odontology in dental identification and legal investigations.
- Integrate anatomical, histological, and physiological knowledge to understand how occlusion, mastication, and TMJ function contribute to oral and systemic health.

SUBJECTS INTEGRATED IN THE MODULE
• Anatomy • Oral Biology & Tooth Morphology • General Pathology & Microbiology

Syllabus

THEORY		
ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Oc1-A-001	Describe the extracranial course, branches, and distribution of trigeminal nerve.	Trigeminal Nerve and Sensory Innervation
	Explain the causes and clinical consequences of damage to the nerve.	
	Describe the innervation of the maxillary and mandibular teeth, and their supporting structures and the anatomical basis of common variations in sensory innervation of the teeth.	
Oc1-A-002	Describe temporomandibular joint mentioning its ligaments, nerve supply and movements.	Temporomandibular Joint (TMJ)
Oc1-A-003	Identify and describe the muscles of mastication along with origin, insertion, action, and innervation of each muscle	Muscles of Mastication
	Identify and demonstrate the origin, insertion, nerve supply, and actions of the muscles of mastication on models or cadaveric specimens	
ORAL BIOLOGY AND TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Oc1-OB-001	Describe the histology of the temporomandibular joint (temporal and condylar bone, muscles, capsule, disk, synovial membrane, and ligaments)	Temporomandibular Joint
Oc1-OB-002	Describe the biomechanics of TMJ	Muscle Contraction (TMJ)
Oc1-OB-003	Describe the nerve supply of the joint emphasizing the role of nerve endings	
Oc1-OB-004	Identify the common TMJ associated clinical manifestations	
Oc1-OB-005	Define Mastication	Mastication

	Elaborate chewing cycle of mastication.	
	What are the different stages of mastication?	
	What are the different muscles involved in mastication? Give their origin, insertions, innervation, and functions	
Oc1-OB-006	Define the terms swallowing and deglutition	Physiology of Swallowing
	Describe the stages of swallowing, outlining the sequence and key physiological events involved in each stage.	
	Describe the pathway involved in swallowing and its neural control mechanisms.	
Oc1-OB-007	Define occlusion. Describe centric & eccentric occlusion.	Occlusion
Oc1-OB-008	Describe the crown morphology of deciduous & permanent incisors.	Deciduous & Permanent Incisors
	Describe the key identification points of deciduous & permanent incisors	
	Describe the normal root and pulpal morphology of maxillary and mandibular incisors	
	Identify and classify common structural anomalies of incisors	
	Interpret periapical radiographs of incisors, recognizing normal anatomy and common anomalies.	
Oc1-OB-009	Describe the crown morphology of deciduous & permanent canines	Deciduous & Permanent canines
	Describe the normal root and pulpal morphology of maxillary and mandibular canines	
	Describe the key identification points of deciduous & permanent canines	
	Identify and classify common structural anomalies of canines	
	Interpret periapical radiographs of canines, recognizing normal anatomy and common anomalies.	

	Define and differentiate between overjet and overbite, and explain their clinical significance.	
Oc1-OB-010	Define forensic odontology and explain the significance of forensic odontology in dental identification and legal investigations.	Forensic odontology
MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Oc1-Pa-001	Describe microbial teratogens associated with craniofacial and dental anomalies, with examples (e.g., traponema, rubella, cytomegalovirus, HIV).	Infectious diseases
PRACTICALS / LAB WORK		
ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Oc1-A-004	Demonstrate basic functional mandibular movements and differentiate the role of muscles of Mastication and accessory muscles in protrusion, lateral excursion, opening, and closing.	Jaw Muscles
	Identify and demonstrate the origin, insertion, nerve supply, and actions of the muscles of mastication on models or cadaveric specimens	
Oc1-A-005	Demonstrate surface marking of trigeminal nerve in relation to relevant structures, and identify their anatomical pathways and clinical relevance.	Neurovascular Supply of face
ORAL BIOLOGY AND TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Oc1-OB-011	Draw & label the histological section of the temporomandibular joint, showing temporal bone, disc, condylar bone, capsule, articular disc, and synovial membrane.	Temporomandibular Joint

	Demonstrate basic functional mandibular movements and differentiate the role of muscles of Mastication and accessory muscles in protrusion, lateral excursion, opening, and closing.	
Oc1-OB-012	Draw the outlines of all deciduous & permanent incisors: labial, lingual, mesial, distal & incisal aspects	Deciduous & Permanent Incisors
	Label each aspect pointing their morphological features (Incisal corners, marginal ridges, fossa, cingulum, pit, developmental depressions, imbrication lines & contact points)	
	Carve anatomical accurate models of incisors from soap blocks/ wax blocks	
	Identify Permanent Incisors on models.	
Oc1-OB-013	Draw the outlines of all deciduous & permanent canines: labial, lingual, mesial, distal & incisal aspects	Deciduous & Permanent canines
	Label each aspect pointing their morphological features (Incisal slopes, labial/lingual ridges, marginal ridges, fossa, cingulum, developmental depressions, imbrication lines & contact points)	
	Carve anatomical accurate models of canines from soap blocks/ wax blocks	
	Identify Permanent Canines on models.	

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The Holy Quran

MODULE RATIONALE

The Holy Quran provides wisdom and knowledge to be followed in every applied component of modern civilization covering Ethical, Social, Legal, Financial and Healthcare Domains. The complete Quran encompasses the guidelines, all full of 'Hikmah' (wisdom) to deal with all practical scenarios encountering patients and health professionals. As the Holy Quran is the guiding light for humanity and a way of life for all the believers of one true Allah, therefore, understanding the message of this Holy Book is mandatory for realizing the duties which one has towards other human beings in general and the profession in particular. Holy Quran is a guide for the modern society and scientific development therefore, orbiting around Quranic doctrines and axioms of Hadith, all challenges faced by modern healthcare can be solved. Therefore, this longitudinal curriculum is developed so that all health professionals can get, as enunciated by the Holy Quran itself, "the best of this world as well as the best of the Hereafter".

VISION & MISSION

2.1: Vision: Building the personality and character of health professionals in light of teachings of the Holy Quran and Sunnah, to alleviate human sufferings.

2.2: Mission: Teaching Holy Quran and Sunnah to undergraduate students of Health Sciences, building their personality and character, enabling them to apply these principles in patient care and innovative research.

3. CURRICULUM DESIGN AND ORGANIZATION

3.1: Course Aim: The Holy Quran course aims to imbibe Health profession students with professionalism, general and medical, based on Divine teachings. The professionals thus groomed shall be able to correlate religion with healthcare delivery and modern science with an understanding that evidence-based practice itself originated from the system by which the "Hadith" was preserved after centuries.

3.2: Mode of Delivery: The module will be taught in the form of interactive lectures.

3.3: Learning Experience: Classroom environment will be used.

3.4: Attendance: Eighty five percent (85%) attendance is mandatory to be eligible to sit in the professional examination.

3.5: Course Modules

The curriculum will be taught under three Major Sections

- Faith
- Worship
- Specific Quranic Commandments

3.6: Module Credit hours & Contact hours: This will be a three (03) credit hour course where each credit hour will be equivalent to eighteen (18) contact hours.

3.7: Assessment Portfolio

The assessment will be done through student portfolios based on four written assignments and two quizzes per year. The portfolio submission to the Quran teacher will be mandatory for sending admission to the university and sitting in the professional examination. The assignments will be based on the topics discussed during the year.

3.8: Reference Material

- Translations of the Holy Quran approved by the Quran Board
- Six Authentic Books of Hadith

3.9. Module Faculty

At least one full time faculty member (Lecturer or above) will be hired for running the Holy Quran course throughout the year. The qualifications of the faculty member will be certified by the academic council of the college/institution to be declared as the teacher of Holy Quran course.

Syllabus

The Holy Quran

SECTION ONE: FAITH (AQAID)

LEARNING OUTCOMES

a. Oneness of Allah (SWT) (Tawheed)

i. Describe Unity of Allah in being
ii. Describe Unity of Allah in attributes
iii. Describe concept of Shirk
iv. Impact of Tawheed in human life

b. Prophethood (Risalat)

i. Explain Significance of Risalat
ii. Identify Prophets as role models
iii. Recognize finality of Prophethood - Prophet Muhammad (PBUH)

c. Belief in Hereafter (Aakhirat)

i. Appraise continuity of life beyond material world
ii. Concept of Doomsday and its various stages
iii. Concept of Day of Judgment and accountability in the Hereafter
iv. Concept of “Meezan”

d. Divine Revelations (Holy Books)

i. Explain the divine decree in sending the Holy Books
ii. Identify the Holy Quran as the only preserved & authenticated divine revelation to date
iii. Interpret Quran as Furqan

e. Angels

i. Discuss belief in angels and its significance
ii. Describe the universal role of angels (their specific duties)

f. Qadr

i. Identify Taqdeer as Knowledge of Allah
ii. Explain the concept of Faith in Good and Evil

CONTENTS

1. Oneness of Allah subhan wa taala (Tawheed)
2. Prophethood (Risalat)
3. Belief in Hereafter (Akhirat)
4. Devine revelations (Holy Books)

SECTION TWO: WORSHIP (IBADAAT)

LEARNING OUTCOMES

a. Prayer (Namaz)

i. Recognize the importance of physical purity (Taharah)
ii. Discuss the philosophy of prayer and its role in purification of soul
iii. Recognize the importance of prayer in building personal character - sense of duty, patience, perseverance, punctuality and self/social discipline
iv. Spiritual, moral and social impact of prayer in building of righteous community
v. Role in creating brotherhood, equality and unity in ummah
vi. Identify the conditions in which relaxation in prayer is allowed e.g. during operation, travelling etc.

b. Obligatory Charity (Zakat)

i. Identify obligatory importance of Zakat and other items as outlined under the title of 'Infaq-fee-sabilillah'
ii. Categorize the people who can be the beneficiaries of Zakat
iii. Role of zakat in eradication of greed and love of material world
iv. Effect of Zakat and sadaqat in circulation of wealth and alleviation of poverty
v. Explain the essence of zakat and sadaqat in building just communities
vi. Describe the role of state in collection and disbursement of zakat

c. Fasting (Roza)

i. Discuss the importance and significance of fasting
ii. Relate the Holy Quran and the month of Ramadan
iii. Role of fasting in building personal qualities like self-control, piety and soft corner for the poor and needy persons
iv. Identify the applications of "Taqwa" through fasting

d. Pilgrimage (Hajj)

i. Discuss the importance and significance of Hajj
ii. Identify the conditions in which Hajj becomes an obligation
iii. Role of manasik-e-Hajj in producing discipline and complete submission
iv. Recognize the importance of Hajj in uniting the ummah
v. Sacrifice for Allah subhan wa taala (essence of qurbani)

TOPIC AREAS

1. Prayer (Salah/Namaz)

2. Obligatory charity (Zakat)
3. Fasting (Saum/Roza)
4. Pilgrimage (Hajj)

SECTION THREE: SPECIFIC QURANIC COMMANDMENTS

LEARNING OUTCOMES

a. Importance of the protection of Human life

i. Concept of the sanctity of human life in Quran and Sunnah
ii. Importance and significance of a single human being even during war
iii. Concept of punishment in regard to the killing of a human being, voluntarily or involuntarily

b. Jihad

i. Concept of Jihad and its significance (hikmat)
ii. Different forms of Jihad and their importance
iii. Principles and preparation of Jihad
iv. Devine reward of Jihad

c. Heirship/Inheritence (Virasat)

i. Heirship and division of wealth in accordance with divine teachings
ii. Heirs and their shares
iii. Legal aspect of virasat (Hud-e-Illahi)

d. Amar-bil-maroof-wa-Nahi-anil-munkar

i. Differentiation between Maroof and Munkar
ii. Importance and significance (effects of avoiding this principle)
iii. Necessary conditions of both amar-bil-maroof and nahi-anil-munkar
iv. The different stages and the necessary prerequisites

e. Hadood-e Illahee and taazeerat

i. Meaning and various types of hadood-e-Illahee
ii. Authority for fixation of limit (hudd)
iii. Criteria and permissible relaxation in fixing the limits
iv. Difference between ‘Hadood’, ‘Qisas’ and ‘Tazeerat’. Punishments which are left to the court of law
v. Benefits for the good of community

f. Justice (Adal-o-insaf)

i. Justice of Allah subhan wa taala
ii. Importance of justice for the survival of community
iii. Need of justice to be prevailed irrespective of religion
iv. Devine reward for fair justice

g. Business (Bay-o-tijarat)

i. Importance of fair business and its necessary constituents
ii. Permissible and impermissible conditions of businesses
iii. Concept of loan in businesses

h. Interest (Riba or Sudi karobar)

i. Meaning of Riba or interest and its different forms
ii. Impact of Riba on a society in general
iii. Devine declaration and its punishment both in this world and Hereafter

i. Nikah-o-talaq

i. Basic rulings regarding marriage and divorce
ii. Importance of Nikah and its constituents
iii. Conditions of Nikah and various forms of prohibited/impermissible nikah
iv. Misconception of dowry
v. Talaq and its various forms
vi. Meaning of Khula and its conditions

CONTENTS

1. Importance of the protection of Human life
2. Jihad
3. Heirship/Inheritence (Virasat)
4. Amar-bil-maroof-wa-Nahi-anil-munkar
5. Hadood-e Illahee and taazeerat
6. Justice (Adal-o-insaf)
7. Business (Bay-o-tijarat)
8. Interest (Riba or Sudi karobar)
9. Nikah-o-talaq

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Islamiyat & Pakistan Studies

MODULE RATIONALE

This module comprises of Islamiyat & Pakistan Studies. All the medical or other curricula relate to our core context and internal fiber. The study of religion and country endorses all relevancy and competency acquisition for the purpose of service to humanity and community orientation.

ISLAMIYAT

A short course on Islamic Studies will be completed in First year with an exam at the end of the year.

Course Content:

1. Understand the basic principles of Islam.
2. Explain the concept of the Islamic state.
3. Explain the Quran as a guide for modern society and scientific development.
4. Describe the life of the Holy Prophet Peace be upon him as an example to follow.
5. Explain ethics in the Islamic prospective.
6. Describe the rights of the individual in Islam.
7. Describe the rights of women and children in Islam.
8. Explain the contribution of Islamic scholars to science and medicine.
9. Understand Islam in terms of modern scientific development.
10. Explain the concept of Rizk-e-Hilal.
11. Explain the concept of Hukook-ul-Ibad.

PAKISTAN STUDIES

A short course on Pakistan Studies will be completed in First year with an exam at the end of the year.

Course Content:

1. Describe brief the salient features of the Pakistan movement.
2. Explain the basis for the creation of Pakistan.
3. Give a brief account of the history of Pakistan.
4. Explain the ethnic and cultural distribution of the population of Pakistan.
5. Describe the Provinces and resources available in Pakistan.
6. Explain current problems faced by Pakistan.
7. Describe the social, economic and health problems of the rural population of Pakistan.

ISLAMIYAT AND PAKISTAN STUDIES BOOKS
• Standard Islamiyat (Compulsory) for B.A, B.Sc., M.A, M.Sc., MBBS by Prof. M.Sharif Islahi Ilmi Islamiyat (Compulsory) for B.A. B.Sc., & equivalent. • Pakistan studies (Compulsory) for B.A. B.Sc., B.Com., Medical/Engineering by Prof. Shah Jahan Kahlun • Pakistan studies (Compulsory) for B.A, B.Sc., B.Com., B.Ed., Medical/Engineering by Prof. Shah Jahan Kahlun

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Civics

MODULE RATIONALE

Civics is part and parcel of life and the study of Civics has major thrust on improvement of the quality of life and welfare of human beings. This discipline enhances the approach towards rational behavior and daily life.

There is a need for us to know role of a citizen with specific reference to Global Village, the Citizen and Daily life issues, Citizenship, Rights and Responsibility, Role of Government and State, Implementation

Issues of Devolution plan, Social Welfare Institutions/ NGOs and their role at basic level, social interactions and the new discoveries in IT and mass media, relations with International Organizations and Pakistan and its neighbors. Civics goes beyond the cognitive level to deal with social values and attitudes. From the earliest stages of the course, it is important to respect students' opinions while helping them to develop a rationale for their opinions. This curriculum is adapted from Agha Khan University Examination Board curriculum for higher secondary examination.

2. VISION & MISSION

2.1: Vision: Building the personality and character of health professionals

2.2: Mission: Teaching Civics to undergraduate students of Health Sciences, building their personality and character, enabling them to apply these principles in patient care.

3. CURRICULUM DESIGN AND ORGANIZATION

3.1: Course Aim:

- To develop understanding of the social nature and significance of civics, its key concepts and civic life.
- To emphasize learning of related themes in a way that encourages creativity, curiosity, observation, exploration and questioning.
- To create awareness of the nature of civic life and the relationship between civics and other social sciences.
- To promote understanding about the ideology of Pakistan and the struggle of an independent state.
- To inculcate the behavior patterns of national character, and qualities of a good citizen,
- self-reliance, patriotism and leadership.
- To create a strong sense of national unity, integration and cohesion.

- To prepare students as future citizens, conscious of their positive role in a society and the world at large.

3.2: Mode of Delivery: The module will be taught in the form of interactive lectures.

3.3: Learning Experience: Classroom environment will be used.

3.4: Attendance: Seventy-five percent (75%) attendance is mandatory to be eligible to sit in the professional examination.

3.5: Assessment: The assessment will be done through two written assignments and two quizzes per year. The assignments will be based on the topics discussed during the year.

3.7: Module Faculty: At least one full time faculty member (Lecturer or above) will be hired to run the civics course throughout the year. The qualifications of the faculty member will be certified by the academic council of the college/institution to be declared as the teacher of civics.

Syllabus

LEARNING OUTCOMES	TOPICS
i. Define civics ii. Describe how civics can improve the citizenship iii. Illustrate the scope of civics iv. Discuss the nature of civics v. Give examples how civics can help in the national development	Civics-Meaning & Nature
i. Examine the significance of civics ii. Explain how civics is important to know the problems of daily life iii. Discuss how civics can help to bring improvements in the civics life of citizens iv. Evaluate how civics can improve the sense of love and respect for human relationship v. Discuss that studying civics can develop a sense of gratitude vi. Give examples how civics is important to develop the global unity	Significance and Utility
i. Compare civics with political science, history, economics, sociology and ethics	Relationship with Social Sciences
i. Describe the term harmonic relationship ii. Explain the harmonic relationship among different members of society. (Women, children and senior citizens) iii. Explain how harmonic relationship develop for respect of religion	Harmonic Relationship
i. Define the term individual in relation to civics ii. Define the term state iii. Explain the relation between an individual and a state iv. Describe the importance of an individual in a state v. Enlist the responsibilities of an individual in a state	Individual and state
i. Identify the basic unit of social institution Discuss and characterize the different types of family ii. Give the importance of basic unit of social institution in the development of a state Enlist the responsibilities of family in general iii. Analyze your role for the betterment of the family Compare and contrast the impact of the deterioration of family in the western society and give examples	Family

i. Define community ii. Explain the nature and significance of community iii. Discuss the role of a family in community iv. Analyze the role of an individual for the betterment of the community	Community
i. Define society ii. Elaborate the relation between an individual and society and society and state iii. Analyze the role of an individual for the betterment of society	Society
i. Define the term nation, nationality and ummah differentiate between nation and nationality distinguish between nation and ummah analyze the value, behavior and the pattern of society based on religions ii. Evaluate the characteristics of society developed by religions	Nation, Nationality
i. Trace the origin of state with reference to the theories of Divine Origin, Force and Social ii. Contract (Hobbs, Lock, Rousseau) iii. Describe the elements of a state (sovereignty, population, territory, Government) iv. Compare and distinguish the role of state, society and government	Origin and elements of State
i. Describe the functions of state ii. Describe the factors which are necessary for proper functioning of state iii. Analyze the situation when a state does not function properly iv. Describe the characteristics of a welfare state Analyze how a welfare state guarantees the equity and justice on the issues of gender, religion, and social classes	Functions of state. (Defense, law and order, welfare etc.)
i. Define the concept of sovereignty in west ii. Discuss different kinds of sovereignty iii. Explain Austin's concept of sovereignty iv. Analyze critically Austin's concept of sovereignty	Sovereignty

Section-05

University of Health Sciences Lahore

BDS Integrated Curriculum 2K25

Version 2.0

PRISME

PRISME

The PRISME (Professionalism, Research, Informatics, Social Accountability, Management, and Evidence-Based Dentistry) represents an integrated and progressive approach to developing competent, ethical, and reflective dental professionals. It builds upon the foundational philosophy of the University of Health Sciences (UHS) and aligns with contemporary trends in health professions education that emphasize professionalism, community responsiveness, and lifelong learning.

This framework is based on the **UHS PERL (Professionalism, Ethics, Research, & Leadership) Version 3.0**, which has been officially published and endorsed by UHS. The same structure and guiding principles were followed as outlined, ensuring consistency and alignment with national standards in undergraduate dental education.

The PRISME module integrates six key domains—**Professionalism, Research, Informatics, Social Responsibility and Ethics, Management & Entrepreneurship, and Evidence-Based Dentistry**. Each domain includes clearly defined, year-wise learning outcomes designed to foster both academic competence and professional identity formation. Through this structured approach, students will progressively develop the knowledge, attitudes, and behaviors required of a socially accountable dental practitioner.

The curriculum encourages **student-centered learning**, reflection, and integration of theory with clinical application. It is designed not only to enhance cognitive and technical competence but also to nurture empathy, ethical reasoning, teamwork, and communication skills that underpin effective dental care.

Diverse Instructional Strategies to Foster Student-Centered Learning

To ensure active engagement and deeper understanding, the PRISME module promotes diverse instructional strategies that place students at the center of the learning process. These approaches encourage collaboration, critical thinking, and experiential learning, helping students apply knowledge to authentic clinical and professional contexts.

1. **Active Learning:** Engage students in problem-solving, team-based learning, group discussions, and hands-on simulations that require active participation.

2. **Collaborative Learning:** Facilitate peer-to-peer interaction and cooperative projects to promote shared understanding and teamwork.
3. **Flipped Classroom:** Assign readings or digital content before class to maximize interactive learning, discussion, and application during contact sessions.
4. **Case-Based Learning:** Present real-world dental and ethical scenarios to enhance critical analysis and clinical reasoning.
5. **Technology Integration:** Incorporate digital tools, online platforms, and virtual simulations to enrich learning and promote digital literacy.
6. **Mentoring and Peer Support:** Establish mentorship systems where students can seek guidance from peers or faculty to build confidence and professional insight.

Portfolio Entry Using the PEEL Concept

Reflective practice is central to the PRISME philosophy. Each student will maintain a portfolio documenting their learning journey, growth, and evolving professional identity. Reflections will follow the **PEEL** (Point, Evidence, Explanation, Link) structure to promote clear, analytical, and purposeful writing.

PEEL Framework:

- **Point:** Identify the main idea or insight of your reflection.
- **Evidence:** Provide examples or experiences that support your point.
- **Explanation:** Describe how the evidence reinforces your learning or professional growth.
- **Link:** Connect the reflection to broader module objectives or your overall development as a dental professional.

Portfolio Guidance:

- Portfolios may be maintained in **hard-bound** or **electronic** formats.
- A portfolio template is provided to ensure uniformity and structured reflection.
- Students are encouraged to apply the PEEL framework in all entries to enhance critical thinking and reflective depth.

This process allows students to actively monitor their progress, recognize areas for improvement, and cultivate habits of self-assessment and continuous learning.

Role of Faculty for PRISME

Faculty members play a pivotal role in ensuring the success and continuous improvement of the PRISME. As facilitators and mentors, they guide students through reflective practice, monitor learning outcomes, and contribute to the module's evaluation and refinement.

Key Responsibilities:

1. Within PRISME, the Research (R) component will primarily be delivered through ***Community and Preventive Dentistry***, where students are introduced to research principles, epidemiology, biostatistics, and community-based inquiry relevant to population oral health.
2. **Monitoring Student Progress:** Observe and assess engagement, participation, and learning through ongoing formative assessments and reflective tasks.
3. **Collecting Feedback:** Obtain student feedback on instructional methods and content relevance to inform curricular enhancements.
4. **Evaluating Learning Outcomes:** Review student portfolios and assessment results to evaluate alignment with defined learning outcomes.
5. **Reflecting on Teaching Practices:** Engage in self-assessment and peer review to strengthen teaching strategies and promote educational excellence.
6. **Implementing Improvements:** Apply findings from evaluation and feedback to modify teaching approaches, update content, and enhance future module delivery.

Through this continuous cycle of evaluation and adaptation, the PRISME module maintains its integrity, relevance, and alignment with **UHS PERLs Version 3.0**, ensuring that dental education remains progressive, reflective, and socially responsive.

Year-01

	PROFESSIONALISM
Year	**Learning Outcomes (LOs)**
I	• Recognize attributes of professionalism (respect, integrity, accountability) • Define professionalism in dentistry • Identify unprofessional behaviors • Practice patient-centered communication (role play) • Apply basic reflective practice

	RESEARCH
Year	**Learning Outcomes (LOs)**
I	• Understand fundamentals of academic writing i.e., official applications, letters, report writing, etc. • Define research, inquiry, and evidence-based dentistry • Recognize importance of research in dentistry • Identify forms of scientific writing (editorial, article, review, case report, meta-analysis) • Explain IMRAD structure • Differentiate types of health research (basic, clinical, applied, public health) • Enlist differences between quantitative and qualitative research • Describe basic principles of research ethics

	INFORMATICS
Year	**Learning Outcomes (LOs)**
I	• Practice email etiquette & online communication norms (WhatsApp/Social Media Platforms) • Use Word/Google Docs for academic writing basics • Apply safe internet use, recognize credible vs. unreliable sources

SOCIAL RESPONSIBILITY, CULTURAL SENSITIVITY, ETHICS & JURISPRUDENCE	
Year	**Learning Objectives**
I	• Define social responsibility in dentistry • Describe role of dentist in public health promotion • Identify cultural diversity in Pakistan • Explain principles of ethics (autonomy, beneficence, non-maleficence, justice) • Take a proper dental consent prior to treatment

MANAGEMENT & ENTREPRENEURSHIP	
Year	**Learning Objectives**
I	• Describe the concept of teamwork and its relevance in dental practice. • Observe and explain basic workflow (hierarchy) in academic and lab settings. • Identify and apply simple time management strategies for balancing academic and personal tasks. • Explain and apply 7Cs of communication • Demonstrate responsibility in small assigned academic or group-based tasks.

EVIDENCE BASED DENTISTRY	
Year	**Learning Objectives**
I	• Define Evidence-Based Dentistry. • Explain the significance of EBD in clinical decision-making. • Identify the components of EBD: best available evidence, clinical expertise, and patient preferences.

Format Template for PRISME Logbook

Note: Each institution is encouraged to adapt and design this logbook according to its available resources and academic context. Subject experts and faculty members from relevant disciplines & dental/medical education should collaboratively review and finalize the format to ensure alignment with institutional goals and the PRISME framework. This template will provide a base to design the logbook for your institute.

Institution	
Year	
Student Name	
ID/Registration No.:	
Supervisor/Mentor Name	
Date of Commencement	
Date of Completion	

This logbook is designed to help students document their learning and development across the PRISME domains (Professionalism, Research, Informatics, Social Accountability, Management, and Evidence-Based Dentistry). Each entry should be dated, linked to specific learning outcomes, and include supervisor sign-off. Reflection should follow Driscoll Model.

Domain: Professionalism/ Research/ Informatics/ Social Responsibility, Ethics & Cultural Competence/ Management & Entrepreneurship/ Evidence-Based Dentistry

Date	Activity Description	Learning Outcome Addressed	Supervisor Signature	Student Reflection (200–300 words)

Major Milestones & Portfolio Tasks

Date	Task / Portfolio Item	Domain	Status (Pending/In Progress/Completed)	Mentor Comments

Reflection & Self-Assessment

Students are expected to use Driscoll Model.

- What?
- So what?
- Now what?

Firstly, students should describe what the situation or experience was to set it in context. Students should then reflect on the experience by asking 'so what?' - what did they learn as a result of the experience? The final stage asks them to think about the action they will take as a result of this reflection. Will they change a behavior, try something new or carry on as they are?

Mentor Feedback: _____

Student Signature: _____

Mentor Signature: _____

University of Health Sciences Lahore

BDS Integrated Curriculum 2K25

Version 2.0

C-FRC

Clinical Foundation Rotation Clerkships

PREAMBLE

The aim of dental education is to prepare graduates who can provide safe, effective, and patient-centered oral healthcare. This goal can only be achieved when dental students are holistically trained to deliver standardized patient care, incorporating diagnostic, preventive, and management skills along with effective communication and counseling abilities.

The competencies outlined by the Pakistan Medical and Dental Council (PMDC) for a graduating dentist include:

- Care Provider
- Decision Maker
- Communicator
- Community Leader

These competencies can only be developed through a structured and comprehensive clinical training program. The purpose of this document is to outline the UHS Clinical Clerkship framework for BDS students. This program is designed as a vertically integrated module spanning all four years of dental education.

Recognizing the diversity among dental colleges affiliated with UHS, this framework has been designed with flexibility so that each institution can adapt it to its available resources and clinical settings. We are confident that this step will promote uniformity in clinical training and enhance the overall quality of dental education across UHS-affiliated colleges.

C-FRC
YEAR
01

Block I	
1.	**Hand washing** Demonstrate steps of hand washing
2.	**Gloving** Perform the procedure of wearing gloves
3.	**Tooth Brushing Techniques** Demonstrate correct toothbrushing techniques in relation to caries prevention.
4.	**Flossing Techniques** Demonstrate correct flossing techniques in relation to caries prevention.
5.	**Communication Skills** Demonstrate counseling skills related to oral hygiene.

Block II	
1.	**Infection Control and Waste Management** Demonstrate safe handling and disposal of sharps and dental waste.
2.	**Communication Skills** Demonstrate counseling skills related to caries prevention.
3.	**Temperature Recording** Measure body temperature using a mercury/digital thermometer

Block III	
1.	**Interpret Bleeding Time** Interpret bleeding time results
2.	**Interpret Clotting Time** Interpret clotting time results
3.	**Blood Pressure Measurement Techniques** Demonstrate blood pressure measurement using palpatory and auscultatory methods in the sitting position under supervision.
4.	**Pulse Examination Awareness** Record the radial pulse characteristics — rate, & rhythm
5.	**Jaw Jerk Reflex** Assess and interpret the jaw jerk reflex as an indicator of trigeminal motor function.

A Guide/Template for Developing the Logbook for CFRC

Each clinical skill included in this list should have a structured checklist similar to the one provided for handwashing. The checklist outlines the key steps of the procedure and serves as a standardized tool for assessment. Supervisors are required to observe the student performing the skill, mark each step as satisfactory or unsatisfactory, and provide feedback. This ensures uniform evaluation across all departments and helps students progressively achieve clinical competence through repeated, supervised practice. (A detailed book for CFRC, MBBS can be accessed at www.uhs.edu.pk)

Checklist For Handwashing

(Some of the following steps/tasks should be performed simultaneously.)

Step/Task	Cases (minimum 2 entries)
Getting Ready	
Has read the handwashing procedure and understands the 4 moments of hand hygiene: • Before contact with patient and/or their environment • Before performing a clean and/or aseptic procedure • After exposure to blood and/or body fluid • After contact with patient and/or their environment	☐ ☐
Skill/Activity Performed Satisfactorily	☐ ☐
The Procedure	
Wet hands with warm water	☐ ☐
Apply soap and lather thoroughly	☐ ☐
Rub palms, spaces between fingers, backs of hands, and wrists, rubbing vigorously (follow diagram)	☐ ☐
Able to identify how long handwashing procedure should last	☐ ☐
Rinse under running water	☐ ☐
Pat hands dry with paper towel	☐ ☐
Turn off tap with paper towel	☐ ☐
Skill/Activity Performed Satisfactorily	☐ ☐
Signature of Supervisor	
Date Observed	

Section-06

Curriculum 2025
INSTITUTIONAL
IMPLEMENTATION
RECOMENDATIONS

RECOMMENDED IMPLEMENTATION SOPs

The implementation of the modular integrated approach requires to be categorical and methodical. It is recommended that the institutes should have an internal hierarchy for the smooth conduction of the educational process and for fine detailing the interpretation of the curricular guidelines.

A few recommended organizational titles and responsibilities are as follows:

YEAR COMMITTEE
• Identify the philosophy for implementing future Curriculum. • Ensures module requirements ahead of time. • Any adjustment of schedule if required. • Liaison with the chairperson of the mentoring program. • Quality assurance of teaching and learning. • Hold regular meetings. • Compliance to schedule and timetable. • Compliance to proposed internal assessment. • Oversee completion of Logbooks and Portfolio. • Oversee the foundation component of C-FRC. • Ensure student centeredness and feedback from students. • Develop timetables. • Analyze the implementation of current curriculum. • Strategize communication with both faculty and students.
MODULE COMMITEE
• Module committee should be headed by module coordinator. • The nomination of the 'Module Coordinator' will be based on the maximum content present in the respective module e.g., Musculoskeletal will have a module coordinator from Anatomy. • The coordinator will develop module team. • Collaboration and consultation with all the relevant departments. • Follow the curricular guidelines by the modules provided by UHS. • Coordinate with the Assessment Cell. • Arrange regular meetings.

- Develop study guides in collaboration with the Department of Medical Education
- Liaison with the PBL Committee.
- PBL committee should be headed by PBL coordinator.
- Responsible for coordination of the PBL meetings
- Responsible for training of tutors by incorporating experiential learning, small

GROUP WORK AND CRITICAL REFLECTION

- The tutors must possess both content expertise and group facilitation skills.
- Forwarding the PBL to coordinator year committee / DDE for the purpose of Quality assurance
- Ensure the teaching resources available for delivery of PBL.
- Quality assurance visits to the PBL site.
- Coordination with year committee head as well as Director Dental Education.

MENTORING COMMITTEE

- Design a mentorship program by establishing the idea and need for program to increase professional competence of students and interest in research and post-graduation.
- A senior faculty member with a keen interest in medical education and student affairs can chair the committee.
- Members of the committee include faculty from basic as well as clinical side voluntarily.
- Training of volunteer mentors through a workshop
- Assigning of mentorship groups (10-12 mentees per mentor)
- Build up a professional network for the mentees and personal growth.
- Improve their level of performance and satisfaction.
- Build relationships with colleagues and feel part of the community.
- Manage the integration of job, career, and personal goals.
- Regular monitoring of program and providing support to mentorship groups
- Evaluation every 6 months based on feedback from the faculty and students and individual performance of students.

DEPARTMENT OF DENTAL EDUCATION

- The department of medical education serves as a backbone to provide effective and high-quality education to both undergraduate and post graduate medical and dental students.
- The Department of Dental Education needs to play the integral role in the implementation and adoption of BDS Integrated Curriculum 2K25 version 2.0.
- DDE will be overall responsible for the spirals of PRISME & C-FRC.
- DDE will be monitoring the portfolio development by the students and the completion of logbook.
- DDE will be responsible for developing a mentoring platform.
- Faculty development trainings for mentoring, reflective writing and portfolio development will be undertaken.
- Planning the affective training competency acquisition framework with the academic council will be the most pivotal role.
- Collaboration with other disciplines for the training sessions for different aspects of Professionalism, Ethics, Research and Leadership skills.

GENERAL RESPONSIBILITIES OF DDE

- Contribute and design, train the trainer activities which fulfil the need for undergraduate and post graduate training.
- Shape and develop medical education research activities of the college.
- Facilitating & organizing workshops, seminars, symposia & conferences
- Conducting CME activities to leverage culture of awareness, journal club.
- Networking by representing the college, when needed, in national /international meetings or conferences.
- Student counseling
- Supervising students' academic progress
- Academic Committees Development and Support
- Staff Support and Development
- Curriculum development and reform
- Collaborate with curriculum committee and faculty members to develop quality instructional material such as modules, lecture, or study guides.
- Standard Operating Procedures for DDE development
- Skill lab management

- Assessment analysis which includes blue printing, pre-exam review, item analysis and standard setting and provide feedback to concerned faculty and students on the learning outcome achievement.
- Develop and conduct periodical review of process of the program, learning and teaching activities, and assessment process.
- Identify opportunities for use of IT in teaching and learning, assessment and faculty development activities.
- Exam Cell management
- Quality Assurance Cell management
- Record keeping of departmental data.
- Leadership and management
- Participation in overall planning and management of teaching in liaison with the departments

INSTRUCTIONAL STRATEGIES

Delivery of a curriculum also needs a diversity of educational vernacular for the different learning styles. Following are a few of the recommended instructional strategies. It is advised that at least **three different methods of instructions** should be adopted in the institutional planning. This will enable the diversity of learning patterns to be facilitated.

Large Group Interactive Session (LGIS)
Lecture format is the most widely used approach to teaching especially in a large class size with average attention span of 20-30 mins. Interactive lecturing involves a two-way interaction between the presenter and the participants. Interactive methods like brainstorming, buzz group, simulation, role play, and clinical cases can be used. **Significance of its usage** • Relaxed environment, diverse opinions, active involvement • Increase attention and motivation. • Independence and group skills. • Cost effective. • Suitable for taking advantage of available audiovisual technologies.
Team based learning (TBL)
TBL is a uniquely powerful form of small group learning. It provides a complete coherent framework for building a flipped course experience. There are four essential elements of TBL which include: • Teams must be properly formed and managed (5-7 students) • Getting students ready • Applying course concepts • Making students accountable **Significance of its usage** • Students are more engaged. • Increased excitement in TBL classroom • Teams outperforms best members. • Students perform better in final and standardized exams.

Problem based learning (PBL)

It is an instructional student-centered approach in which students work in small groups on a health problem, identifying their own educational needs and being responsible for the acquisition of the knowledge required to understand the scenario.

Significance of its usage

- Teamwork
- Critical evaluation of literature
- Self-directed learning and use of resources
- Presentation skills
- Leadership
- Respect for colleagues' views

Tutorials

Tutorial is a class or short series of classes, in which one or more instructors provides intensive instruction on some subject to a small group. Its purpose is to explore students' point of view, allowing time for discussion, and inculcating self-directed, reflective learning skills.

Significance of its usage

- Develop and assess the extent of background knowledge of students, which enables them to properly understand concepts which may not have been understood in lectures.
- Develop problem-solving skills.
- Develop practice of self-learning.
- Reduced time to understand the topic.

Reflective Writing

It is a metacognitive process that occurs before, during and after the situation with the purpose of developing greater understanding of both the self and situation so that future encounters with the situation are informed from previous encounters.

Significance of its usage

- Questioning attitude and new perspectives.
- Areas for change and improvement.
- Respond effectively to new challenges.
- Critical thinking and coping skills

Clinical Teaching

Teaching and learning that occurs with actual patient as the focus. It occurs in the dental simulation labs, Dental Clinics and for OMFS in the wards and operation theatre

Significance of its usage

- Stimulus of clinical contact
- Psychomotor skills
- Communication skills
- Language skills
- Interpersonal skills
- Professional attitudes and empathy
- Role modelling

Laboratory Practical

Lab practical involve things like identifying a structure, a type of stain through a microscope, a problem with a preparation, reading biochemical test results and answering safety questions. These simulations allow students to attempt the experiments in the laboratory in a risk-free way that provides the opportunity to make mistakes and learn how to correct them using the immediate feedback generated.

Significance of its usage

- Enhance mastery of subject matter.
- Develop scientific reasoning.
- Develop practical skills.
- Develop teamwork abilities.

Demonstrations

The demonstration method in teaching can be defined as giving a demo or performing a specific activity or concept. It is a teaching-learning process carried out in a very systematic manner.

Significance of its usage

- Promotes learning and correlates theory with practice.
- Sharpens the observation skills.
- Sustain interests in learning environment.
- Helps teacher to evaluate students' response

Section-07

Curriculum 2K25
ASSESSMENT
POLICY

Regulations:

1. Professional examination shall be open to any student who: -

   a. has been enrolled/registered and completed one academic year preceding the concerned professional examination in a constituent/affiliated college of the University.
   b. has his/her name submitted to the Controller of Examinations, for the purpose of examination, by the Principal of the college in which he / sheis enrolled & is eligible as per all prerequisites of the examination.
   c. has his/her marks of internal assessment in all the Blocks/Clinical Clerkships sent to the Controller of Examinations through office of the Principal of the concerned college, at the end of each Block/Clinical Clerkships, as well as at the conclusion of the academic session along with the admission form for the professional examination.
   d. Has been certified by the principal of his/her college:
      (i) of good character;
      (ii) of having attended not less than cumulative 75%* of the full course of lectures delivered, practical and clinical rotations conducted in the particular academic session, while maintaining 75 % attendance in each Block/Clinical Clerkship,
      (iii) of having appeared at the Block/Clinical Clerkship Examinations conducted by the college of enrolment with at least 50 % marks* in each Block/Clinical Clerkship examination, as well as in aggregate score of all Blocks/Clinical Clerkships examinations for the concerned year;

2. Written/Theory paper in all Professional Examinations in Modular Integrated MBBS or BDS Curricula shall consist of MCQs alone, with effect from Annual 2026 Examinations. (Ref: No. UHS/REG-25/2379, dated 17.11.2025)
3. The minimum number of marks required to pass the professional examination for each Block/Clinical Clerkship shall be fifty percent (50%) in Written and fifty percent (50%) in the 'Oral/Practical/Clinical' examinations and fifty percent (50%) in aggregate, independently and concomitantly, at one and the same time.
4. A candidate failing in one or more Blocks/Clinical Clerkships in the annual examination shall be provisionally allowed to join the next professional class till the commencement of supplementary examinations. The candidate, however, shall have to pass the failed Block/s or Clinical Clerkship in this supplementary examination failing which he / she shall be detained in the professional year. Under no circumstances, a candidate shall be promoted to the next professional class till

he/she has previously passed all the Blocks/Clinical Clerkships in the preceding professional examination.

If a student appears in the Supplementary Examination for the first time as he/she did not appear in the annual examination for any reason and failed in any Block/Clinical Clerkship in the Supplementary Examination, he/she will be detained in the same class and will not be promoted to the next class.

**Notification No.UHS/REG-25/2351 Dated 13-11-2025*

5. Only one annual and one supplementary of each Professional Examination shall be allowed in a particular academic session. However, in exceptional situations, i.e., national calamities, war or loss of solved answer books in case of accident, special examination may be arranged after having observed due process of law. This will require permission of relevant authorities, i.e., Syndicate and Board of Governors.
6. Any student who fails to clear the First or Second Professional MBBS / First Professional BDS Examination, in four consecutive attempts, each, inclusive of both availed as well as un-availed attempts, after becoming eligible for the examination, and has been expelled on that account shall not be eligible for continuation of studies and shall not be eligible for admission as a fresh candidate in either MBBS or BDS.
7. The application for admission of each candidate to the professional examination shall be submitted to the Controller of Examination, through the Principal of the College, on the prescribed format, as per notified schedule, accompanied by the prescribed fee.
8. The candidates shall pay their fee through the principal of their respective Colleges, who shall forward the Examination Forms along with the duly paid challan of the examination fee generated from the Online Examination Form.
9. The continuous internal assessment through the Block/Clinical Clerkship, conducted by the college of enrollment, shall carry 20% weightage in the total allocated marks for the concerned Block/Clinical Clerkship in the Professional Examination conducted by the university. The score will be equally distributed to the Written and “Oral/Practical/Clinical” Examinations.
10. The marks of internal assessment through Blocks/Clinical Clerkships examination and attendance record shall be submitted to Controller of Examinations, along with question papers and keys for the Block/Clinical Clerkship examination, within two weeks of completion of each Blocks/Clinical Clerkships examination.

    Further, parent-teacher meetings shall be arranged by the colleges after every Block/Clinical Clerkship examination to share feedback on the progress of students with their parents. Minutes of parent teacher meetings, academic timetables/schedule of

Blocks/Clinical Clerkships and academic year study guides shall be submitted to the Department of Medical Education UHS, as well.

11. It is emphasized that fresh internal assessment or a revision of assessment for supplementary examination shall not be permissible. However, a revised internal assessment for the detained students can be submitted. The internal assessment award in a particular year will not be decreased subsequently detrimental to the detainee candidate. A proper record of the continuous internal assessment shall be maintained by the concerned department/s in the colleges.
12. The colleges may arrange remedial classes and one re-sit for each Block/Clinical Clerkship examination after fulfillment of prescribed requirements given below. The remedial classes and re-sit examination can be conducted during summer vacation/weekends, before or during preparatory leave for the concerned professional examination, subject to the following conditions:

Block/Clinical Clerkship Attendance	Remedial Classes
<75%, ≥ 50% (50-74%)	i. Principal of the college may conduct remedial classes and submit result to the Examination Department, UHS, independently. ii. Principal of the college may conduct remedial classes for detained students, who have short attendance in the first Block/Clinical Clerkship of a professional year after detention. The college may submit record of the remedial classes to the Examination Department, UHS, independently.
<50%	i. Principal of the college may submit attendance record of such students to Department of Medical Education, UHS, seeking permission for conduct of remedial Classes. The conduct of remedial classes in such cases shall be arranged only after permission from the Competent Authority in the university. ii. The colleges shall also have to provide the university with the reasons submitted by the candidates for short attendance along with documentary evidence for the same duly verified by the principal. iii. The following shall be considered as valid reasons for short attendance of the students for consideration of permission for remedial classes:

	• Illness/accident/surgery of the student or sickness/death of an immediate relative/being afflicted by a natural/man-made calamity or disaster or detained students (missed the first Block/Clinical Clerkship of the year), students clearing their preceding professional examination in supplementary, or late admitted students who have been permitted for joining by UHS

Marks in Block/ Clinical Clerkship Examination	Re-sit Examination
<50% Marks/ Absence from Block /Clinical Clerkship Examination	i. Principal of the college may submit record of such students to Department of Medical Education, UHS, seeking permission for conduct of re-sit examination. ii. The conduct of re-sit examination in all cases shall be arranged only after permission from the Competent Authority in the university. iii. The colleges shall also have to provide the university with the reasons submitted by the candidates for absence from the Block/Clinical Clerkship examination, along with documentary evidence for the same duly verified by the principal. iv. The following shall be considered as valid reasons for absence of a student from Block/Clinical Clerkship examination, and for consideration of permission for re-sit examination: • Illness/accident/surgery of the student or sickness/death of an immediate relative/being afflicted by a natural/man-made calamity or disaster or detained students (missed the first Block/Clinical Clerkship of the year), students clearing their preceding professional examination in supplementary, or late admitted students who have been permitted for joining by UHS

13. The following policy shall be applicable for transition of students From Traditional Subject-Based Scheme to the Modular Integrated Curriculum Scheme:

    i. The students who fail in all subjects of the professional examination, either by taking the examination or due to non-appearance, and are detained in the respective professional year, shall follow the Modular Integrated Curriculum Scheme for their teaching and assessment.

    ii. The students who fail in one or more subjects but not all the subjects of a professional examination, either by taking the examination or due to non-appearance, and are detained in the respective professional year, shall attend classes with students following the Modular Integrated Curriculum Scheme, but they will be examined in the failed subject/s according to their parent scheme, i.e., the Traditional Subject-Based Curriculum Scheme.

BDS 1st Year, BLOCK-01							
Sr. No.	Written Exam		Oral/Practical exam				Total
	Subjects	No. of MCQs	Subjects	OSPE (9 marks)	OSCE/ CFRC (9 marks)	OSVE (6 marks)	
1	Anatomy	**23**	Anatomy	02	-	01	**24**
2	Oral Biology	**22**	Oral Biology	03	-	01	**33**
3	Biochemistry	**18**	Biochemistry	-	-	01	**06**
4	General Pathology & Microbiology	**14**	General Pathology & Microbiology	01	-	01	**15**
5	Physiology	**09**	Physiology	-	-	01	**06**
6	Oral Pathology	**09**	Oral Pathology/Operative Dentistry	01	-	01	**15**
7	Community Dentistry	**07**	Community Dentistry	-	01	01	**15**
8	Operative Dentistry	**07**	Pharmacology	-	-	01	**06**
9	Pharmacology	**08**	-	-	-	-	**-**
10	Behavioral Sciences	**03**	-	-	-	-	-
Total		**120**	**Total**	**7 OSPE= 63 marks**	**1 OSCE/ CFRC = 09 marks**	**8 OSVE= 48 marks**	**120**

BDS 1st Year, BLOCK-02							
Sr. No.	Written Exam		Oral/Practical exam				Total
	Subjects	No. of MCQs	Subjects	OSPE (9 marks)	OSCE/ CFRC (9 marks)	OSVE (6 marks)	
1	Anatomy	**23**	Anatomy	01	-	01	**15**
2	Oral Biology	**20**	Oral Biology	03	-	01	**33**
3	Biochemistry	**19**	Biochemistry	-	-	01	**06**
4	General Pathology & Microbiology	**14**	General Pathology & Microbiology	01	-	01	**15**
5	Physiology	**18**	Physiology	-	01	01	**15**
6	Oral Pathology	**7**	Oral Pathology/ Periodontology	01	-	01	**15**
7	Community Dentistry	**4**	Community Dentistry /Dental Radiology	01	-	01	**15**
8	Periodontology/ Dental Radiology	**4**	Pharmacology	-	-	01	**06**
9	Pharmacology	**7**	-	-	-	-	**-**
10	Dental Radiology	**4**	-	-	-	-	-
Total		**120**	**Total**	**7 OSPE= 63 marks**	**1 OSCE/ CFRC = 09 marks**	**8 OSVE= 48 marks**	**120**

BDS 1st Year, BLOCK-03							
Sr. No.	Written Exam		Oral/Practical exam				Total
	Subjects	No. of MCQs	Subjects	OSPE (9 marks)	OSCE/ CFRC (9 marks)	OSVE (6 marks)	
1	Anatomy	**18**	Anatomy	01	-	01	**15**
2	Oral Biology	**23**	Oral Biology	02	-	02	**27**
3	Biochemistry	**17**	Biochemistry	-	-	01	**06**
4	General Pathology & Microbiology	**16**	General Pathology & Microbiology	02	-	01	**24**
5	Physiology	**24**	Physiology	01	01	01	**24**
6	Oral Pathology	**07**	Oral Pathology	-	-	01	**06**
7	Pharmacology	**15**	Pharmacology	-	-	01	**06**
8	-	**-**	PRISME	-	01	-	**09**
Total		**120**	**Total**	**6 OSPE= 54 marks**	**2 OSCE/ CFRC = 18 marks**	**8 OSVE= 48 marks**	**120**

BDS Year-I							
Subject	**Theory**		**Practical**				**Total**
Block I	Foundation I Craniofacial I Cariology I 120 MCQs	120 Marks	Practical/ Clinical Examination	07 OSPE (9 marks each)	07 Stations x 9 = 63 Marks	120 Marks	**300**
				01 OSCE-CFRC (9 marks each)	01 Station x 9 = 09 Marks		
				08 OSVE (6 marks each)	08 Stations x 6 = 48 Marks		
	Internal Assessment 10%		Internal Assessment 10%				
Block II	Foundation II Craniofacial II Neurosciences I Alveo-cemental Complex 120 MCQs	120 Marks	Practical/ Clinical Examination	07 OSPE (9 marks each)	07 Stations x 9 = 63 Marks	120 Marks	**300**
				01 OSCE-CFRC (9 marks each)	01 Station x 9 = 09 Marks		
				08 OSVE (6 marks each)	08 Stations x 6 = 48 Marks		
	Internal Assessment 10%		Internal Assessment 10%				
Block III	Blood & CVS I GIT Occlusion I 120 MCQs	120 Marks	Practical/ Clinical Examination	06 OSPE (9 marks each)	06 Stations x 9 = 54 Marks	120 Marks	**300**
				02 OSCE/ CFRC (9 marks each)	02 Station x 9 = 18 Marks		
				08 OSVE (6 marks each)	08 Stations x 6 = 48 Marks		
	Internal Assessment 10%		Internal Assessment 10%				

Islamic Studies/Civics & Pakistan Studies	Islamic Studies/Civics 03 LEQs of 20 marks each	60 marks	**100**
	Pakistan Studies 02 LEQs of 20 marks each	40 marks	
Total Marks:			**1000**

Note:

- The time allotted for theory exam shall be 130 minutes.
- Time for each OSPE/OSCE/OSVE station will be six (06) minutes
- No grace marks shall be allowed in any examination or practical under any guise or name.
- Marks of Islamic Studies/Civics and Pakistan Studies shall not be counted towards total marks of any professional examination, and determination of position or merit of a candidate. However, the candidates failing in the subject of Islamic Studies/Civics & Pakistan Studies, while passing other subjects of 1st professional examination, may not be subjected to detention, as the subject has no contribution towards total marks of any professional examination, and determination of position or merit. The students may rather be allowed to pass the examination in the subject, before appearing in their final professional BDS examination, and in case of their failure to clear the subject they may not be allowed to take their final professional BDS examination.

Block Exam Total = 300 Marks			
Theory Exam	120 Marks	Practical/Clinical Exam	120 Marks
Internal Assessment (10 %)	30 Marks	Internal Assessment (10 %)	30 Marks
Theory Exam + Internal Assessment	**150 Marks**	**Practical/Clinical Examination + Internal Assessment**	**150 Marks**

INTERNAL ASSESSMENT

It shall constitute 20% of the total assessment at the end of the academic year

	Scoring Parameter	Weightage (percentage)
Theory 10 %	Attendance	75% attendance -1 % >85% attendance -2 %
	Block Exam (SEQs, LEQs, MCQs etc)	5 %
	Continuous assessment (SEQs, LEQs, MCQs etc)	3 %
Practical 10 %	Attendance	75% attendance -1 % >85% attendance -2 %
	Block Exam	5 %
	Portfolio-clinical logbooks (CFRC, PRISME)	3 %

Section-08

Curriculum 2K25
LIST OF
RESOURCES

Subject	Learning Resources
General Anatomy, Histology & Embryology	1. General Anatomy by Laiq Hussain Siddiqui 7th Edition 2. Medical Histology Text and Atlas by Laiq Hussan Siddique 9th Edition 3. Langman's Medical Embryology 15th Edition 4. Snell's Clinical Anatomy by Regions 11th Edition 5. Snell's Clinical Neuroanatomy 9th Edition
Physiology	1. Guyton & Hall. Textbook of Medical Physiology (14th ed.). 2. Essential Physiology for Dental Students (Essentials (Dentistry)) 1st Edition by Kamran Ali (Editor), Elizabeth Prabhakar (Editor)
Biochemistry	1. Harper's Illustrated Biochemistry (32nd ed.) by Rodwell et al. 2. Lippincott Illustrated Reviews: Biochemistry (8th ed.) by Abali et al.
Oral Biology & Tooth Morphology	1. Nanci, A. (2024). Ten Cate's Oral Histology, Development, Structure, and Function (10th ed.). Elsevier Health Sciences. 2. Fuller, J. L. (4th ed.). Concise Dental Anatomy & Morphology. 3. Nelson, S. J. (2015). Wheeler's Dental Anatomy, Physiology and Occlusion (1st SAE) (for Occlusion).
Pathology & Microbiology	1. Robbins & Cotran Pathologic Basis of Disease 2. Review of Medical Microbiology and Immunology by Levinson
Community & Preventive Dentistry	1. Textbook of Public Health Dentistry by SS Hermith
Pharmacology & Therapeutics	1. Katzung & Trevor's Pharmacology Examination & Board Review (12th ed.)- Mini 2. Lippincott Illustrated Reviews: Pharmacology (7th ed.)
Oral Pathology	1. Contemporary Oral and Maxillofacial Pathology by Wysocki, Sapp & Eversole 2. Cawson's Essentials of Oral Pathology & Oral Medicine

Operative Dentistry	1. Sturdevant's Art and Science of Operative Dentistry 2. Summitt's Fundamentals of Operative Dentistry
Behavioral Sciences	1. Hand book of Behavioral sciences, by MH Rana, 3rd ed. 2. Humayun A., Herbert M. (2010). Integrating behavioural sciences in healthcare. Islamabad: HEC.
Periodontology	1. Newman and Carranza's Clinical Periodontology (3rd South Asia Edition)
Oral Medicine	1. Tyldesley's Oral Medicine (5th Edition)
Dental Radiology	1. K. Horner, K. A. Eaton's Selection Criteria for Dental Radiography (3rd Edition)

UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
Section-09
Curriculum 2025

Curriculum 2K25
FEEDBACK
PROFORMA &
PROCESS

Program Evaluation & Feedback

In continuation to the contextualization and development process undertaken by all the subject experts and stakeholders, the process of implementation is also vital. DME University of Health Sciences Lahore, considers the implementation segment of the entire continuum as the most vital and significant step. A curriculum is a live document and its viability dependence on the collaborative ownership of all the stakeholders. These stakeholders are inclusive of curriculum designers, students, faculty members, institutional administration, institutional leads, examiners, paper setters, question bank developers, PBL architects and program evaluators. To address such broad-based evaluation response UHS aims to keep the channel of feedback patent so that any possible glitch, omission, overlap, adjustment, or nuance could be addressed in a methodical manner.

A feedback proforma has been annexed which will also be available on the website. This if filled and routed through the channel mentioned below will be assessed at DME University of Health Sciences Lahore and then processed by the subject expert committee. In addition to the educationists at UHS we have module in charge and subject expert committees who can further process any recommendation or define a solution.

After the processing the recommended solution will be put up for approval by the Board of Studies before being conveyed across the board to the affiliated colleges and being implemented.

Curriculum Feedback/Suggestion Proforma

Name of the respondent / applicant
Title of the respondent / applicant (student/faculty member/ Principal)
Registration Number (or any official identification number)
Name of Department (in case of students mention year of entry)
Name of Institution
Observation / Impediment to training identified
Area of observation / Impediment (content, theme, resources, instructional strategy, timetable, implementation, assessment, logbooks, clarity of instruction etc.)

Any recommended solution:
Signature: _____ Name: _____ Date: _____

FOR OFFICE USE

Remarks by Director/HOD Medical Education

Signature Director Dental Education: _____ Name & Stamp: _____ Date: _____

Remarks by Principal

Signature: _____

Name & Stamp:

_____

Date: _____

University of Health Sciences
Lahore

Skill Acquisition Workshops

BDS Integrated Curriculum 2K25

Version 2.0

Mandatory Workshop for BDS First & Second Year Students

The Following **Life Saving Workshops** is included in the "BDS Integrated Curriculum 2K25 *version 2.0*":

Sr. No.	Course Name	Academic Year	Duration
1.	**Cardiac First Response (CFR) /Basic Life Support (BLS)**	**1st Year**	**2 days**
2.	**Immediate Care Cardiac (ICC) / Advanced Life Support Cardiac (ALSC)**	**2nd Year**	**1 day**