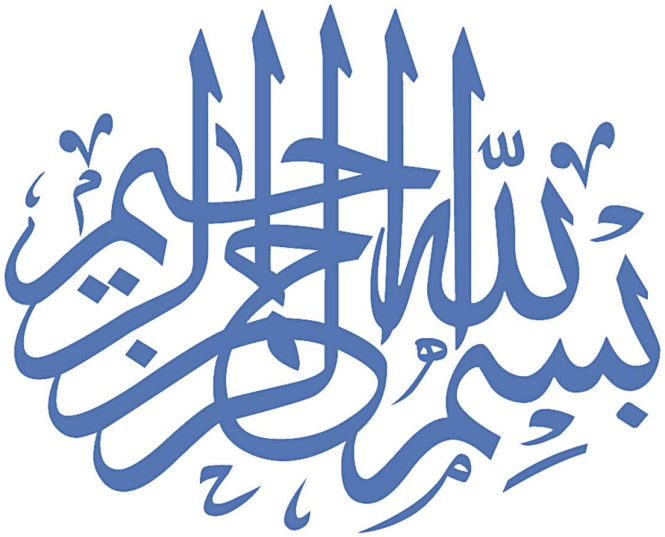
University of Health Sciences
Lahore

BDS Integrated Curriculum 2K25

Version 2.0

BDS Year-02

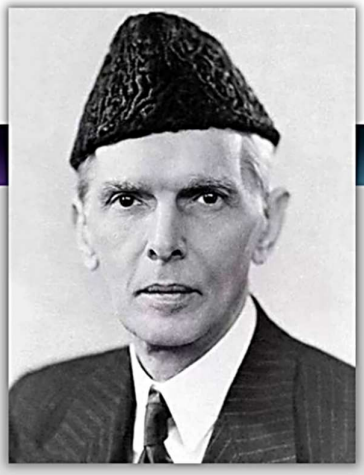


BDS Integrated Curriculum 2K25

Version 2.0

BDS YEAR-02


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.

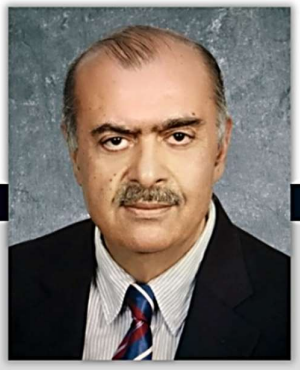
Issued under the auspices of the

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 the final version of C2K23 integrated medical 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 Chancellor
University of Health Sciences Lahore

With great pride, UHS presents the BDS Integrated Curriculum 2K25, Version 2.0, Year-02, a testament to our shared vision of academic excellence and innovation in dental education at the University of Health Sciences, Lahore. This curriculum reflects our commitment to excellence, innovation, and alignment with international standards, as envisioned by the Honourable Vice Chancellor and Pro-Vice Chancellor.

Version 2.0 builds on systematic evaluation, stakeholder feedback, and evidence-based practices. It marks a shift from traditional teaching to a competency-based, outcome-driven, and integrated approach, ensuring graduates are clinically competent, ethical, and socially responsible. Key features include horizontal and vertical integration, spiral learning, and early clinical exposure via structured modules, clerkships, and skills workshops. Incorporation of PRISME domains further enhances professionalism, research capacity, and leadership.

The Department of Medical Education, UHS, has provided clear implementation guidelines aligning learning outcomes with teaching and assessment strategies, enabling effective translation into practice while allowing institutional flexibility. This curriculum is the result of collaborative efforts of faculty, subject experts, and institutional leadership. Continuous review and quality assurance remain central to ensure responsiveness to emerging educational and healthcare needs. We remain committed to faculty development, effective implementation, and continuous improvement to produce competent, compassionate, and future-ready dental professionals.

Dr. Lamia Yusuf
Director Medical Education
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.


Curriculum 2K25
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Version 2.0


Curriculum 2025
LIST OF
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BOARD OF GOVERNORS

1. ***Ms. Farkhanda Waseem Afzal (Chairperson)***
   Former Ombudsperson Punjab,
   Member, Board of Governors, UHS
2. ***Justice (Retd.) Sheikh Ahmad Farooq***
   Former Judge, Lahore high Court/ Federal Shariat Court,
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   Ex-Chief Secretary, Punjab;
   Member, Board of Governors UHS
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   Ex PA&AS Officer at Auditor General Pakistan Office,
   Member, Board of Governors, UHS
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   Professor Emeritus, Forman Christian College, Lahore,
   Member, Board of Governors, UHS
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7. ***Secretary, Government of the Punjab, Finance Department, Civil Secretariat, Lahore***
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   Vice Chancellor,
   University of Health Sciences, Lahore
9. ***Ms. Kiran Fatima***
   Registrar,
   University of Health Sciences, Lahore

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   Specialized Healthcare & Medical Education Department
   Government of the Punjab
3. ***Secretary***
   Finance Department
   Government of the Punjab
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   Vice Chancellor
   Fatima Jinnah Medical University, Lahore

5	***Prof. Dr. Nadia Naseem*** *Pro-Vice Chancellor/* *Head, Department of Histopathology* *University of Health Sciences, Lahore*
6	***Prof. Dr. Sidra Saleem*** *Head, Department of Microbiology* *University of Health Sciences, Lahore*
7	***Prof. Dr. Samina Kausar*** *Head, Institute of Nursing* *University of Health Sciences, Lahore*
8	***Prof. Dr. Arshad Cheema*** *Professor of Surgery*
9	***Dr. Zahid Pervaiz*** *Ex- Director General Health Services, Punjab*
10	***Prof. Dr. Maryam Malik*** *Professor of Gynae. & Obst.* *Central Park Medical College, Lahore*
11	***Mr. Muhammad Haider Amin*** *Chairman, Board of Governors* *The University of Faisalabad*
12	***Prof. Dr. Tayyiba Wasim*** *Principal* *Allama Iqbal Medical College, Lahore*
13	***Prof. Dr. Soufia Farrukh*** *Principal* *Quaid-e-Azam Medical College, Bahawalpur*
14	***Ms. Kiran Fatima*** *Registrar* *University of Health Sciences, Lahore*

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

Prof. Dr. Nadia Naseem,
Pro-Vice Chancellor
University of Health Sciences Lahore

BDS Integrated Curriculum 2K25

Version 2.0, Year-02

Focal Coordinator

1 *Dr. Saria Khalid*

Feedback Analysis, Research, Write-up, Review & Proof Reading

1 *Prof. Dr. Sumera Ehsan*

2 *Prof. Dr. Sarah Ghafoor*

3 *Dr. Lamia Yusuf*

4 *Dr. Saqib Rabbani*

5 *Dr. Saria Khalid*

6 *Dr. Salima Naveed Manji*

7 *Dr. Maryam Raza*

Content Coordinator, Advertiser & Creative Graphic Designer

1 *Shehla Noor*

Administrative Coordinator

1 *Mr. Luqman Javed*

Administrative & Printing Support

1 *Mr. Mubashir Arshad*

2 *Mr. Rashid Ali*

DEPARTMENT OF MEDICAL EDUCATION (UHS)

1 *Dr. Lamia Yusuf (Head of Department)*

FACULTY SECTION

2 *Dr. Farah Rehman (Associate Professor)*

3 *Dr. Anam Zahra (Assistant Professor)*

4 *Dr. Saria Khalid (Assistant Professor)*

5 *Dr. Rameen (Lecturer)*

6 *Dr. Maryam Raza (Ex-Intern)*

ADMINISTRATIVE SECTION

1 *Ms. Shehla Noor (Assistant Registrar)*

2 *Mr. Luqman Javed (Admin Assistant)*

3 *Mr. Mubashar Arshad (Data Entry Operator)*

4 *Mr. Rashid Ali (Book Binder)*

BDS INTEGRATED CURRICULUM 2K25 *Version 2.0*
STEERING COMMITTEE

1	***Prof. Dr. Nabila Riaz (Convener)*** *Principal, de' Montmorency College of Dentistry, Lahore*
2	***Prof. Dr. Sarah Ghafoor*** *Convener Board of Studies (Dentistry), UHS, Lahore*
3	***Prof. Dr. Armaghan Israr Mirza*** *Dean, Fatima Jinnah Institute of Dental Sciences, Lahore*
3	***Prof. Dr. Abid Asher*** *Principal, College of Dentistry, FMH College of Medicine & Dentistry, Lahore*
4	***Prof. Dr. Aqib Sohail*** *Principal, College of Dentistry, Lahore Medical & Dental College, Lahore*
5	***Prof. Dr. Qasim Saeed*** *Principal, Rashid Latif Dental College, Lahore*
6	***Prof. Dr. Nasir Saleem*** *Principal, Rahbar College of Dentistry, Lahore*
7	***Prof. Dr. Uzair bin Akhtar*** *Principal, College of Dentistry, Sharif Medical & Dental College, Lahore*
8	***Lt. Col. (R) Dr. Khalid Rahim Khan*** *Ex-Director of Medical Education & International Linkages, UHS, Lahore*
9	***Dr. Lamia Yusuf*** *Director of Medical Education, UHS, Lahore*
10	***Dr. Saqib Rabbani*** *Assistant Professor, Department of Medical Education, UHS, Lahore*
11	***Dr. Saria Khalid (Secretary)*** *Assistant Professor of Medical Education, UHS, Lahore*

BDS INTEGRATED CURRICULUM 2K25 *VERSION 2.0*
MODULE INCHARGE

1	***Prof. Dr. Afifa Ehsan*** *Professor & Head, Department of Oral Biology; Director, Medical Education Department, Faryal Dental College, Lahore*
2	***Dr. Malik Zain ul Abideen*** *Head, Department of Dental Education & Research (DDE&R), College of Dentistry, Bakhtawar Amin Medical & Dental College, Multan*
3	***Dr. Muhammad Azeem*** *Associate Professor & Head, Department of Orthodontics, Fatima Jinnah Institute of Dental Sciences, Jubilee Town, Lahore*
4	***Dr. Hajra Talat*** *Head of Dental Education / Assistant Professor, Rahbar College of Dentistry, Lahore*
5	***Dr. Muhammad Sohaib Nawaz*** *Associate Professor, Bakhtawar Amin Medical & Dental College, Multan*
6	***Dr. Rafia Minhas*** *Head, Department of Medical Education, Central Park Medical College, Lahore*
7	***Dr. Salima Naveed Manji*** *Head, Dental Education Department, FMH College of Medicine and Dentistry, Lahore*
8	***Dr. Saira Rahim*** *Head, Department of Medical Education, FMH College of Medicine and Dentistry, Lahore*
9	***Dr. Alina Saeed*** *Assistant Professor, Department of Medical Education, Lahore Medical & Dental College, Lahore*
10	***Dr. Faiza Salman*** *Assistant Professor, Department of Medical Education, Rashid Latif Medical College, Lahore*
11	***Dr. Muhammad Imtiaz*** *Assistant Professor, Oral and Maxillofacial Surgery, FMH College of Medicine and Dentistry, Lahore*
12	***Dr. Muhammad Tauqeer Ehsan*** *Assistant Professor, Lahore Medical & Dental College, Lahore*
13	***Dr. Saman Fatima*** *Assistant Professor, Department of Medical Education, College of Dentistry, Bakhtawar Amin Medical & Dental College, Multan*

PRISME CONTRIBUTORS

1. ***Prof. Dr. Abid Asher***
   Principal, FMH College of Dentistry, Lahore
2. ***Prof. Dr. Sumera Ehsan***
   Ex-Head, Department of Medical Education, University of Health Sciences, Lahore
3. ***Prof. Dr. Saad Mateen***
   Principal, Faryal Dental College, Lahore
4. ***Dr. Noor-i-Kiran Naeem***
   Head, Department of Medical Education, ABWA Medical College, Faisalabad
5. ***Dr. Rashid Mahmood***
   BDS, MOrth (RCSEd, UK), MS Healthcare Management & Innovation (LUMS)
6. ***Dr. Saria Khalid***
   Assistant Professor, Department of Medical Education, University of Health Sciences, Lahore
7. ***Dr. Saqib Rabbani***
   Assistant Professor, Behavioral Sciences, University of Health Sciences, Lahore
8. ***Dr. Maryam Raza***
   Ex- Intern, Department of Medical Education, University of Health Sciences Lahore

CFRC CONTRIBUTORS

1. ***Prof. Dr. Sumera Ehsan***
   Ex-Head, Department of Medical Education, University of Health Sciences, Lahore
2. ***Prof. Dr. Uzair bin Akhtar***
   Principal, College of Dentistry, Sharif Medical & Dental College, Lahore
3. ***Prof. Dr. Saira Khalid***
   Professor of Science of Dental Materials, Faryal Dental College, Sheikhupura
4. ***Prof. Dr. Nasir Saleem***
   Principal, Rahbar College of Dentistry, Lahore
5. ***Prof. Dr. Uzair bin Akhtar***
   Principal, College of Dentistry, Sharif Medical & Dental College, Lahore
6. ***Dr. Aamir Rafique***
   Assistant Professor, Prosthodontics, de' Montmorency college of dentistry, Lahore
7. ***Dr. Saria Khalid***
   Assistant Professor, Department of Medical Education, University of Health Sciences, Lahore
8. ***Dr. Maryam Raza***
   Ex-Intern, Department of Medical Education, University of Health Sciences Lahore

ASSESSMENT POLICY DOCUMENTATION

1. ***Prof. Dr. Nadia Naseem, Pro-Vice Chancellor, UHS***

2	***Prof. Dr. Sumera Ehsan, Ex-Head of Department of Medical Education, UHS***
3	***Prof. Muhammad Asif Naveed, Director Postgraduate Studies, UHS***
4	***Dr. Muhammad Abbas, Controller of Examination, UHS***
5	***Dr Masooma, Director Undergraduate Studies, UHS***
6	***Dr. Hummad Hussain, Additional Registrar, Registration Department, UHS***
7	***Lt. Col. (R) Dr. Khalid Rahim Khan TI (M), Ex-Director Medical Education & International Linkages, UHS***
8	***Dr. Saria Khalid, Assistant Professor, Department of Medical Education, UHS***
9	***Ms. Shehla Noor, Assistant Registrar, Department of Medical Education, UHS***

BDS INTEGRATED CURRUCULUM 2K25 *Version 2.0* YEAR I & II REVIEW CONTRIBUTORS		
1.	***Prof. Dr. Aruna Bashir***	**ANATOMY**
2.	***Prof. Dr. Fouzia Imran***	
3.	***Prof. Dr. Amna Nauman***	**COMMUNITY DENTISTRY**
4.	***Dr. Shamta Sufia***	
5.	***Dr. Kashif Adnan***	
6.	***Prof. Dr. Maira Mahmood***	**BIOCHEMISTRY**
7.	***Dr. Sadia Imran Cheema***	**BEHAVIORAL SCIENCES**
8.	***Prof. Dr. Saira Khalid***	**SCIENCE OF DENTAL MATERIALS**
9.	***Dr. Qurrat ul Ain Idrees***	
10.	***Dr. Daud Anthony***	
11.	***Prof. Dr. M. Anwaar Alam***	**ORAL BIOLOGY & TOOTH MORPHOLOGY**
12.	***Prof. Dr. M. Sharjeel Ilyas***	
13.	***Dr. Sadia Awais***	
14.	***Prof. Dr. Imran Ashraf***	**PHARMACOLOGY**
15.	***Dr. Shazia Ibn e Rasa***	**GENERAL PATHOLOGY & MICROBIOLOGY**
16.	***Dr. Alia Batool***	
17.	***Prof. Dr. Uzma Zargham***	**PHYSIOLOGY**
18.	***Dr. Mah-e-Jabeen Raza***	
19.	***Dr. Huma Saeed Khan***	
20.	***Dr. Sadaf Qadeer***	**PERIODONTOLOGY**

21.	***Prof. Dr. Sadia Iqbal***	**ORAL PATHOLOGY**
22.	***Prof. Dr. Zainab Rizvi***	
23.	***Dr. Sunnayah Waris***	
24.	***Prof. Dr. Hina Zafar Raja***	**PROSTHODONTICS**
25.	***Dr. Aamir Rafique***	
26.	***Prof. Dr. M. Ilyas***	**ORTHODONTICS**
27.	***Dr. M. Azeem***	
28.	***Dr. Hira Anjum***	**OPERATIVE DENTISTRY**
29.	***Prof. Dr. Aneela Amjad***	**ORAL MEDICINE**
30.	***Dr. Shehzad Iqbal***	
31.	***Dr. Ayesha Khan***	**DENTAL EDUCATION**
32.	***Dr. Fatima Sikander***	
33.	***Dr. Hajra Talat***	

SUBJECT SPECIALISTS

ANATOMY

1 *Prof. Aruna Bashir*

2 *Dr. Fouzia Imran*

3 *Dr. Shamaila Ejaz*

4 *Dr. Sonia Bashir*

5 *Dr. Alvia Batool*

BIOCHEMISTRY

1 *Prof Sobia Imtiaz*

2 *Prof. Saleem ul Haq*

3 *Prof. Faiza Amir*

4 *Dr. Maira Mahmood*

PHYSIOLOGY

1 *Prof. Uzma Zargham*

2 *Prof. Afsheen Saad*

3 *Dr. Shazia Irfan*

ORAL BIOLOGY & TOOTH MORPHOLOGY

1 *Prof. Sarah Ghafoor*

2 *Prof. Raheela Yasmin*

3 *Prof. Nedal Iqbal*

4 *Prof. Afifa Ehsan*

5 *Dr. Muhammad Sharjeel Ilyas*

6 *Dr. Iqra Ejaz*

7 *Dr. Asad Rathore*

GENERAL PATHOLOGY & MICROBIOLOGY

1 *Prof. Saima Inam*

2 *Prof. Rabiya Jamil*

3 *Prof. Maria Aslam*

4	***Prof. Dure Shahwar Lone***
5	***Dr. Sehar Shamshad***
6	***Dr. Aafrinish Amanat***
7	***Dr, Fatima tuz Zahra***
8	***Dr. Attia Lateef***
9	***Dr. Afshan Zia***
COMMUNITY AND PREVENTIVE DENTISTRY	
1	***Prof. Nazli Shujaat***
2	***Prof. Rabia Asad***
3	***Prof. Faisal Izhar***
PHARMACOLOGY	
1	***Prof. Maryam Rashid***
2	***Dr. Faiza Khan***
MICROBIOLOGY	
1	***Prof. Sidra Saleem***
2	***Dr. Zakia***
MEDICAL EDUCATION	
1	***Prof. Dr Sumera Ehsan***
2	***Lt. Col. (R) Dr. Khalid Rahim Khan (Ex Director DME)***
3	***Dr. Noor I Kiran Naeem***
4	***Dr. Nighat Nadeem***
5	***Dr. Rafia Minhas***
6	***Dr. Farah Rehman***
7	***Dr. Zain Gulzar***
8	***Dr. Jawad Tareen***
9	***Dr. Husna Maab***
10	***Dr. Salima Naveed Manji***
BEHAVIORAL SCIENCES	

1 *Prof. Sumaira Qambar Bukhari*

2 *Prof. Muhammad Mujtaba*

3 *Dr. Saqib Rabbani*

4 *Dr. Faiza Ather*

5 *Ms. Zohra Khalid*

SCIENCE OF DENTAL MATERIALS

1 *Prof. Dr. Nadia Munir*

2 *Prof. Dr. Zenab Sarfaraz*

3 *Prof. Dr. Aneela Qaiser*

ORTHODONTICS

1 *Dr. Asmi Shaheen*

PROSTHODONTICS

1 *Dr. Muhammad Sohaib Nawaz*

ORAL PATHOLOGY

1 *Prof. Sadia Iqbal*

2 *Prof. Afshan Hussain*

OPERATIVE DENTISTRY

1 *Dr. Shazia Naz*

2 *Dr. Saroosh Ehsan*

CLINICAL EXPERTS

1 *Dr. Imran Naseer*

2 *Dr. Abdullah, Dental Surgeon*

BDS INTEGRATED CURRICULUM 2K25 WORKING GROUP PHASE-I

1 *Dr. Muhammad Azeem*

2 *Dr. Muhammad Sohaib Nawaz*

3 *Dr. Nighat Nadeem*

4 *Dr. Salima Naveed Manji*

5 *Dr. Noor-i-Kiran Naeem*

6 *Dr. Afifa Ehsan*

7	***Dr. Rafiya Minhas***
8	***Dr. Zain Gulzar***
9	***Dr. Faiza Salman***
10	***Dr. Hajrah Talat***
11	***Dr. Muhammad Tauqeer Ehsan***
12	***Dr. Sadia Zaheer***
13	***Dr. Alina Saeed***
14	***Dr. Saman***
15	***Dr. Muhammad Imtiaz***
16	***Dr. Malik Zain Ul Abideen***

CURRICULUM STEERING COMMITTEE PHASE-I

1	***Prof. Dr. Abid Asher*** *Principal FMH college of Dentistry, Lahore*
2	***Prof. Dr. Aqib Sohail*** *Principal, Lahore Medical & Dental College, Lahore*
3	***Prof. Dr. Saad Mateen*** *Principal Faryal Dental College, Lahore*
4	***Prof. Dr. Muhammad Ilyas*** *Professor of Orthodontics,* *De' Mont Morency College of Dentistry, Lahore*
5	***Prof. Dr. Sarah Ghafoor*** *Chairman board of studies for Dentistry, UHS,* *Convener committee for BDS Integrated curriculum 2k25*
6	***Lt Col (R) Dr. Col. Khalid Rahim TI (M)*** *Ex Director Medical Education & International Linkages, UHS Lahore*

SUB-COMMITTEE OF STEERING COMMITTEE FOR BDS INTEGRATED CURRICULUM 2K25 PHASE-I

1	***Prof. Dr. Sarah Ghafoor,*** *Head, Department of Oral Biology, UHS (Convener)*
2	***Prof. Dr. Sumera Ehsan****, Ex-Head, Medical Education Department, UHS*
3	***Dr. Saira Khalid,*** *Associate Professor, Science of Dental Materials, UHS*
4	***Dr. Rabia Anjum****, Assistant Professor, Oral Pathology, UHS*
5	***Dr. Salima Naveed Manji****, Head, Dental Education Department, FMH College of Medicine and Dentistry, Lahore*
6	***Dr. Saqib Rabbani****, Assistant Professor, Behavioral Sciences, UHS*

7 ***Dr. Fatima-tu-Zahra,*** *Assistant Professor, Microbiology, UHS (Secretary)*

8 ***Dr. Hammad Hassan****, Assistant Professor, Science of Dental Materials, UHS*


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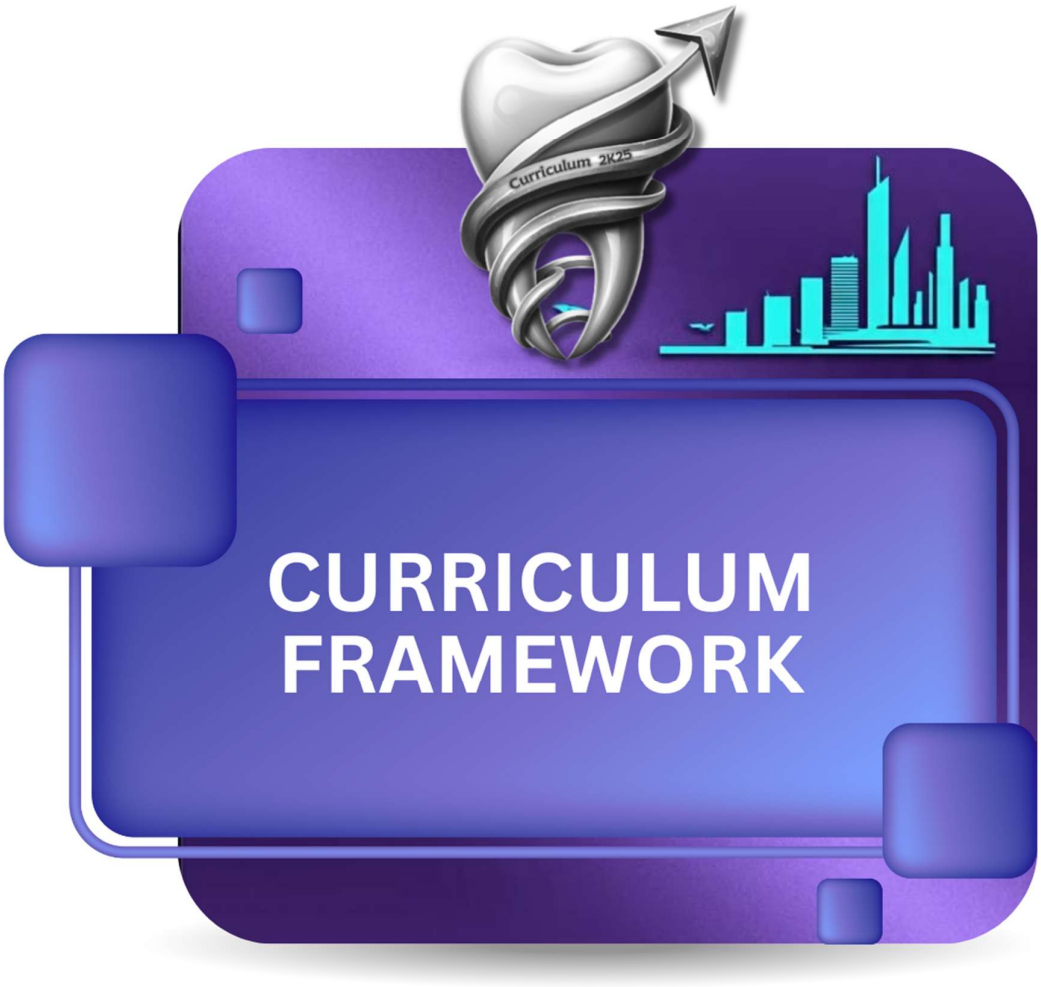
Curriculum 2K25
CURRICULUM
FRAMEWORK

CURRICULUM FRAMEWORK

BDS Integrated Curriculum 2K25

Version 2.0

YEAR-2

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12.Community Dentistry & Public Health-I
13.Dental Materials & Pre-Clinical Dentistry-I
14.Hepatorenal

Block-5

15.Endocrinology
16.Occlusion-II
17.Community Dentistry & Public Health-II
18.Dental Materials & Pre-Clinical Dentistry-II

Block-6

19.Craniofacial-III
20.Respiration
21.Dental Materials & Pre-Clinical Dentistry-III

PRISME (Year-2)

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

CFRC (Year-2)

Clinical Foundation Rotation Clerkships


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.

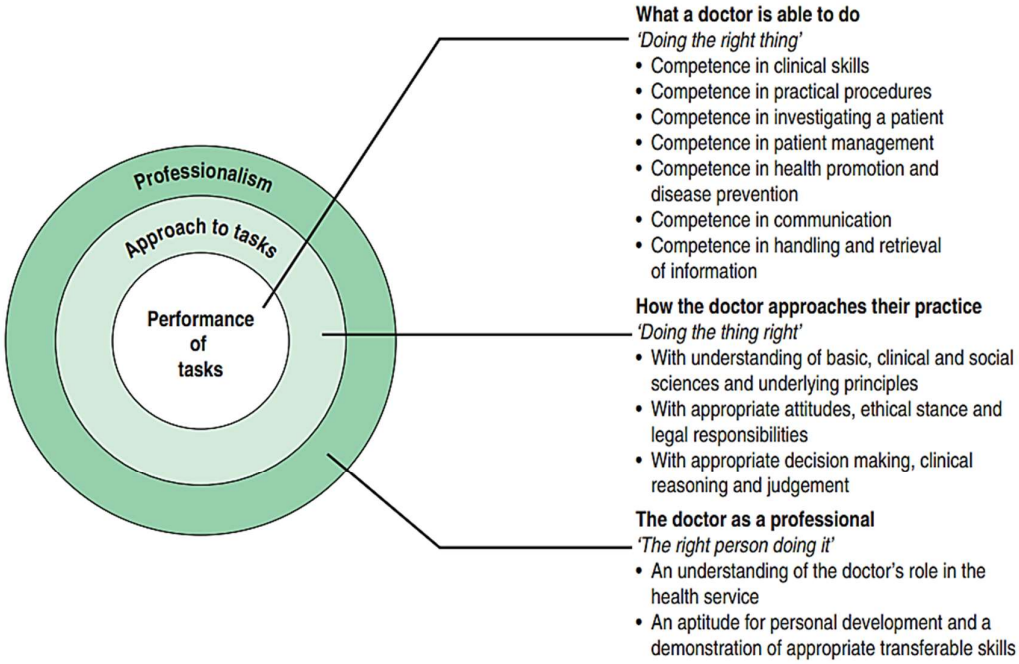


Fig. 9.2 The 12 learning outcomes of the Scottish Doctor (Simpson et al, 2002).

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 Department of Dental Education (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	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.

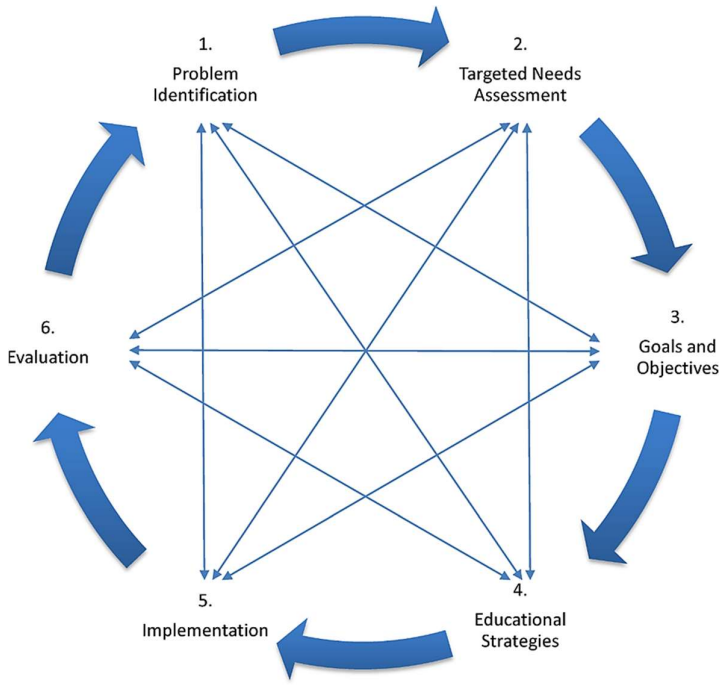
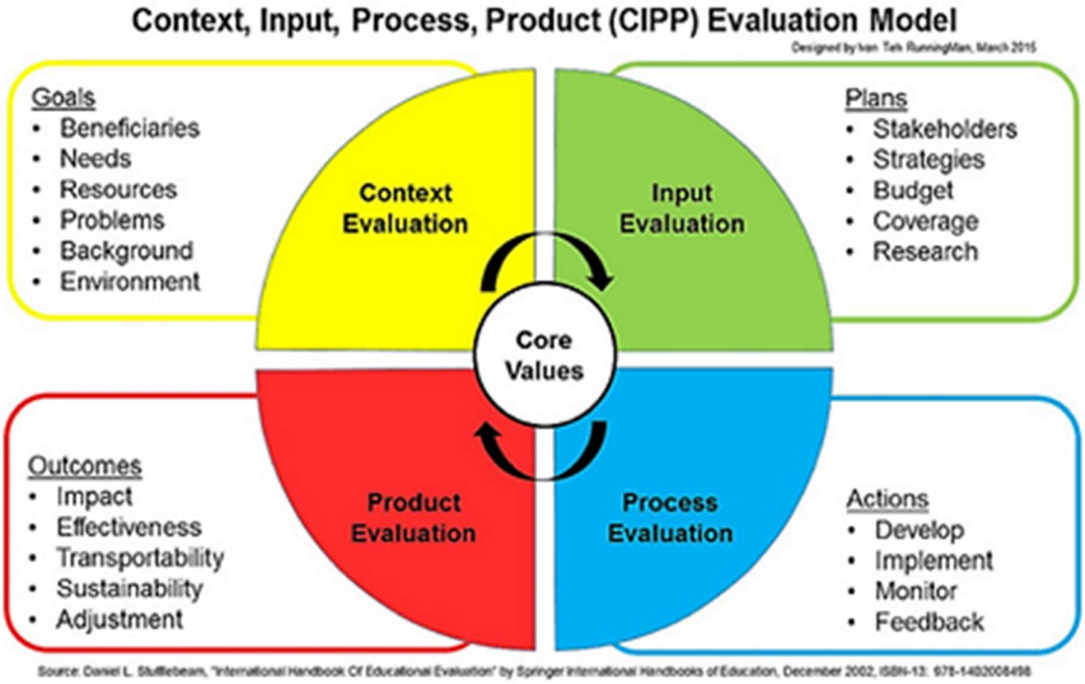


Figure. 1

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*

L

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
DME	Department of Medical Education
DDE	Department of Dental Education
HPE	Health Professions Education
CFRC	Clinical Foundation Rotation Clerkship
ICDAS	International Caries Detection and Assessment System
A	Anatomy
AI	Artificial Intelligence
B	Biochemistry
Enr	Endocrinology
HR	Hepatorenal
GDC	General Dental Council
Ph	Pharmacology & Therapeutics
P	Physiology
Pa	General Pathology & Microbiology
PD	Prosthodontics
OB	Oral Biology
OP	Oral Pathology
CD	Community & Preventive Dentistry
OD	Operative Dentistry
OMOral MedicineAMIAAmerican Medical Informatics AssociationAMEE	Association for Medical Education in Europe
BhS	Behavioral Sciences
CNS	Central Nervous System
GIT	Gastrointestinal Tract
CVS	Cardiovascular System
TMJ	Temporomandibular Joint

DR	Dental Radiology
DM	Dental Materials
CBC	Complete Blood Count
ESR	Erythrocyte Sedimentation Rate
PCR	Polymerase Chain Reaction
ED50	Median Effective Dose
LD50	Median Lethal Dose
TD50	Median Toxic Dose
ID50	Median Infectious Dose
AUC	Area Under Curve
MCV	Mean Corpuscular Volume
MCH	Mean Corpuscular Hemoglobin
MCHC	Mean Corpuscular Hemoglobin Concentration
NS	Neurosciences
DNA	Deoxyribonucleic Acid
TORCH	Toxoplasmosis, Other, Rubella, Cytomegalovirus, Herpes Simplex
CF	Craniofacial
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
ALT	Alanine Aminotransferase
AST	Aspartate Aminotransferase
ALP	Alkaline Phosphatase
INR	International Normalized Ratio
GFR	Glomerular Filtration Rate
eGFR	Estimated Glomerular Filtration Rate
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus

HAV	Hepatitis A Virus
HDV	Hepatitis D Virus
HEV	Hepatitis E Virus
RCTs	Randomized Controlled Trials


UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
Section-04
Curriculum 2025

BDS Integrated Curriculum 2K25

Version 2.0

YEAR-02

ACADEMIC AND ASSESSMENT FRAMEWORK: GENERAL GUIDELINES
BDS SECOND PROFESSIONAL EXAM

Time Allocation and Academic Framework

The Second 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-2

Blocks	Block 4	Weeks	Block 5	Weeks	Block 6	Weeks
Modules	Cariology II	2 weeks	Endocrinology	2 weeks	Craniofacial III	4 weeks
	Community Dentistry & Public Health I	3 weeks	Occlusion II	3 weeks	Respiration	3 weeks
	Dental Materials & Pre-Clinical Dentistry I	4 weeks	Community Dentistry & Public Health II	3 weeks	Dental Materials & Pre-Clinical Dentistry III	5 weeks
	Hepatorenal	2 weeks	Dental Materials & Pre-Clinical Dentistry II	4 weeks		
	Assessment	**1 week**	**Assessment**	**1 week**	**Assessment**	**1 week**
	Total	**12 weeks**	**Total**	**13 weeks**	**Total**	**13 weeks**
	PRISME (Professionalism, Research, Informatics (Dental), Social Responsibility and Accountability, Management/Entrepreneurship and Evidence Based Dentistry)					
	CFRC-II (Clinical Foundation Rotation Clerkship -II)					

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.**

BDS Integrated Curriculum 2K25

Version 2.0

BLOCK-04


UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
BDS Integrated Curriculum 2K25
Version 2.0
Curriculum 2K25
Module No:11
CARIOLOGY-II

MODULE RATIONALE

Cariology II builds upon foundational knowledge of tooth morphology and dental caries to develop an integrated understanding of tooth structure, disease processes, and clinical decision-making. The module emphasizes the relationship between anatomical features of teeth and their susceptibility to caries, enabling students to apply morphological knowledge in identifying, diagnosing, and managing dental conditions.

It introduces dental caries as a dynamic, multifactorial process, highlighting the interplay of demineralization and remineralization, and the role of biological, behavioral, and environmental factors. Through the integration of operative dentistry, oral pathology, and dental radiology, students gain a comprehensive understanding of the clinical, histopathological, and radiographic aspects of caries and related tooth surface defects.

The module also focuses on risk assessment, early detection using standardized systems, and the principles of prevention and minimally invasive management. By combining theoretical knowledge with practical skills in tooth identification, carving, and radiographic interpretation, the module prepares students to make informed clinical decisions and to manage carious lesions effectively within both individual and community-oriented contexts.

MODULE OUTCOMES

- Describe and differentiate the morphology of premolars and molars (deciduous and permanent), including crown and root features relevant to identification and clinical practice.
- Recognize anatomical variations and anomalies in tooth structure and explain their clinical implications.
- Correlate pulp morphology with radiographic appearance, particularly in premolars and molars.
- Explain the etiology, classification, and pathogenesis of dental caries, including the processes of demineralization and remineralization.
- Identify and interpret clinical and radiographic features of dental caries, including staging and severity.
- Apply standardized systems (e.g., International Caries Detection and Assessment System (ICDAS) for detection and assessment of carious lesions.
- Differentiate carious lesions from non-carious tooth surface loss and developmental defects, using clinical and radiographic criteria.
- Assess caries risk and categorize patients into risk groups to support clinical decision-making.
- Outline preventive and minimally invasive management strategies for dental caries.
- Interpret conventional radiographs to evaluate carious lesions and their progression.

- Demonstrate practical skills in tooth morphology (drawing, identification, carving) and recognition of carious lesions in clinical and radiographic settings.

SUBJECTS INTEGRATED IN THE MODULE

- Oral Biology & Tooth Morphology
- Operative Dentistry
- Oral Pathology
- Oral Medicine / Dental Radiology


Syllabus

THEORY		
ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Car2-OB-001	Describe the general considerations and morphological features of maxillary premolars, including their labial, lingual, mesial, distal, and occlusal aspects, as well as root morphology.	Morphology of Premolars
	Describe the general considerations and morphological features of mandibular premolars, including their labial, lingual, mesial, distal, and occlusal aspects, as well as root morphology.	
	Differentiate maxillary from mandibular premolars using key identification criteria such as cusp morphology, root anatomy, and occlusal patterns.	
Car2-OB-002	Identify and explain variations and anomalies in crown and root morphology of premolars.	Anomalies of Premolars
Car2-OB-003	Explain and analyze the number, shape, and anatomical variations of pulp canals and pulp chambers in premolars, with reference to radiographic appearances.	Pulp Morphology & Radiographic correlation
Car2-OB-004	Describe the general considerations and detailed morphology of the labial, lingual, mesial, distal, occlusal aspects, and root structure of permanent maxillary molars.	Morphology of Permanent maxillary molars
Car2-OB-005	Describe the general considerations and detailed morphology of the labial, lingual, mesial, distal, occlusal aspects, and root structure of permanent Mandibular molars.	Morphology of permanent Mandibular molars.
Car2-OB-006	Enlist and compare key identification features of maxillary deciduous & permanent molars based on cusp pattern, crown outline, and root configuration.	Comparison of Deciduous & Permanent molars.

Car2-OB-007	Enlist and compare key identification features of deciduous & permanent mandibular molars based on cusp pattern, crown outline, and root configuration.	
Car2-OB-008	Enlist morphological anomalies in the crown and root of deciduous and permanent molars.	Molar Morphological Anomalies
Car2-OB-009	Explain and analyze the number, shape, and anatomical variations of pulp canals and pulp chambers in deciduous & permanent molars, with reference to radiographic appearances.	Pulp Morphology and Radiographic Correlation
OPERATIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Car2-OD-001	Discuss the etiology of dental caries.	Dental Caries
Car2-OD-002	Classify dental caries based on site, severity, and activity.	Classification of Dental Caries
Car2-OD-003	Describe the dynamic process of demineralization and remineralization in the development of caries.	Demineralization and remineralization
Car2-OD-004	Discuss the clinical characteristics of dental caries.	Clinical characteristics of dental caries
Car2-OD-005	Explain the radiographic appearance of dental caries.	Caries' Radiographic Appearance
Car2-OD-006	Discuss prevention of caries using medical model.	Caries Prevention
Car2-OD-007	Outline minimally invasive and operative approaches to caries management.	Caries Management
Car2-OD-008	Explain the criteria used to classify adult and pediatric patients into high, moderate, or low caries risk based on clinical findings, caries history, and relevant risk factors. Describe principles of caries risk assessment and their role in clinical decision-making.	Caries risk Assessment

ORAL PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Car2-OP-001	Define dental caries and outline its initiation in enamel.	Zones of Caries
	List and identify zones of enamel caries & histological images.	
	List the zones of dentin caries.	
	Outline the progression of caries from enamel to dentin.	
Car2-OP-002	Explain standardized systems (International Caries Detection and Assessment System (ICDAS) for the detection and clinical evaluation of carious lesions and pulp health status.	Caries Detection and Diagnosis
Car2-OP-003	Evaluate the etiology and contributing factors of non-carious cervical and enamel lesions, including erosion, abrasion, attrition, abfraction and molar–incisor hypo mineralization (MIH).	Tooth Surface Loss and Enamel Defects
	Identify and differentiate enamel and dentin defects (hypoplasia, amelogenesis imperfecta, fluorosis, MIH, erosion, abrasion, attrition, and developmental malformations) based on clinical and radiographic criteria.	
	Differentiate developmental enamel defects from early carious lesions based on clinical and radiographic findings to prevent unnecessary intervention.	
Car2-OP-004	Define pulpitis and give its type.	Pulpitis
	Differentiate between reversible & irreversible pulpitis.	
ORAL MEDICINE / DENTAL RADIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Car2-DR-001	Explain the role of radiographic aids in diagnosing carious lesions and periodontal disease.	Interpretation of Conventional Radiographs

PRACTICALS / LAB WORK		
ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Car2-OB-010	Identify and draw the outlines of all premolars (labial, lingual, mesial, distal, and occlusal aspects) on paper or models, labeling morphological features such as cusps, ridges, fossa, contact points, roots, and pulp canals Accurately label all key morphological features (e.g., cusps, marginal ridges, transverse ridges, triangular ridges, developmental depressions, pits, and grooves) on premolar models	Premolars
	Carve anatomical models of premolars using soap blocks/ wax blocks	
Car2-OB-011	Identify and draw the outlines of all permanent molars (labial, lingual, mesial, distal, and occlusal aspects) on paper or models, labeling their key features, including oblique ridges and root anatomy Identify and draw the outlines of deciduous molars.	Molars
	Accurately label all key morphological features (Cusps name, cusp ridges, marginal ridges, transverse ridges, triangular ridges, fossa, developmental depressions, contact points, name of roots/pulp canals, etc.) on molar models	
	Carve anatomical models of molars using soap blocks/ wax blocks	
OPERATIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Car2-OD-009	Identify clinical characteristics of dental caries in a clinical setup.	Dental Caries
Car2-OD-010	Identify various classes of carious lesions using images.	

ORAL MEDICINE / DENTAL RADIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Car2-DR-002	Determine the radiographic severity of carious lesions on radiographic images.	Radiographic Caries Interpretation
Car2-DR-003	Assess and interpret radiographs to determine the depth and severity of carious lesions.	


UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
BDS Integrated
Curriculum 2K25
Version 2.0
Curriculum 2025
Module
No:12
COMMUNITY
DENTISTRY & PUBLIC
HEALTH-I

MODULE RATIONALE

Community Dentistry and Public Health I introduces the principles of population-based oral health care, emphasizing prevention, health promotion, and the role of social and behavioral determinants in oral health. The module develops students' understanding of epidemiology, screening, and basic biostatistics for assessing community oral health needs and planning preventive strategies. Integration of behavioral sciences enables patient-centered communication and holistic care. The module prepares students to link clinical practice with public health approaches to reduce oral disease burden and inequalities.

MODULE OUTCOMES

- Explain principles of dental public health and the role of oral health at individual and population levels.
- Analyze oral diseases as public health problems, including their determinants, distribution, and inequalities.
- Apply epidemiological concepts and study designs to understand, investigate, and interpret oral health data.
- Calculate and interpret basic biostatistical measures, including measures of central tendency, dispersion, probability, and normal distribution.
- Differentiate and apply appropriate statistical tests (parametric and non-parametric) based on data type and research context.
- Explain and apply screening principles, including Wilson and Jungner criteria and characteristics of ideal screening tests.
- Plan and evaluate oral health surveys and preventive programs using appropriate indices and methodologies.
- Apply oral health indices (e.g., DMFT, CPI) in assessing disease burden at community level.
- Explain disease causation and risk factors using models such as the epidemiological triad and common risk factor approach.
- Evaluate preventive strategies for major oral diseases including periodontal disease and oral cancer.
- Integrate behavioral science principles (biopsychosocial model, stress, personality, illness behavior) into dental care.
- Demonstrate effective communication and behavior management skills tailored to patient needs, including anxious and vulnerable individuals.

- Apply ethical and professional responsibilities, including safeguarding and patient-centered decision-making.
- Conduct basic community-based oral health assessment activities and interpret findings for planning interventions.

SUBJECTS INTEGRATED IN THE MODULE

- Community & Preventive Dentistry
- Behavioral Sciences


Syllabus

THEORY		
COMMUNITY & PREVENTIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CDPH1-CD-001	Describe the principles and scope of Dental Public Health and its role in promoting community oral health.	Introduction to Dental Public Health
CDPH1-CD-002	Explain how individual dental care contributes to population-level oral health outcomes.	Concept of Oral Health and Disease
CDPH1-CD-003	Explain the criteria used to identify oral conditions that constitute public health problems.	Oral Conditions as Public Health Problems
CDPH1-CD-004	Compare professional and layperson perspectives of health, disease, and illness.	Concepts of Health and Illness
CDPH1-CD-005	Explain the iceberg phenomenon and its relevance to subclinical oral diseases.	Epidemiological Concepts
CDPH1-CD-006	Explain the common risk factor approach and apply it to preventive oral health planning.	Risk Factors and Prevention Strategies
CDPH1-CD-007	Describe the major patterns and social determinants contributing to oral health inequalities.	Social Determinants of Health
CDPH1-CD-008	Analyze socioeconomic, behavioral, and environmental causes of oral health inequalities.	Health Inequalities
CDPH1-CD-009	Differentiate between high-risk, population, and common risk factor prevention strategies.	Prevention Approaches in Oral Health
CDPH1-CD-010	Evaluate the suitability of preventive strategies for different oral health contexts.	Planning Preventive Programs
CDPH1-CD-011	Explain the principles and applications of screening in oral health programs.	Screening in Dental Public Health
CDPH1-CD-012	Explain Wilson and Jungner criteria and evaluate their application in screening programs for oral diseases.	Screening Evaluation
CDPH1-CD-013	List and explain the desirable properties of an ideal screening test.	Screening Tests

CDPH1-CD-014	Differentiate between screening and diagnostic tests based on purpose and methodology.	Screening vs Diagnosis
CDPH1-CD-015	Define epidemiology and explain its role in understanding oral disease distribution.	Introduction to Epidemiology
CDPH1-CD-016	Explain the applications of epidemiology in planning and evaluating dental services.	Epidemiology and Oral Health Services
CDPH1-CD-017	Classify epidemiological studies and describe their design and use in oral health research.	Epidemiological Study Designs
CDPH1-CD-018	Explain the fundamental framework of an epidemiological study applicable to dental public health	Study Planning and Design
CDPH1-CD-019	Analyze how epidemiological findings guide preventive and clinical dental practices.	Application of Epidemiology
CDPH1-CD-020	Define bias and confounding and explain their influence on study validity.	Research Validity
CDPH1-CD-021	Explain techniques such as randomization and blinding and their role in minimizing bias in research studies.	Research Methodology
CDPH1-CD-022	Compare epidemiological, screening, and clinical approaches to oral disease management.	Integrated Disease Control Approaches
CDPH1-CD-023	Explain how epidemiological and screening principles can be applied in clinical and community dental care.	Application to Practice
CDPH1-CD-024	Differentiate and calculate prevalence and incidence rates to interpret oral health trends.	Epidemiological Measurements
CDPH1-CD-025	Classify and describe different types of oral health surveys.	Oral Health Surveys
	Explain the standardized steps involved in designing and conducting a simple oral health survey	
CDPH1-CD-026	Describe data types, variables, statistical methods, sampling techniques, and present findings graphically.	Data Handling and Presentation
CDPH1-CD-027	Define range, variance, mean deviation, and standard deviation as measures of data	Research dynamics
CDPH1-CD-028	Define probability and explain its application in dental research and data interpretation.	

CDPH1-CD-029	Interpret and calculate key descriptive measures of data, including central tendency and dispersion.	Hypothesis testing in research & Presentation of data
CDPH1-CD-030	Correlate standard deviation with mean and the concept of normal distribution	Parametric and non-parametric tests
CDPH1-CD-031	Define and explain Normal distribution (Bell curve) and its characteristics. explain the importance of normal distribution in research as well as on choice of tests of significance	
	Differentiate between parametric and non-parametric tests and select appropriate tests of significance (t-test, Chi-square test, and their alternatives) based on data type and distribution.	
CDPH1-CD-032	Differentiate skewness and kurtosis types.	
CDPH1-CD-033	Explain the cause-and-effect relationships underlying major oral diseases.	Disease Causation
CDPH1-CD-034	Define and classify oral health indices used in epidemiological studies.	Oral Health Indices
CDPH1-CD-035	escribe prevalence, distribution, and risk factors of periodontal diseases.	Periodontal Epidemiology
CDPH1-CD-036	Identify etiological factors and explain the triad of host, agent, and environment in periodontal disease.	Etiological Triads
CDPH1-CD-037	Evaluate preventive strategies for reducing the incidence of periodontal disease.	Periodontal Disease Prevention
CDPH1-CD-038	Explain the key components and strategies for planning oral health promotion programs aimed at preventing periodontal disease.	Health Promotion
CDPH1-CD-039	Explain etiological triads and contributing risk factors for oral cancer.	Oral Cancer Etiology
CDPH1-CD-040	Identify and implement preventive strategies for oral cancer in clinical settings.	Oral Cancer Prevention
CDPH1-CD-041	Design community-based oral cancer prevention programs using public health approaches.	Community Prevention Programs

BEHAVIORAL SCIENCES		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CDPH1-BhS-001	Explain and apply the biopsychosocial model in dental patient care.	Biopsychosocial Model
CDPH1-BhS-002	Describe psychological development stages (Piaget, Erikson, Freud) and their relevance to patient behaviour in dental settings.	Human Development
CDPH1-BhS-003	Explain how personality traits influence patient reactions to oral health challenges and stress in a dental setting.	Personality
CDPH1-BhS-004	Describe patient stress responses and explain how coping mechanisms influence behaviour and cooperation in dental settings.	Patient Stress & Coping
CDPH1-BhS-005	Identify illness behaviour patterns in dental patients and apply appropriate management strategies.	Illness Behaviour
CDPH1-BhS-006	Define dental anxiety and phobia and explain their impact on patient attendance, treatment compliance, and oral health outcomes.	Dental Anxiety -- Foundation
CDPH1-BhS-007	Describe the stages of grief and identify psychological responses to dental-related loss.	Grief -- Stages Grief -- Communication
	Apply supportive communication strategies for patients experiencing grief or dental-related emotional distress.	
CDPH1-BhS-008	Recognize signs of domestic violence, abuse, and self-harm presenting in the dental setting.	Safeguarding -- Recognition Safeguarding -- Responsibilities
	Outline legal responsibilities and appropriate intervention pathways when domestic violence or self-harm is suspected.	
CDPH1-BhS-009	Explain evidence-based methods of patient reassurance and emotional support and describe their impact on treatment outcomes.	Reassurance & Emotional Support

PRACTICALS / LAB WORK		
COMMUNITY & PREVENTIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CDPH1-CD-042	Practise DMFT, CPI scoring on typodonts/models/case scenarios Learning how to record indices and simple epidemiological measures	Indices Recording (DMFT, CPI)
CDPH1-CD-043	Calculate mean, range, variance, and standard deviation using small datasets provided.	Basic Biostatistics
CDPH1-CD-044	Interpret sample histograms and differentiate normal, skewed, and kurtotic distributions.	Skewness & Kurtosis
CDPH1-CD-045	Perform basic dental screening by applying the principles of screening, using the Wilson and Jungner criteria and features of ideal screening tests. Distinguish screening findings from diagnostic assessments.	Dental Screening
CDPH1-CD-046	Conduct a community-based oral health assessment by performing dental history taking, clinical examination, and DMFT index recording using WHO Oral Health Assessment Form.	Community Visit 1: Dental Caries Assessment Activity
BEHAVIORAL SCIENCES		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CDPH1-BhS-010	Demonstrate communication with paediatric, adolescent, and adult patients based on developmental stage.	Age-Specific Communication
CDPH1-BhS-011	Perform behaviour management using Tell-Show-Do with a simulated anxious paediatric patient.	Tell-Show-Do Technique
CDPH1-BhS-012	Demonstrate empathetic, patient-centred communication, apply empathy skills effectively, and provide structured psychological support to distressed patient. Explain a dental procedure to a patient with low health literacy using simple language.	Empathetic & Supportive Communication

CDPH1-BhS-013	Apply shared decision-making in a simulated treatment planning discussion.	Shared Decision-Making
CDPH1-BhS-014	Resolve interpersonal conflicts in a dental practice setting ensuring patient safety and team harmony.	Conflict Resolution
CDPH1-BhS-015	Demonstrate structured emotional support and empathetic communication with a simulated patient experiencing dental-related grief or distress.	Grief Support -- Applied

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Module No:13

DENTAL MATERIALS & PRE-CLINICAL DENTISTRY-1

MODULE RATIONALE

Dental Materials and Preclinical Dentistry I introduces the fundamental principles governing the properties, manipulation, and clinical application of dental materials, alongside essential preclinical skills in prosthodontics and operative dentistry. The module emphasizes the relationship between material science and clinical performance, enabling students to select and handle materials appropriately. Through simulation-based training, students develop foundational skills in impression making, model fabrication, tooth preparation, and removable prosthesis construction. The module prepares students for safe, effective, and evidence-based clinical practice.

MODULE OUTCOMES

- Explain the fundamental physical, mechanical, chemical, and biological properties of dental materials and relate them to clinical performance.
- Describe the structure of matter and principles of adhesion relevant to dental materials.
- Classify dental materials based on composition, properties, and clinical applications.
- Explain biocompatibility, toxicity, and safety considerations in the use of dental materials.
- Describe the composition, properties, manipulation, and clinical uses of gypsum and impression materials.
- Analyze factors affecting accuracy, dimensional stability, and performance of dental materials and impressions.
- Apply infection control principles in handling dental materials and impressions.
- Explain the principles and classification of prosthodontics, including Kennedy's classification and Applegate's rules.
- Identify components and principles of removable partial dentures, including retention and support.
- Explain principles of tooth preparation, including outline, resistance, retention, and convenience forms.
- Recognize dental instruments and describe their functions, including safe use of rotary instruments.
- Explain and apply isolation techniques, including rubber dam placement and its clinical significance.
- Demonstrate manipulation of dental materials, including gypsum and impression materials, in laboratory settings.

- Perform preclinical prosthodontic procedures, including clasp fabrication, wax-up, articulation, flasking, dewaxing, and denture processing.
- Demonstrate basic operative skills, including instrument handling, isolation, and ergonomic positioning.
- Apply principles of accuracy, precision, and infection control during all preclinical procedures.

SUBJECTS INTEGRATED IN THE MODULE

- Science of Dental Materials
- Pre-clinical Operative Dentistry
- Pre-clinical Prosthodontics


Syllabus

THEORY		
SCIENCE OF DENTAL MATERIALS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD1-DM-001	Define and differentiate the key physical properties of dental materials including density, thermal conductivity, co-efficient of thermal expansion, solubility and optical and mechanical properties.	General Principles of Dental Materials
	Interpret and label a stress-strain curve to determine various mechanical and physical properties.	
	Describe the fundamental physio-mechanical, biological, and chemical principles that determine the clinical behavior and performance of dental materials.	
DMPD1-DM-002	Elaborate the structure of matter and explain the fundamental principles of adhesion among dental materials.	Structure of Matter and Adhesion
DMPD1-DM-003	Classify dental materials according to types, materials & uses.	Classification of Dental Materials
DMPD1-DM-004	Describe the concepts of safety and biocompatibility in dental biomaterials.	Biocompatibility and Safety
DMPD1-DM-005	Define key biological terms related to dental materials, including biocompatibility and hypersensitivity.	Biological Considerations
	Discuss the effects of toxicity and corrosion and their influence on the biological performance of dental materials.	
DMPD1-DM-006	Define cast and die materials	Gypsum Products and Model Fabrication and die materials
	Define gypsum and identify various gypsum products used in dentistry.	
	Describe the composition, hydration reaction, and crystal formation process of gypsum products.	

	Classify gypsum products according to their composition and intended use in dental procedures.	
	Discuss the ideal physical and mechanical properties, setting expansion, and setting time of gypsum products.	
	Demonstrate or describe the correct proportioning, mixing, pouring, and trimming techniques for gypsum materials.	
	Identify and explain factors that influence the setting time, expansion, and strength of gypsum materials.	
	Explain infection control measures and safety precautions during the pouring and handling of impressions and models.	
	Analyze common causes of air bubbles, inaccuracies, and fractures in gypsum models and propose preventive measures.	
	List the advantages and disadvantages of gypsum and enumerate miscellaneous types of die materials.	
DMPD1-DM-007	Classify impression materials used in dentistry according to setting mechanism and clinical use.	Impression Materials
	Describe the ideal properties and characteristics of impression materials.	
	Compare the advantages, disadvantages, and clinical indications of different impression materials.	
	Analyze the factors that affect the dimensional accuracy and surface detail of dental impressions.	
DMPD1-DM-008	Describe methods for disinfecting and storing dental impressions to prevent distortion and cross-infection.	Infection Control

DMPD1-DM-009	Describe the composition, setting mechanism, and classification of hydrocolloid impression materials	Hydrocolloid Impression Materials
	Explain the clinical steps for mixing, loading, and inserting hydrocolloid impression materials	
DMPD1-DM-010	Identify and classify non-elastic impression materials and discuss their composition, properties, setting reactions and uses.	Non-elastic impression materials
	Evaluate the advantages and disadvantages of non-elastic impression materials.	
	Describe and differentiate between mucostatic and mucocompressive for complete denture impressions.	
PRE-CLINICAL PROSTHODONTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD1-PD-001	Define Prosthodontics.	Overview of Prosthodontics and Its Branches
	Comprehend various terminologies used in prosthodontics.	
	Comprehend the role of prosthodontics in oral rehabilitation.	
	Differentiate among major branches of Prosthodontics.	
DMPD1-PD-002	Identify Kennedy's Classes I–IV.	Kennedy's Classification of Partial Edentulism
	Comprehend different modifications of Kennedy's classification.	
DMPD1-PD-003	Apply Applegate's Rules governing the Kennedy's Classification.	Applegate's Rules
	Differentiate between tooth bounded and free end saddle areas.	

DMPD1-PD-004	Identify different types of removable prosthesis used for replacement of missing teeth.	Interim partial denture
	Identify components of interim partial denture (types of teeth, retainer and denture base)	
	Comprehend the significance of components of interim partial denture.	
DMPD1-PD-005	Define Retention.	Interim partial denture
	Comprehend different principles of retention used in prosthodontics.	
	Define Retainer and identify its different types for interim/ acrylic partial denture.	
	Comprehend properties of stainless-steel wrought alloy clasp material and its application in removable partial denture	
OPERATIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD1-OD-001	Recognize different instruments used in tooth preparation.	Instruments and armamentarium
	Describe their functions.	
	Differentiate between hand and rotary instruments.	
	Discuss the hazards of rotary instruments.	
DMPD1-OD-002	Explain the importance of isolation in dental procedures, including its role in moisture control, visibility, infection control, and treatment success Enlist components of rubber dam Outline stepwise procedure for application of rubber dam.	Isolation

DMPD1-OD-003	Discuss the principles of cavity preparation, including outline form, resistance form, retention form, and convenience form in ensuring the longevity and effectiveness of restorative treatments.	Fundamentals of tooth Preparations

PRACTICAL / LAB WORK		
SCIENCE OF DENTAL MATERIALS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD1-DM-011	Demonstrate and perform techniques for manipulation of hydrocolloid impression materials.	Impression Materials
	Demonstrate the mixing of alginate ensuring correct water-to-powder ratio giving accurate consistency and setting time.	
DMPD1-DM-012	Demonstrate the softening technique of the impression compound using a water bath without overheating the material.	Non-elastic impression materials
DMPD1-DM-013	Manipulate soft/hard plaster in the correct water/powder ratio to obtain a homogenous mix fit for model/die pouring	Gypsum
	Build a plaster slab following the allocated dimensional guidelines.	
	Demonstrate the technique of model pouring.	
	Demonstrate the process of fabricating dental cast/model including trimming and finishing of the study models.	
	Differentiate between study casts, working casts, and refractory casts based on purpose and fabrication.	
PRE-CLINICAL PROSTHODONTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD1-PD-001	Identify and remove specific teeth from a cast to simulate Kennedy's class III partial denture design.	Kennedy's Classification
	Identify and classify partially edentulous arches according to Kennedy's classification on casts.	

DMPD1-PD-002	Fabricate a C-clasp for a removable partial denture.	C-Clasp Fabrication
DMPD1-PD-003	Fabricate occlusal rim; perform wax-up; articulate for both upper and lower partial dentures.	Wax-Up and Articulation for Partial Dentures
	Manipulation of base plate waxes to fabricate occlusal rims of standard dimensions.	
	Articulate upper and lower partial dentures.	
DMPD1-PD-004	Arrange upper and lower teeth as per the 5 planes (buccolingual, mesiodistal, occlusal plane, ridge relation, and rotational angle).	Dental Setup for Partial Dentures
DMPD1-PD-005	Demonstrate the process of flasking for both upper and lower partial dentures.	Flasking for Partial Dentures
DMPD1-PD-006	Perform dewaxing of flasks accurately while maintaining denture form.	Dewaxing for Partial Dentures
DMPD1-PD-007	Perform packing, curing, and finishing steps for both upper and lower partial dentures.	Packing, Curing, and Finishing of Partial Dentures
PRE-CLINICAL OPERATIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD1-OD-003	Identify instruments & equipment used in restorative work, their uses & handling.	Instruments and Armamentarium
DMPD1-OD-004	Perform single tooth isolation & quadrant isolation using rubber dam on typodonts in maxillary and mandibular arches.	Rubber Dam Application and Isolation Techniques
DMPD1-OD-005	Perform patient, operator position and instrument exchange.	Clinical Ergonomics

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Module No:14

HEPATORENAL

MODULE RATIONALE

This module provides foundational knowledge and basic clinical skills in dental materials, prosthodontics, and operative dentistry, essential for early dental training. It integrates principles of material science, including adhesion, biocompatibility, and manipulation of commonly used materials, with their practical applications in clinical procedures. The module also introduces students to oral rehabilitation concepts, classification of partially edentate arches, and fabrication of interim prostheses, alongside essential operative skills such as identification of instruments, isolation, cavity preparation, and operator positioning. Overall, it aims to develop a strong theoretical base and hands-on competence necessary for safe and effective patient care.

MODULE OUTCOMES

- Explain the structure of matter and fundamental principles of adhesion.
- Describe the biocompatibility and effects of toxicity and corrosion on the biological performance of dental materials.
- Define and classify gypsum products and explain properties. Also demonstrate the mixing of gypsum materials.
- Discuss hydrocolloids and non-elastic impression materials.
- Demonstrate the manipulation of gypsum materials, alginate, impression compound and ZOE.
- Discuss the role of Prosthodontics in oral rehabilitation.
- Classify partially edentate arches for construction of a removable prosthesis.
- Demonstrate the procedure for fabrication of an acrylic interim partial denture.
- Demonstrate the tooth arrangements for acrylic interim partial denture.
- Identify instruments used in operative dentistry and demonstrate proper techniques for isolation and cavity preparation.
- Explain the fundamentals of tooth preparation for restoration of teeth and describe classification of dental caries.
- Perform patient and operator position for restorative procedures.

SUBJECTS INTEGRATED IN THE MODULE

- Physiology
- Biochemistry
- Pharmacology & Therapeutics
- General Pathology & Microbiology
- Oral Medicine
- Behavioral Sciences


Syllabus

THEORY		
PHYSIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
HR-P-001	Explain the functional anatomy and vascular organization of the liver Discuss functions of the liver.	Vascular Anatomy and Functional Correlation of the Liver
	Differentiate between hemolytic and obstructive jaundice.	
	State the dental relevance of liver disease in coagulation and drug metabolism.	
HR-P-002	Describe physiological anatomy of the kidney and nephron	Anatomy of Renal System
	Explain physiological anatomy and innervation of the bladder	
	Describe the mechanism of micturition and its control	
HR-P-003	Explain the processes of glomerular filtration, tubular reabsorption	Primary physiological Function of Renal System
	State normal GFR and filtration fraction values explain determinants of GFR.	
	Describe the mechanism of autoregulation of GFR	
	Describe factors affecting GFR	
HR-P-004	Mention proportion of sodium, glucose and water reabsorbed in different parts of nephron.	Secondary Physiological function of renal system
	Explain regulation of fluid osmolality by osmoreceptor-ADH mechanism	
HR-P-005	Discuss normal constituents of urine	Clinical relevance of renal system
	Identify normal values/range of blood urea, and serum creatinine	
HR-P-005	Differentiate between acute kidney injury and chronic kidney disease.	Patho- Physiology of renal system

	Enlist causes of hypertension in kidney diseases	
	Define nephrotic syndrome, oliguria and anuria	
	State the dental relevance of chronic kidney disease	
BIOCHEMISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
HR-B-001	Differentiate between L-alpha amino acids and alpha-keto acids (carbon skeleton).	Nitrogen Removal from Amino Acids
	Enumerate alpha-keto acids of alanine, glutamate, and aspartate.	
	Define transamination and explain its biochemical significance.	
	Describe the reactions catalyzed by alanine aminotransferase (ALT) and aspartate aminotransferase (AST)	
	Discuss the role of pyridoxal phosphate (PLP) in transamination reactions	
	Explain the diagnostic importance of AST and ALT	
	Define oxidative deamination and outline its physiological significance	
	Describe the reaction catalyzed by glutamate dehydrogenase (GDH)	
HR-B-002	Enlist sources of ammonia. Outline the two major mechanisms for transport of ammonia from peripheral tissues to liver. Enumerate transport forms of ammonia.	Sources and Transport of Ammonia
HR-B-003	Explain the reactions, regulatory mechanisms, and physiological significance of the urea cycle and state the normal blood urea levels.	Disposal of Amino Groups: Urea Cycle
HR-B-004	Describe the normal blood ammonia levels and explain the biochemical basis of ammonia-induced CNS toxicity.	Ammonia Metabolism and Hyperammonemia mia
	Enlist inherited & acquired causes of hyperammonemia.	
	Describe the effects of hyperammonemia on brain.	

	Discuss the dietary and pharmacological strategies used in its management of hyperammonemia.	
HR-B-005	Briefly describe the metabolism & importance of glutamine in human body.	Glutamine Metabolism
HR-B-006	Describe heme degradation and jaundice.	Heme Degradation and Jaundice
HR-B-007	Interpret elevated ALT and AST values in patient histories to anticipate potential bleeding risks and altered drug metabolism during dental treatment.	Liver Function and Clinical Correlations in Dentistry
HR-B-008	Explain renal structure–function relationships underlying fluid balance, drug excretion, and homeostasis.	Renal structure-function
HR-B-009	Explain the renal mechanisms involved in hydrogen ion homeostasis.	pH Regulation Mechanisms
PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
HR-Ph-001	Classify 5 major types of diuretics and relate them to their sites of action Describe the major applications and the toxicities of acetazolamide, thiazides, loop diuretics, and potassium-sparing diuretics.	Diuretics
HR-PH-002	Apply dose-modification charts for analgesics, local anesthesia, and common antibiotics in hepatic patients.	Drug Dose Modification in Hepatic Impairment
GENERAL PATHOLOGY & MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
HR-Pa-001	Interpret basic liver function tests (ALT, AST, ALP, INR) to assess hepatic function and disease severity.	Liver Function Tests
HR-Pa-002	Explain the mechanisms of hepatic coagulopathies and relate them to increased bleeding risk.	Hepatic Coagulopathies
HR-Pa-003	Explain and compare eGFR, CBC, and related renal function tests in distinguishing acute from chronic kidney disease.	Renal Function Tests

HR-Pa-004	Define and classify types of edema and explain their underlying causes.	Edema –Types and Mechanisms
HR-PA-005	Discuss the viral characteristics and diagnosis of HBV.	Blood Borne Hepatic Infection and Their Relationship to Patient Safety and Infection Control Module.
	Discuss the viral characteristics and diagnosis of HCV.	
	Discuss the window period in the diagnosis of HBV & HCV and its significance in dental surgery.	
	Discuss the vaccination of HBV & HCV and its importance for a dental surgeon.	
HR-PA-006	Discuss the viral characteristics and diagnosis of HAV.	Hepatic infection and their relationship to patient safety and infection control module.
	Discuss the viral characteristics and diagnosis of HDV.	
	Discuss the viral characteristics and diagnosis of HEV.	
	Discuss the vaccination of HAV and HEV	
HR-PA-007	Discuss briefly the life cycle and diseases caused by Entamoeba histolytica	Entamoeba histolytica
HR-PA-008	Discuss briefly the life cycle and diseases caused by Echinococcus granulosis	Echinococcus granulosis
HR-PA-009	Discuss briefly the bacteria that cause Urinary Tract Infection.	UTI
HR-PA-010	Discuss briefly the microbial characteristics, disease spectrum brief diagnosis, and renal infection caused by i. E. coli ii. Proteus iii. Staphylococcus saprophyticus iv. Klebsiella v. Pseudomonas	Microorganisms causing renal infections

ORAL MEDICINE		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
HR-OM-001	Explain the oral implications of hepatitis, cirrhosis, and hepatic failure.	Oral Manifestations of Hepatic Diseases
HR-OM-002	Recognize hepatic conditions most relevant to general dental care and their impact on treatment planning.	Dental Considerations in Hepatic Disorders
HR-OM-003	Explain the principles of post-exposure prophylaxis (PEP) for Hepatitis B and Hepatitis C.	Infection Control and Post-Exposure Prophylaxis for Hepatitis
HR-OM-004	Interpret lab findings CBC, RFTs (urea, creatinine), Bleeding time and (PT, APTT, & INR) to plan dental treatment for acute and chronic renal conditions	Laboratory Interpretation and Dental Management in Renal Disorders
HR-OM-005	Describe the risk factors for patients undergoing renal dialysis associated with oral cavity.	Oral Health Considerations in Renal Dialysis Patients
HR-OM-006	Identify oral soft-tissue changes associated with hepatic disease and correlate them with underlying cholestatic mechanisms.	Oral Manifestations of Liver Disease
HR-OM-007	Interpret urea and creatinine levels and apply findings to modify dental treatment plans.	Dental Management in Renal Disease
HR-OM-008	Describe and relate the systemic and oral manifestations of CKD, nephrotic syndrome, and dialysis dependency.	Oral Manifestations of Renal Disease
BEHAVIORAL SCIENCES		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
HR-BhS-001	Explain the principles for communicating diagnoses, treatment modifications, and infection-control measures to patients with	Communication

	hepatic disease in a clear, non-stigmatizing manner.	
HR- BhS -002	Explain the OARS motivational interviewing (MI) micro-skills and describe how they can be applied to improve patient adherence to liver and kidney health recommendations	Motivational Interviewing Skills
HR- BhS -003	Explain the principles and appropriate use of shared-decision tools in developing a bleeding-risk mitigation plan collaboratively with the patient and the physician	Shared Decision-Making
HR- BhS -004	Describe the principles and rationale of anxiety-reduction techniques (such as tell–show–do and paced breathing) used when preparing medically compromised patients for dental procedures.	Anxiety-Reduction Techniques
HR- BhS -005	Discuss ethical dilemmas encountered in pain management for patients with liver disease and explain the rationale for an appropriate, justified prescribing decision	Ethical Considerations
HR- BhS -006	Describe communication and professionalism challenges encountered in clinical practice and outline a monthly goal to improve one specific aspect.	Reflective Practice
HR- BhS -007	Explain principles of patient-centred communication and shared decision-making.	Principles of Patient-Centred Communication
HR- BhS -008	Explain the principles of patient-centred communication and shared decision-making in the management of individuals with hepatic disease.	Application of Patient-Centred Care
HR- BhS -009	Explain the process of coordinating referrals and follow-up with hepatology services using structured communication templates and shared electronic records.	Interdisciplinary Coordination and Continuity of Care
HR- BhS -010	Explain strategies for providing patient education on prevention and postoperative care using clear, literacy-appropriate written and verbal instructions.	Patient Education and Health Literacy in Dental Practice

PRACTICALS / LAB WORK		
BIOCHEMISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
HR-B-010	Estimate blood urea levels using standard biochemical methods and interpret results in relation to renal function.	Estimation of Blood Urea
HR-B-011	Estimate serum creatinine concentration and interpret findings to assess glomerular filtration efficiency.	Estimation of Serum Creatinine
HR-B-012	Estimate total and direct serum bilirubin and interpret values to differentiate between hemolytic, hepatic, and obstructive jaundice.	Estimation of Total and Direct Bilirubin
PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
HR-Ph-003	Demonstrate correct prescription writing by accurately completing all components	Principles and Guidelines of Prescription Writing
HR-Ph-004	Perform dose calculations for medications requiring adjustment in renal and hepatic impairment	Dose Adjustment Strategies in Renal and Hepatic Impairment

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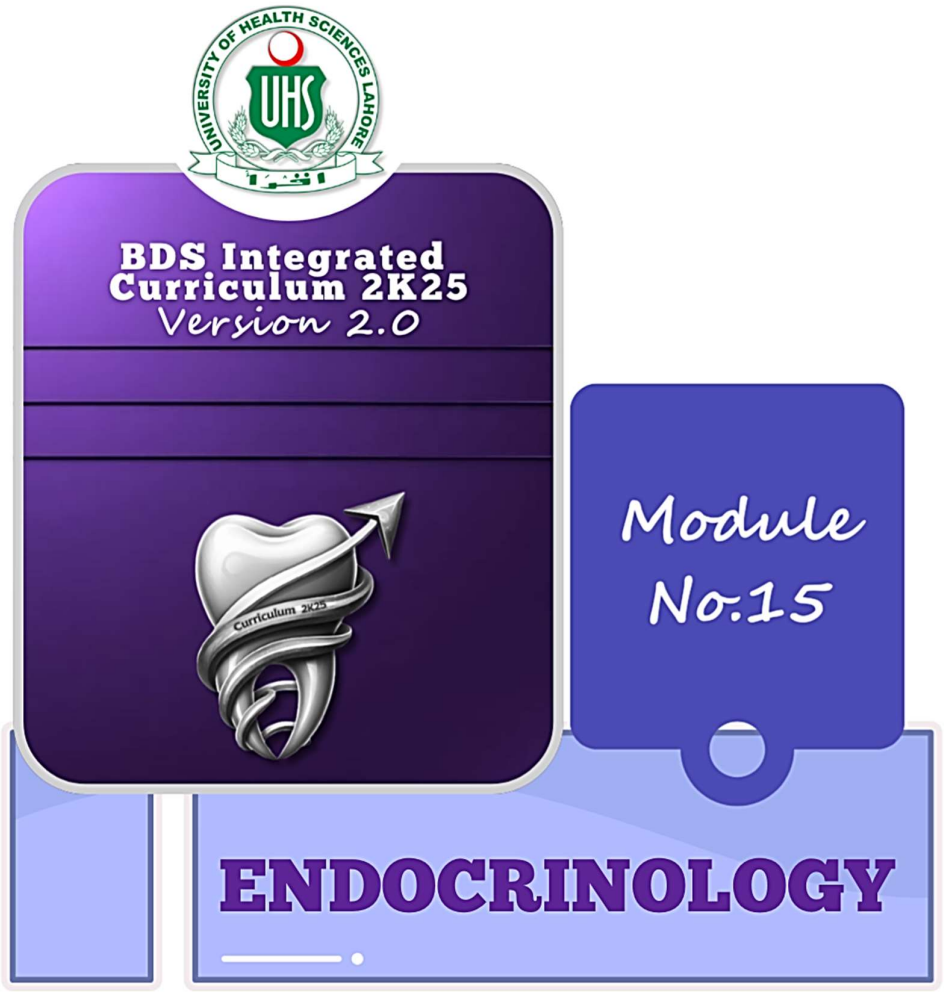
UNIVERSITY OF HEALTH SCIENCES LAHORE
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Module
No:15
ENDOCRINOLOGY

MODULE RATIONALE

The Endocrinology module introduces the structure, function, and regulation of major endocrine glands and their hormones, emphasizing their role in growth, metabolism, calcium balance, and stress response. Understanding endocrine physiology and pathology enables dental students to recognize systemic and oral manifestations of hormonal disorders that influence dental health and treatment planning. The module links core principles from physiology, biochemistry, pharmacology, and pathology to clinical dental practice, highlighting conditions such as diabetes mellitus, thyroid disease, and calcium metabolism disorders. It also fosters the ability to interpret laboratory data, understand pharmacological management, and apply safe clinical decision-making for patients with endocrine dysfunction.

MODULE OUTCOMES

- Identify major endocrine glands, their hormones, and mechanisms of hormonal regulation.
- Explain the physiological roles of pituitary, thyroid, parathyroid, adrenal, and pancreatic hormones in maintaining metabolic and calcium homeostasis.
- Describe the synthesis, biochemical regulation, and clinical significance of thyroid, parathyroid, insulin, and vitamin D pathways.
- Interpret basic endocrine function tests, including thyroid and calcium-related profiles, in relation to systemic and oral findings.
- Recognize oral and systemic manifestations of common endocrine disorders such as diabetes mellitus, hypothyroidism, hyperthyroidism, and parathyroid dysfunction.
- Explain the pharmacological basis, uses, and precautions of major antidiabetic, antithyroid, and corticosteroid drugs relevant to dental care.
- Correlate endocrine disturbances with dental implications such as altered bone metabolism, salivary gland changes, and healing capacity.
- Demonstrate competency in interpreting endocrine-related case data and laboratory reports to support clinical reasoning and safe dental management.

SUBJECTS INTEGRATED IN THE MODULE

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


Syllabus

THEORY		
PHYSYIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
EnC-P-001	Enlist the major endocrine glands and their hormones.	Introduction to Endocrinology
	Classify hormones broadly based on chemical structure (peptide, steroid, amine).	
	Differentiate between surface and intracellular hormone receptors.	
	Explain the basic concept of feedback control in hormone secretion	
EnC-P-002	Describe the basic anatomy of pituitary gland and its relation to hypothalamus.	Pituitary Hormones and Their Control by the Hypothalamus
	Identify the main hormones of the anterior and posterior pituitary and state their primary functions	
	Outline the effects of growth hormone on growth and metabolism	
	Explain the pathophysiology of growth-related disorders—dwarfism, gigantism, and acromegaly.	
	Describe the main functions of ADH (in water balance) and oxytocin (in labor and lactation).	
EnC-P-003	Outline the basic functions of thyroid hormones.	Thyroid Gland
	Discuss the salient clinical features of major thyroid disorders: hyperthyroidism, hypothyroidism, cretinism, and myxedema	
EnC-P-004	Outline the basic functions of parathyroid hormone, calcitonin, and vitamin D in calcium and bone metabolism.	Calcium Regulating Hormones
	Describe clinical conditions associated with calcium imbalance: hypoparathyroidism, hyperparathyroidism, rickets, osteomalacia, and osteoporosis.	
EnC-P-005	Name the main adrenal cortical hormones and describe the physiological functions of cortisol, and aldosterone.	Adrenal Glands

	Discuss the salient features of Cushing's syndrome and Addison's disease.	
EnC-P-006	Describe the main actions of insulin and glucagon on carbohydrate, protein, and fat metabolism	Pancreas
	Differentiate between Type I and Type II diabetes mellitus based on etiology and pathophysiology.	
	Discuss the general features and complications of diabetes mellitus.	
BIOCHEMISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
EnC-B-001	Outline the main steps of thyroid hormone synthesis (iodide uptake, iodination, coupling, storage, release)	Synthesis of Thyroid and Parathyroid Hormones
	State how parathyroid hormone is synthesized and its role in calcium regulation	
EnC-B-002	Describe, in simple terms, how insulin and glucagon are produced in pancreatic islet cells	Synthesis of Insulin and Glucagon
	Explain the clinical significance of C-peptide (marker of insulin secretion)	
	Compare key features of Type 1 and Type 2 diabetes mellitus	
	Describe the pathways of beta-oxidation and ketogenesis and explain their metabolic significance.	
EnC-B-003	Describe vitamin D and its active form, sources, RDA, biochemical roles, and deficiency manifestations.	Vitamins
EnC-B-004	Describe metabolism of calcium	Calcium
PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
EnC-Ph-001	State the major effects of insulin on body tissues	Antidiabetic drugs: Insulin

	Classify types of insulin (short, intermediate, long-acting)	
	Describe the uses and common side effects of insulin	
	Recognize newer agents (SGLT2 inhibitors, incretin mimetics, DPP-4 inhibitors) at a basic level	
EnC-Ph-002	List the main groups of oral antidiabetic drugs (e.g., sulfonylureas, metformin, thiazolidinediones)	Oral antidiabetic drugs
	Explain in simple terms how these drugs lower blood glucose	
	Identify common side effects and contraindications	
EnC-Ph-003	Outline the synthesis and functions of thyroid hormones	Thyroid hormones & Antithyroid drugs
	State the drugs used in hypothyroidism	
	Explain the mechanism of action of main antithyroid drugs	
	Recognize the role of iodides and beta blockers in hyperthyroidism	
	List common toxicities of antithyroid drugs	
EnC-Ph-004	Recall the main adrenal steroid hormones (cortisol, aldosterone)	Adrenal hormones – I
	Recognize some synthetic glucocorticoids	
	Differentiate between short-, intermediate-, and long-acting glucocorticoids.	
EnC-Ph-005	Describe the main pharmacological effects and therapeutic uses of glucocorticoids.	Adrenal hormones – II
	Outline their major adverse effects and precautions corticosteroids	

	Explain the clinical implications and monitoring considerations in long-term steroid use	
	Describe their pharmacokinetics, mechanism of action, pharmacological effects, uses, adverse effects, drug interactions and contraindications of Corticosteroid Antagonists	
GENERAL PATHOLOGY & MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
EnC-Pa-001	Discuss the microbiological characteristics, disease spectrum and brief diagnosis of Prevotella.	Prevotella
EnC-Pa-002	Discuss the microbiological characteristics, disease spectrum and brief diagnosis of Bacteroides.	Bacteroides
EnC-Pa-003	Discuss the microbiological characteristics, disease spectrum and brief diagnosis of Lactobacillus	Lactobacillus
EnC-Pa-004	Discuss the microbiological characteristics, disease spectrum and brief diagnosis of Clostridium perfringens	Clostridium perfringens
EnC-Pa-005	Discuss the microbiological characteristics, disease spectrum and brief diagnosis of firmicutes	Firmicutes
EnC-Pa-006	Discuss the microbiological characteristics, disease spectrum and brief diagnosis of staphylococci	Staphylococci
EnC-Pa-007	Discuss the microbiological characteristics, disease spectrum and brief diagnosis of HIV and its relation with dental surgery.	HIV


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Module
No:16
OCCLUSION_II

MODULE RATIONALE

Occlusion II develops an integrated understanding of the biological, functional, and clinical aspects of occlusion by linking temporomandibular joint dynamics, neuromuscular control, periodontal responses, and dental relationships. The module emphasizes the determinants of normal and ideal occlusion, growth-related variations, and the impact of occlusal forces on oral structures. Through multidisciplinary integration, students are prepared to recognize occlusal patterns, identify deviations, and apply foundational concepts in diagnosis and clinical decision-making.

MODULE OUTCOMES

- Explain the anatomy and function of the temporomandibular joint (TMJ), including the articular disc, synovial fluid, ligaments, and joint stability.
- Describe neuromuscular control of mandibular movement, including the role of muscles of mastication, proprioceptors, and central regulation.
- Explain the role of periodontal structures (PDL and alveolar bone) in occlusal force distribution, proprioception, and adaptation (including Wolff's law).
- Describe occlusal curves, arch forms, and functional cusp relationships, and explain their role in masticatory efficiency.
- Explain facial growth, bone remodeling, and their influence on occlusion and facial profile.
- Define and differentiate static and dynamic occlusion, including centric relation, centric occlusion, maximum intercuspation, and excursive movements.
- Explain determinants of occlusion, including anterior (incisal and canine guidance) and posterior (TMJ/condylar guidance) factors.
- Describe characteristics of ideal occlusion and compare them with normal occlusion and malocclusion.
- Classify occlusal relationships using systems such as Angle's classification and Andrews' Six Keys of Occlusion.
- Explain occlusal features across different dentitions (deciduous, mixed, and permanent).
- Describe the role of orthodontics in the development and maintenance of occlusion, including preventive and interceptive approaches.
- Identify the effects of parafunctional habits (e.g., bruxism) on TMJ, teeth, and periodontal structures.
- Correlate occlusal concepts with clinical implications, including joint health, tooth wear, and functional disturbances.

SUBJECTS INTEGRATED IN THE MODULE

- Oral Biology & Tooth Morphology
- Prosthodontics
- Orthodontics
- Periodontology
- Oral & Maxillofacial surgery


Syllabus

THEORY		
ORAL BIOLOGY & TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Oc2-OB-001	Define the biological features of the temporomandibular joint relevant to occlusion, including the structure and function of the articular disc, synovial fluid, and cartilage adaptation	TMJ & Oral Biology
	Explain the neuromuscular control of mandibular movement, including the role of muscle spindles, Golgi tendon organs, and the central nervous system in maintaining occlusal stability.	
Oc2-OB-002	Describe occlusal curves and explain their significance in masticatory efficiency	Occlusal Curves & Arch Form
	Explain the concept of arch form	
	Describe the normal dental arch forms (tapered, ovoid, square)	
	Define supporting cusps and guiding cusps, and explain their functional role in occlusion.	
Oc2-OB-003	Explain the basic concepts of facial growth and bone remodeling Describe various facial types and profiles.	Facial Growth, Facial Types & Bone remodeling
PERIODONTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Oc2-Pe- 001	Explain the basic concepts of periodontology, including the structure and function of the periodontium and its role in maintaining oral health.	Periodontium & Occlusal Response
	Describe the Physiology of Mastication and the role of mechanoreceptors in the PDL in regulating occlusal biting forces.	
	Describe the role of the periodontal ligament (PDL) in occlusal function, including mechanoreception, proprioception, and tooth mobility.	
PROSTHODONTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**

Oc2-PD-001	Explain the characteristics of ideal occlusion in natural dentition and its significance for oral function and health.	Characteristics and Significance of Ideal Occlusion
	Define the Anterior & posterior determinants (TMJ morphology, condylar guidance) incisal guidance, canine guidance of occlusion).	
	Define & differentiate between static occlusion (centric occlusion, centric relation, maximum intercuspation) and dynamic occlusion (working side, balancing side, protrusive and lateral excursions).	
	Enumerate the key features of occlusion in deciduous, mixed & permanent dentition	
ORAL & MAXILLOFACIAL SURGERY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Oc2-OMFS- 001	Describe the biological features of the temporomandibular joint relevant to occlusion	Review of TMJ anatomy & Its Occlusal relevance
	Summarize the anatomy of TMJ, including TMJ ligaments and the muscles of mastication	
	Compare the condyle disc complex and mandibular fossa	
	Explain the role of synovial fluid in joint maintenance	
	Discuss the importance of joint stability and intra-articular pressure	
ORTHODONTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Oc2-OtD-001	Define Orthodontics & describe the branches of Orthodontics.	Introduction to Orthodontics & Development of Occlusion & Dentition
	Explain the relevance of preventive and interceptive orthodontics to the development of occlusion and dentition during the primary and mixed dentition periods.	
Oc2-OtD-002	Define overjet, and overbite.	Normal Occlusion, Occlusal

	Define and differentiate between ideal occlusion, normal occlusion and malocclusion.	Relationships and Key Characteristics
	Enumerate Andrews' Six Keys of occlusion & its functional significance. What is classification of normal incisor, canine, and molar relationships (using Angle's classification system)	
Practical / Lab work		
ORTHODONTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Oc2-OtD-003	Measure overjet and overbite accurately using a periodontal probe or ruler using study models.	Overjet & Overbite
Oc2-OtD-004	Classify occlusion based on Angle's classification using study models.	Angle's classification

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Module No:17

COMMUNITY DENTISTRY & PUBLIC HEALTH-II

MODULE RATIONALE

Community Dentistry and Public Health II builds on foundational public health concepts to develop competencies in oral health promotion, healthcare systems, and service planning. The module emphasizes behavioural sciences, health education, and patient-centered care to address oral health inequalities and improve treatment adherence. It prepares students to design, implement, and evaluate preventive programs while integrating ethical, psychological, and socio-cultural aspects into clinical and community practice.

MODULE OUTCOMES

- Explain principles of oral health promotion and apply models such as the Ottawa Charter in designing preventive strategies.
- Describe the structure and function of healthcare systems, including Primary Health Care and factors influencing access and delivery of dental services.
- Explain concepts of health service planning, evaluation, and quality assurance, including audit cycles and needs assessment.
- Apply principles of health economics and describe financing and remuneration systems in oral healthcare.
- Identify barriers to oral healthcare access and propose strategies to improve equity for disadvantaged populations.
- Explain oral health education principles, including educational models, approaches, and levels of prevention.
- Design and deliver oral health education interventions in community and clinical settings.
- Apply epidemiological and public health principles in planning and evaluating oral health programs.
- Explain the roles of dental auxiliaries in oral healthcare delivery systems.
- Integrate behavioural science theories (learning theories, motivation, Health Belief Model) to promote behaviour change in patients.
- Demonstrate effective counselling and communication skills, including motivational interviewing and patient-centered approaches.
- Recognize and manage psychological conditions such as anxiety, depression, and stress in dental patients, including appropriate referral.
- Apply ethical principles and professional responsibilities in clinical decision-making, including consent, confidentiality, and safeguarding.
- Demonstrate advanced communication skills, including breaking bad news (SPIKES),

managing difficult patients, and culturally sensitive interactions.

- Assess psychosocial determinants of oral health, including family, socioeconomic, and cultural influences.
- Promote patient adherence and behavioural change through evidence-based strategies.
- Conduct community-based oral health assessments and apply indices (e.g., CPITN) to determine treatment needs.
- Demonstrate professionalism, teamwork, and self-awareness, including managing stress and burnout in dental practice.

SUBJECTS INTEGRATED IN THE MODULE

- Community & Preventive Dentistry
- Behavioral Sciences


Syllabus

THEORY		
COMMUNITY & PREVENTIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CDPH2-CD-001	Define oral health promotion and outline its key principles	Oral health promotion
	Apply the principles of health promotion and disease prevention to design oral health strategies.	
	Describe the five areas for action in the Ottawa Charter and illustrate each with oral health examples.	
	List potential partners and community settings for oral health promotion activities	
CDPH2-CD-002	Define and classify dental auxiliaries, and describe their roles in oral health delivery systems	Dental Auxiliaries
CDPH2-CD-003	Discuss the Primary Health Care (PHC) approach and explain the principles of the Alma-Ata Declaration.	Introduction to the health care system
	Outline factors influencing the development and evaluation of healthcare systems.	
	Describe the different components of a healthcare system	
	Outline the criteria for evaluating healthcare systems	
CDPH2-CD-004	Define quality in healthcare and explain the quality assurance/audit cycle.	Quality assurance cycle
	Discuss the models of access to healthcare and apply the concept practically in a dental setting.	
CDPH2-CD-005	Define planning and explain the steps of the rational planning model for dental services.	Planning dental services
	Describe evaluation and its types, and identify the range of information needed for dental service planning.	
	Define concepts of need	

	Outline the stages necessary in planning strategy.	
CDPH2-CD-006	Explain the basic principles of health economics and outline payment and remuneration systems in oral health care.	Financing oral health care
	Explain the Health goals of a program	
CDPH2-CD-007	Describe common problems with healthcare delivery	Problem with health care services and health care system
	Discuss different barriers to dental care reception	
	Define the terms 'access to care /and barriers to care	
	Outline how the barriers to care might be overcome for disadvantaged groups	
CDPH2-CD-008	Define determinants of health and equality	Dental Public Health
CDPH2-CD-009	Describe the educational process with its domains	Oral Health Education
	Explain the concept of educational theories/ models	
	Define Oral health education, its settings, and approaches	
	Describe the objectives of oral health education	
	Identify principles of oral health education	
	Explain the steps in planning Oral Health Education	
	Discuss the three levels of prevention of oral diseases	
	Discuss the health care system and the levels of prevention per Pakistani system	

BEHAVIORAL SCIENCES		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CDPH2-BhS-001	Describe strategies to strengthen emotional intelligence (EQ) and apply cognitive abilities effectively in dental settings.	Emotional Intelligence (EQ)
CDPH2-BhS-002	Describe how genetic, environmental, and social factors shape personality and intelligence in dental professionals and patients.	Personality Factors
CDPH2-BhS-003	Explain the interplay of nature vs nurture in shaping behaviours and characteristics relevant to dental practice.	Nature vs Nurture
CDPH2-BhS-004	Utilize reinforcement, motivation, and feedback, and apply Behaviourism, Social Learning Theory (Bandura), and Cognitive Theory to achieve effective oral health behaviour change in dental patients.	Learning Theories
CDPH2-BhS-005	Define motivation, distinguish intrinsic from extrinsic types, and apply motivational theories to improve treatment adherence in dental patients.	Motivational Theories
CDPH2-BhS-006	Describe and apply the Health Belief Model to promote preventive and treatment-related oral health behaviours in dental patients.	Health Belief Model
CDPH2-BhS-008	Explain basic counselling principles and the role of counselling in dental healthcare.	Counselling Principles
CDPH2-BhS-008	Compare paternalistic, shared, and informed doctor-patient relationship models and apply them to guide clinical interactions in dentistry.	Doctor-Patient Relationship Models
CDPH2-BhS-009	Recognize signs of anxiety, depression, and psychological distress in dental patients.	Psychological Distress -- Recognition
CDPH2-BhS-010	Initiate appropriate referral to mental health services or apply CBT-based management strategies for distressed dental patients.	Psychological Distress -- Management
CDPH2-BhS-011	Explain how family dynamics, parenting styles, and help-seeking behaviors influence dental attendance and patient cooperation.	Family Dynamics & Help-Seeking
CDPH2-BhS-012	Describe how socioeconomic factors and social constructs (gender roles, stigma, cultural norms) shape oral health perceptions and outcomes.	Social Constructs & Inequalities
CDPH2-BhS-013	Explain the relationship between stress, psychosocial factors, and oral health outcomes and assess impact on quality of life.	Psychosocial Impact on Oral Health
CDPH2-BhS-014	Describe psychosocial aspects of chronic illness and hospitalization and their impact on dental care and patient cooperation.	Chronic Illness & Hospitalization

CDPH2-BhS-015	Explain palliative care principles, psychosocial support strategies, and management of medically unexplained oral symptoms in dental and oral oncology settings.	Palliative & Special Care
CDPH2-BhS-016	Describe the SPIKES protocol and explain principles of breaking bad news in dental scenarios.	Breaking Bad News -- Principles
CDPH2-BhS-017	Identify ethical dilemmas in dental practice (autonomy, consent, confidentiality) and apply established bioethical frameworks (beneficence, non-maleficence, justice) to analyze and resolve them.	Ethical Dilemmas -- Frameworks
	Reflect on professional responsibilities when navigating ethical conflicts involving cultural sensitivity, dual obligations, and patient welfare.	Professional Responsibility
CDPH2-BhS-018	Recognize how behavior affects oral health outcomes and develop evidence-based strategies to promote healthy oral behaviors.	Behavioural Influences on Oral Health
CDPH2-BhS-019	Evaluate factors influencing patient adherence and apply behavior change strategies to improve oral health outcomes. Explain the impact of low health literacy on oral health outcomes and treatment adherence.	Patient Adherence
CDPH2-BhS-020	Recognize signs of stress and burnout in dental professionals and apply evidence-based coping strategies to maintain wellbeing and clinical performance.	Dentist Stress & Burnout

PRACTICALS / LAB WORK		
COMMUNITY & PRESVENTIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CDPH2-CD-010	Deliver a short OHE message to classmates using lab models (tooth models, charts, typodonts).	Oral Health Education
CDPH2-CD-011	Classify example cases into primary, secondary, and tertiary prevention using different scenarios	Levels of Prevention Classification
CDPH2-CD-012	Conduct a community-based periodontal health assessment by performing structured history taking and CPITN screening using WHO criteria, and determine periodontal treatment needs.	Community Visit 2: Periodontal Health Assessment Activity
BEHAVIORAL SCIENCES		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CDPH2-BhS-021	Apply structured advanced communication and demonstrate interprofessional teamwork in complex patient scenarios.	Advanced Communication
CDPH2-BhS-022	Demonstrate non-judgmental, culturally sensitive communication with patients affected by stigma or social barriers.	Cultural Sensitivity & Health Disparities
CDPH2-BhS-023	Implement appropriate behaviour change techniques (e.g., motivational interviewing, goal setting) to improve patient adherence to oral health recommendations in a simulated consultation.	Behaviour Change Strategies
CDPH2-BhS-024	Differentiate biological and environmental factors in dental case scenarios and explain their impact on patient behaviour.	Case Analysis -- Nature vs Nurture
CDPH2-BhS-025	Demonstrate professional behaviour in dental practice by effectively resolving complaints, maintaining confidentiality, patient refusal and applying ethical decision-making.	Ethical dilemmas
CDPH2-BhS-026	Demonstrate the SPIKES protocol in a simulated bad news consultation.	Breaking Bad News (SPIKES)
CDPH2-BhS-027	Apply MI techniques to improve patient adherence to oral hygiene.	Motivational Interviewing

CDPH2-BhS-038	Demonstrate ethical informed consent ensuring autonomy and patient understanding.	Informed Consent
CDPH2-BhS-029	Respond appropriately to safeguarding scenarios including child abuse and domestic violence.	Safeguarding
CDPH2-BhS-030	Analyze patient misinformation and recommend an evidence-based management strategy.	Misinformation Management
CDPH2-BhS-031	Manage aggressive, anxious, or non-adherent patients using behavioural approaches without compromising ethics.	Managing Difficult Patients
CDPH2-BhS-032	Manage a simulated anxious patient using advanced behavioural desensitization and structured reassurance techniques beyond Tell-Show-Do.	Advanced Dental Anxiety Management


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Module No:18
DENTAL MATERIALS & PRE-CLINICAL DENTISTRY-II

MODULE RATIONALE

This module builds upon foundational knowledge to develop students' understanding of direct restorative materials and their clinical application in operative dentistry and prosthodontics. It integrates the science of dental materials including amalgam, composites, glass ionomers, and cements with principles of adhesion, manipulation, and material selection for specific clinical situations. Additionally, the module introduces essential prosthodontic concepts such as jaw relations and occlusion, alongside practical skills like fabrication of denture base plates. Through hands-on training in cavity preparation, restoration, and finishing procedures, the module aims to enhance students' technical competence, critical thinking, and ability to deliver functionally and aesthetically sound restorations.

MODULE OUTCOMES

- Describe the fundamental requirements of direct restorative materials.
- Describe the composition, manipulation and properties of amalgam.
- Describe the hybrid layer and specify the roles of etchant, primer and adhesive.
- Describe the composition, properties and polymerization of composite and categorize materials based on filler particle size.
- Classify dental cements. Differentiate between temporary and permanent cements. Explain the manipulation, setting characteristics and clinical applications of major dental cements.
- Describe the composition and properties of glass ionomer cements.
- Demonstrate the mixing of amalgam and manipulation of dental cements.
- Describe the vertical jaw relations.
- Describe the basic features of natural and artificial occlusion.
- Demonstrate the fabrication procedure of upper and lower base plates for complete dentures.
- Explain principles of Class I cavity preparation and material selection (amalgam vs composite).
- Demonstrate step-by-step Class I cavity preparation and restorations on typodont for both amalgam and composite restorations.
- Perform finishing and polishing of restorations to achieve proper anatomy, marginal integrity, and occlusion.

SUBJECTS INTEGRATED IN THE MODULE

- Science of Dental Materials
- Pre-clinical Operative Dentistry

- Pre-clinical Prosthodontics


Syllabus

THEORY		
SCIENCE OF DENTAL MATERIALS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD2-DM-001	Outline the essential requirements of direct filling restorative materials.	Fundamental Requirements of Direct Restorative Materials
DMPD2-DM-002	Describe and relate the function of each component of dental amalgam alloy to its physical properties.	Dental Amalgam - Composition
	Explain the role of the mercury–alloy ratio and its effect on the setting reaction and long-term performance of amalgam restorations.	
	Correlate the manipulation parameters of amalgam with the mechanical and physical properties of the final restoration.	
	Evaluate the evidence on amalgam toxicity and justify its clinical safety in comparison with other environmental and dietary sources of mercury exposure.	
	Explain mercury hygiene guidelines and describe the protocols for safe amalgam waste disposal.	
DMPD2-DM-003	Define the hybrid layer. Explain how resin infiltrates and demineralizes dentin to create the “interdiffusion zone”.	Dentin bonding agents
	Explain why bonding to wet, organic dentin is harder than bonding to dry, inorganic enamel.	
	Describe how this cutting debris is either removed or modified by different bonding systems.	
	Differentiate the specific roles of the Etchant(acid), Primer(monomer) and Adhesive(resin).	
	Categorize agents by generation (1st - 8th) and by strategy (Etch and Rinse vs. Self-Etch)	
	Explain how keeping dentin moist prevents the collapse of collagen fibers during the procedure.	
DMPD2-DM-004	Describe the composition. Detail the roles of the organic matrix (Bis-GMA), inorganic fillers and the silane coupling agent in the composition structure	Composites
	Categorize materials based on filler particle size(Macro, Micro, Hybrid, Nano, Bulkfill) and explain how this determines clinical use.	

	Explain the polymerization process. Describe the chemical stages of light-activation and the function of the photo-initiator Camphorquinone.	
	Discuss polymerization shrinkage. Explain the mechanism of “setting stress” and how it leads to marginal microleakage and post-operative sensitivity.	
	Analyze the C-Factor(configuration factor). Describe the relationship between bonded and unbonded tooth surfaces and how it dictates incremental layering.	
	Differentiate material properties. Compare the viscosity, flow and mechanical strength of Flowable vs. Packable composites.	
	Explain the role of Coupling Agent. Describe how Silane creates a chemical bond between the filler particles and the resin matrix to ensure structural integrity.	
	Outline finishing and polishing protocol. Describe the sequence of using abrasive instruments to achieve a surface that resists plaque accumulation.	
DMPD2-DM-005	Classify dental cements according to composition and clinical use.	Dental Cements
	Differentiate between temporary and permanent cements based on composition, strength, and clinical application.	
	Explain the manipulation, setting characteristics, and clinical applications of major dental cements including zinc phosphate, GIC, calcium hydroxide, zinc polycarboxylate and ZOE.	
DMPD2-DM-006	Describe the chemical composition and key properties of Glass Ionomer Cements GIC.	Glass Ionomer Cements
	Correlate the constituents of GIC with its physical and biological properties.	
	Explain the setting reaction, fluoride release ion exchange and environmental interaction mechanisms of GIC.	
	Explain the rationale behind the development of resin-modified glass ionomers and describe their advantages over conventional glass ionomer cements.	
	Explain how modifications in GIC composition influence material properties and clinical performance.	
	Describe the composition, properties and clinical indications of metal-reinforced glass ionomers (cermet’s).	

OPERATIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD2-OD-001	Outline the principles and steps of tooth preparation for class I amalgam cavity design on mandibular molars, maxillary molars and premolars utilizing principles of cavity preparations.	Class I cavity preparation for amalgam
DMPD2-OD-002	Understand the objectives of pulp protection and clinical considerations	Liners and Bases
DMPD2-OD-003	Describe the principles of restoration design for amalgam, including condensation, carving, finishing, and the factors influencing marginal integrity and longevity of the restoration	Amalgam Restorations in Class I
DMPD2-OD-004	Describe the indications and case selection for Class I composite restorations.	Class I Composite Restorations
	Explain conservative cavity design principles for posterior adhesive restorations.	
	Explain polymerization shrinkage and C-factor in posterior composites.	
	Discuss finishing, polishing, and occlusal adjustment protocols to optimize restoration longevity.	
	Describe common clinical complications (e.g., postoperative sensitivity, marginal leakage, open contacts, overhangs) and discuss preventive strategies.	
PRE-CLINICAL PROSTHODONTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD2-PD-001	Define vertical and horizontal jaw relations.	Establishing Artificial Occlusion
	Enlist following features of natural occlusion: • Overjet • Overbite • Centric relation • Maximum intercuspation • Condylar guidance, and • Incisal guidance	
	Define significant planes for arrangement of teeth: • Facio lingual,	

	• Mesiodistal, • Occlusal plane, • Ridge relation, and • Rotational curve	
	Define anatomic occlusion in artificial dentition.	
	Correlate features of natural occlusion with artificial dentition.	

PRACTICAL / LAB WORK		
SCIENCE OF DENTAL MATERIALS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD2-DM-007	Manipulate GIC as luting/lining or base consistency.	Manipulation techniques for Dental Cements
	Mix Zinc phosphate dental cement as luting or base consistency.	
	Manipulate Zinc Oxide Eugenol dental cement	
	Mix Calcium hydroxide (two paste) dental cement as pulp capping agent	
DMPD2-DM-008	Perform trituration with correct mercury-alloy ratio. Also demonstrate condensation, burnishing, finishing and carving.	Dental amalgam
OPERATIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD2-OD-005	Prepare Class I cavity on typodont for an amalgam restoration (premolars & mandibular molars).	Class I Cavity Preparation for Amalgam
	Demonstrate preparation of a Class I cavity on maxillary molars of typodont.	
DMPD2-OD-006	Apply liners & bases in a prepared cavity.	Pulp protection
DMPD2-OD-007	Perform trituration, condensation, carving, and finishing of amalgam restoration in prepared Class I cavity on a typodont.	Class I Restoration with amalgam
DMPD2-OD-008	Perform quadrant isolation with rubber dam for posterior composite restorations	Quadrant Isolation
DMPD2-OD-009	Prepare conservative Class I cavity on typodont for composite restoration.	Cavity preparation for class I composite restoration
DMPD2-OD-010	Demonstrate adhesive protocol, including: i. Etching strategy (total-etch/self-etch) ii. Primer and bonding application iii. Solvent evaporation and light curing	Adhesion and composite restoration

	Place composite using appropriate incremental techniques to minimize shrinkage stress and establish proper contour and contact.	
DMPD2-OD-011	Finish and polish restorations while maintaining marginal integrity and anatomy.	Finishing and Polishing
	Evaluate and adjust occlusion to ensure proper functional contacts.	
PRE-CLINICAL PROSTHODONTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD2-PD-001	Prepare an edentulous cast suitable for the fabrication of a complete denture.	Preparation of Edentulous Cast
	Identify anatomical landmarks on edentulous cast.	
DMPD2-PD-002	Perform wax-up of trial denture upper base plate ensuring recommended extension and denture base adaptation.	Wax-Up of Upper Base Plate
DMPD2-PD-003	Perform wax-up of trial denture lower base plate ensuring correct border extension and stability.	Wax-Up of Lower Base Plate
DMPD2-PD-003	Demonstrate correct procedure for flasking trial denture upper and lower base plates prior to processing.	Flasking of Upper and Lower Base Plates
DMPD2-PD-004	Perform dewaxing for trial denture upper and lower base plates.	Dewaxing of Upper and Lower Base Plates
DMPD2-PD-005	Perform packing, curing, and finishing of trial denture base plates, ensuring smooth and well-adapted surfaces.	Packing, Curing, and Finishing of Base Plates

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Module No:20

CRANIOFACIAL-III

MODULE RATIONALE

Craniofacial III module develops a clinically oriented understanding of head and neck anatomy, disease processes, and their management. It integrates anatomy with pathology, microbiology, pharmacology, and oral pathology to explain the spread of infections, mechanisms of disease, and therapeutic interventions. The module prepares students to recognize, diagnose, and manage common and serious conditions including infections, neoplasia, and oral cancer, with emphasis on safe and effective dental practice.

MODULE OUTCOMES

- Explain the anatomy of the neck (fascia, spaces, triangles, vessels, nerves, lymphatics) and correlate it with the spread of infections and clinical procedures.
- Describe muscles, joints, and skeletal framework of the neck, including their functional and clinical relevance.
- Explain the structure and function of the larynx, thyroid, and parathyroid glands, including developmental and histological aspects.
- Apply anatomical knowledge to clinical conditions, including torticollis, Horner's syndrome, and head & neck cancers.
- Explain the principles and phases of wound healing and factors affecting tissue repair.
- Describe cellular and molecular mechanisms of tissue regeneration and repair, including the role of growth factors and cell types.
- Differentiate types of tissue healing and identify complications such as infection, fibrosis, and abnormal scar formation.
- Explain the principles of neoplasia, including tumor classification, molecular basis (oncogenes, tumor suppressor genes), and carcinogenesis.
- Describe tumor behavior, metastasis, grading, staging, and diagnostic investigations relevant to clinical practice.
- Explain the microbiology of major oral and systemic pathogens (bacterial, fungal, viral) and their role in oral diseases.
- Describe infection control, sterilization, and diagnostic microbiological techniques used in dental practice.
- Explain the spread of odontogenic infections and principles of management, including Ludwig's angina and osteomyelitis.
- Classify and explain the pharmacology of major antimicrobial agents, including mechanisms of

action, resistance, spectrum, and adverse effects.

- Apply rational drug selection in dentistry, including antibiotics, antifungals, and anticancer agents.
- Explain the epidemiology, risk factors, clinical features, and prevention of oral cancer.
- Describe the role of the dentist in early diagnosis, referral, and prevention of oral cancer.
- Demonstrate practical laboratory skills, including staining, culture techniques, sterilization, and specimen handling.
- Interpret histopathological and microbiological findings relevant to oral diseases.
- Integrate basic sciences with clinical dentistry for diagnosis and management of head and neck conditions.
- Demonstrate professionalism and safe clinical practices, including infection control and patient safety.

SUBJECTS INTEGRATED IN THE MODULE

- Anatomy
- General Pathology & Microbiology


Syllabus

THEORY		
GENERAL ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-A-001	Explain the parts and attachments of the deep cervical fascia and relate them to the spread of neck infections.	Cervical Fascia and Fascial Spaces
CF3-A-002	Describe the fascial spaces of head and neck and explain their relevance to the spread of infections.	
CF3-A-003	Identify and describe the attachments, actions, and nerve supply of the major muscles of the neck (platysma, sternocleidomastoid, infrahyoid, suprahyoid, scalene).	Muscles of the Neck
CF3-A-004	Explain the anatomical basis, differentiate the types, and correlate anatomical changes with the clinical presentation of torticollis.	
CF3-A-005	Identify the boundaries and list the contents of the anterior and posterior triangles of the neck.	Triangles and Surface Anatomy of the neck
CF3-A-006	Trace the origin, course, branches, and distribution of the common and external carotid arteries. interpret its clinical importance.	Blood Vessels of the Neck
CF3-A-007	Describe the origin, course, major branches, and distribution of the subclavian artery.	
CF3-A-008	Explain the formation, tributaries, and drainage areas of veins forming the jugular venous system.	
CF3-A-009	Summarize the venous drainage of the neck region.	
CF3-A-010	Identify the superficial and deep cervical lymph nodes and describe their locations and drainage areas.	Lymphatic Drainage of the Neck
CF3-A-011	Describe the extracranial course, major branches, and functional distribution of the glossopharyngeal, vagus, and accessory nerves.	Nerves of the Neck
CF3-A-012	Describe the location, formation, branches, and distribution of the cervical plexus.	
CF3-A-013	Explain the location, formation, and branches of cervical sympathetic ganglia.	

CF3-A-014	Correlate the anatomical basis of Horner's syndrome with its clinical presentation.	
CF3-A-015	Identify and describe the anatomical features of the hyoid bone.	Skeletal Framework of the Neck
CF3-A-016	Classify the cervical vertebrae and distinguish their characteristic features.	
CF3-A-017	Describe the anatomical features of typical and atypical cervical vertebrae.	
CF3-A-018	Classify the joints of cervical vertebrae and explain associated ligaments, movements, muscles, and neurovascular supply.	
CF3-A-019	Describe the parts of the larynx, including their extent, anatomical features, framework, and neurovascular supply.	Larynx: Structure and Function
CF3-A-020	Identify and describe the attachments, actions, and nerve supply of intrinsic and extrinsic muscles of the larynx.	
CF3-A-021	Describe the location, anatomical features, and vascular supply of thyroid and parathyroid glands.	Thyroid and Parathyroid Glands
CF3-A-022	Describe and identify the histological features of the thyroid gland and parathyroid gland under light microscope.	
CF3-A-023	Explain the embryological development of thyroid gland and relate it to common congenital anomalies (thyroglossal cyst, fistula).	
CF3-A-024	Describe the muscles of back of neck and suboccipital triangle.	Back of neck
CF3-A-025	Explain the clinical relevance of the neck Anatomy in relation to head and neck cancers. (Integration with OMFS)	Neck dissection for head and neck cancers
CF3-A-026	Explain the cause and clinical features of Horner's syndrome. (Integration with OMFS)	Horner's syndrome
GENERAL PATHOLOGY & MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-Pa-001	Explain the basic principles and sequence of events involved in wound healing, including hemostasis, inflammation, proliferation, and remodeling.	Principles and Phases of Wound Healing

	Describe and differentiate the phases of wound healing, emphasizing the cellular and molecular events in each stage.	
	Analyze the local and systemic factors that influence healing at each phase.	
CF3-Pa-002	Explain the roles of different cell types (neutrophils, macrophages, fibroblasts, endothelial cells, epithelial cells) and correlate their functions with growth factors involved in periodontal tissue repair and regeneration.	Cellular and Molecular Basis of Repair
	Describe the major phases of the cell cycle and relate them to tissue growth and repair.	
	Classify and discuss the characteristics of labile, stable, and permanent cells in relation to tissue regeneration.	
CF3-Pa-003	Describe and compare the different types of tissue healing—primary, secondary, and tertiary intention—based on mechanism, tissue response, and clinical presentation.	Types and Complications of Healing
	Enumerate and explain the sequential steps involved in scar formation.	
	Identify and explain common complications such as infection, wound dehiscence, hypertrophic scar, and keloid formation.	
	Describe and illustrate the stages of wound healing in an extracted tooth socket, highlighting cellular and tissue-level changes.	
CF3-Pa-004	Define neoplasia and discuss the nomenclature of neoplasms	Nomenclature of neoplasia
CF3-Pa-005	Describe the characteristics of benign and malignant tumors.	Characteristics of tumors
	Differentiate between benign and malignant tumors.	
CF3-Pa-006	Describe the molecular basis of cancer, including an introduction, essential features of malignant transformation, and the role of oncogenes (with emphasis on RAS).	Mechanism & Carcinogenesis of Neoplasia
CF3-Pa-007	Describe the molecular basis of cancer, focusing on tumor suppressor genes, with emphasis on RB and p53.	
CF3-Pa-008	Describe carcinogenesis, including the multistep pathway and radiation-induced carcinogenesis.	

CF3-Pa-009	Describe carcinogenesis, including chemical and microbial carcinogenesis.	
CF3-Pa-010	Describe Tumor metastasis	Invasion of tumors
CF3-Pa-011	Outline the clinical aspects of neoplasia, focusing on grading and staging of cancer.	Clinical aspects of neoplasia
CF3-Pa-012	Describe and interpret the laboratory investigations used in cancer diagnosis.	
CF3-Pa-013	Define microbial teratogens, Define TORCH infections and identify the impact of maternal infections (TORCH complex) on embryonic development and their dental implications.	Microbial Teratogens
CF3-Pa-014	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Staphylococci.	Staphylococci
CF3-Pa-015	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Mucormycosis	Mucormycosis
CF3-Pa-016	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Streptococci	Streptococci
CF3-Pa-017	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Actinomyces	Actinomyces
CF3-Pa-018	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Porphyromonas	Porphyromonas
CF3-Pa-019	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Fusobacterium	Fusobacterium
CF3-Pa-020	Describe the epidemiology, transmission, virulence factors, pathogenesis, laboratory diagnosis, and prevention of Candida	Candida
CF3-Pa-021	Classify the hemorrhagic viruses with clinical presentation.	Dengue & Congo virus
CF3-Pa-022	Discuss clinical relevance of hemorhagic virus infections for dentistry.	
CF3-Pa-023	Discuss the viral characteristics, diagnosis and tumors caused by following oncogenic viruses: • HCV • HBV • HPV	Oncogenic Viruses

	• EBV • HHV8	
CF3-Pa-024	Discuss the role of H. pylori in causing MALT.	MALT
ORAL PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-OP-001	Enumerate the spaces involved with spread of acute inflammation from periapical area of tooth to the floor of mouth and onwards.	Spread of infection in the neck from oral cavity
CF3-OP-002	Describe the signs and symptoms of infections according to the spaces involved.	
CF3-OP-003	Give the general principles of management of Ludwig's angina.	
CF3-OP-004	Give the sequence of events of periapical acute and chronic inflammation and spread of infection into adjacent bone and soft tissue.	Periapical acute and chronic inflammation
CF3-OP-005	Enumerate and describe the types of osteomyelitis (types of bone inflammation).	Osteomyelitis
CF3-OP-006	Give the radiographic and microscopic features of osteomyelitis.	
PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-Ph-001	Classify cell wall synthesis inhibitors.	Cell Wall Inhibitors
CF3-Ph-002	Discuss the mechanism of action of beta lactam antibiotics (Penicillin G, V, Oxacillin, Nafcillin, Ampicillin, Amoxicillin, Piperacillin	
CF3-Ph-003	Outline the mechanism of resistance to beta lactam antibiotics	
CF3-Ph-004	Write the clinical uses of beta lactam antibiotics.	

CF3-Ph-005	Identify the antibacterial spectrum.	
CF3-Ph-006	Identify important antibiotics for dental procedures.	
CF3-Ph-007	Enlist the major adverse effects of penicillin	
CF3-Ph-008	Discuss the mechanism of action and clinical significance of Beta Lactamase Inhibitors (Clavulanic acid, Sulbactam, Tazobactam, Avibactam, Vaborbactam	Protein synthesis inhibitors
CF3-Ph-009	Classify cephalosporin generations Describe their antibacterial spectrum and clinical uses	
CF3-Ph-010	List the major adverse effects of cephalosporin	
CF3-Ph-011	Describe important features of the carbapenems and monobactam	
CF3-Ph-012	Describe antibacterial spectrum, mechanism of action, resistance, clinical uses and toxicity of vancomycin	
CF3-Ph-013	Explain briefly the major steps of protein synthesis.	
CF3-Ph-014	Classify protein synthesis inhibitors	
CF3-Ph-015	Classify tetracyclines and discuss mechanism of action, resistance, antibacterial spectrum, clinical uses, adverse effects of tetracyclines.	
CF3-Ph-016	Classify Macrolide/ Ketolide.	
CF3-Ph-017	Describe the mechanism of action and pharmacokinetics, antimicrobial spectrum, mechanism of resistance, clinical uses, adverse effects of Erythromycin, Clarithromycin, Azithromycin, Fidaxomycin.	
CF3-Ph-018	Discuss the main characteristics of Clindamycin including mechanism of action, pharmacokinetics, clinical uses and adverse effects.	
CF3-Ph-019	Describe the antibacterial spectra, therapeutic uses and side effects of Ketolides	
CF3-Ph-020	Discuss the main characteristics of Clindamycin including mechanism of action, pharmacokinetics, clinical uses and adverse effects.	

CF3-Ph-021	Describe the mechanism of action of Aminoglycosides (amikacin, gentamycin, streptomycin, tobramycin, neomycin, kanamycin). Describe the mechanism of resistance of Aminoglycosides. Discuss the clinical uses of Aminoglycosides. Describe the adverse effects and toxicities of Aminoglycosides	Aminoglycosides
CF3-Ph-022	Describe the mechanism of action of DNA Gyrase Inhibitors (Ciprofloxacin, Levofloxacin, Ofloxacin, Getifloxacin and others) Describe the mechanism of resistance of DNA Gyrase Inhibitors. Discuss the clinical uses of DNA Gyrase Inhibitors. Describe the adverse effects and toxicities of DNA Gyrase Inhibitors.	Flouroquinolones
CF3-Ph-023	Discuss the mechanism of action, clinical uses and side effects and clinical spectrum of Niroimidazoles. Discuss their anaerobic spectrum.	Nitroimidazoles (metronidazole)
CF3-Ph-024	Briefly discuss the polyenes antifungal drugs dor oral candidiasis. Name Azole group of antifungal drugs. Briefly discuss their mechanism of action, and use in oral candidiasis. Enumerate their side effects.	Antifungals
CF3-Ph-025	Classify anticancer drugs according to cell cycle. Enumerate side effects of anticancer drugs.	Anticancer
COMMUNITY & PREVENTIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-CD-001	Explain the epidemiological distribution of oral cancer with respect of age, gender, site and geographic variation	Epidemiology of Oral Cancer
CF3-CD-002	Describe the etiology, risk factors and C/P of oral cancer	
CF3-CD-003	Discuss diagnosis, treatment and prevention of oral cancer	
CF3-CD-004	Discuss the role of a dentist in diagnosis and control of oral cancer	

PRACTICALS / LAB WORK		
ANATOMY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-A-027	Identify the course and key functions of the laryngeal nerves on anatomical models/ preserved specimens.	Laryngeal Nerve
	Describe how damage to laryngeal nerve leads to common clinical signs.	
CF3-A-028	Identify and illustrate the histological features of thyroid under light microscope.	Thyroid
CF3-A-029	Identify and illustrate the histological features of parathyroid glands under light microscope.	Parathyroid
GENERAL PATHOLOGY & MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-Pa-025	Study the characteristics of Benign (Epithelial & Connective tissue) tumors: Squamous Papilloma, Lipoma, Leiomyoma,	Benign Tumors
CF3-Pa-026	Study the characteristics of Malignant (Epithelial and connective tissue) tumors: Squamous cell carcinoma, Leiomyosarcoma (Pictorial).	Malignant tumors
CF3-Pa-027	Perform and interpret the catalase test, and coagulase test.	Laboratory tests
CF3-Pa-028	Demonstrate appropriate Sterilization and disinfection methods for dental instruments.	Sterilization and disinfection
CF3-Pa-029	Perform Gram staining on bacterial smears to identify gram-positive, gram-negative bacteria and candida under the microscope.	Microscopic identification
CF3-Pa-030	Demonstration the use of anerobic jar and explain its applications in the cultivation of dental microbes.	Anerobic cultures
CF3-Pa-031	Demonstrate collection of oral and throat specimens for microbiological examination in dental practice.	Sample collection
CF3-Pa-032	Identify culture media used in microbiology laboratory for identification of pathogens.	Culture media

ORAL PATHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
CF3-OP-007	Identify, Draw and label periapical granulomas, periapical cysts and suppurative osteomyelitis.	Acute and chronic infections


UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
BDS Integrated
Curriculum 2K25
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Curriculum 2K25
Module
No:21
RESPIRATION

MODULE RATIONALE

This module introduces the structure, function, and regulation of the respiratory system through an integrated approach. It links microscopic anatomy, physiology, biochemistry, pharmacology, and pathology to develop a comprehensive understanding of respiration in health and disease. Emphasis is placed on gas exchange, acid–base balance, and respiratory disorders relevant to dental and clinical practice.

MODULE OUTCOMES

- Describe the structure and cellular composition of the respiratory tract.
- Explain the mechanics of breathing, gas exchange, and transport of respiratory gases.
- Interpret acid–base balance and identify compensatory mechanisms in respiratory and metabolic disturbances.
- Recognize major respiratory diseases and their oral health implications.
- Identify the pharmacological basis of drugs used in asthma, cough, allergy, and tuberculosis.
- Apply understanding of respiratory physiology and pharmacology to safe and effective dental management of patients with respiratory disorders

SUBJECTS INTEGRATED IN THE MODULE

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


Syllabus

THEORY		
HISTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-A-001	Identify the cells of respiratory epithelium and describe their functions.	Microscopic Structure of Respiratory and Olfactory Epithelium
	Identify the cells of olfactory epithelium and explain their functions.	
Res-A-002	Describe and identify the histological features of the trachea under microscope.	Trachea
	Describe the anatomical features and neurovascular supply of the trachea.	
	Explain the anatomical basis and possible complications of tracheostomy.	
PHYSIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-P-001	Describe the functional divisions of the respiratory system.	Introduction and Functional Anatomy
	Differentiate between respiratory and non-respiratory functions of the respiratory system.	
	Identify the layers of the respiratory membrane.	
Res-P-002	Discuss the mechanics of ventilation.	Mechanics of Breathing
	Identify the muscles of inspiration and expiration in quiet and strenuous breathing.	
	Define interalveolar, intrapleural, and transpulmonary pressures and state their normal values during inspiration and expiration.	
	Define and explain lung compliance and discuss factors affecting it.	

	List the components of surfactant and explain its role in reducing alveolar surface tension.	
	Discuss the significance of surfactant in premature infants	
Res-P-003	Define and describe normal lung volumes and capacities with their normal values.	Pulmonary Volumes, Capacities, and Ventilation
	Define and explain the types and functions of respiratory dead spaces, including the normal value of anatomical dead space.	
	Define alveolar ventilation and minute respiratory volume.	
	State the normal respiratory rate.	
	Draw and interpret a spirogram showing respiratory excursions during normal, maximal inspiration, and maximal expiration.	
	Define forced vital capacity (FVC), forced expiratory volume in one second (FEV_1), and FEV_1/FVC ratio, and compare these values in normal and COPD patients	
Res-P-004	Describe the factors affecting gas diffusion through the respiratory membrane.	Gas Exchange and Diffusion
	Define diffusing capacity for a gas.	
	Define partial pressure of a gas and state normal values of oxygen (O_2) and carbon dioxide (CO_2) in arterial and venous blood, as well as their partial pressures in atmospheric and alveolar air	
Res-P-005	Explain the different forms of oxygen transport in the blood.	Transport of Gases
	Describe the mechanisms of carbon dioxide transport in the blood	
	Describe the structure and functions of hemoglobin, oxygen transport, oxygen dissociation curve, and factors that shift it.	Hemoglobin and Oxygen Transport
Res-P-006	Identify and describe the components of the respiratory centers and explain their functions.	Neural and Chemical Control of Respiration
	Discuss the inspiratory ramp signal and the Hering–Breuer inflation reflex.	

	Explain the chemical control of respiration.	
	State the normal arterial and venous partial pressures of O_2 and CO_2, and pH values.	
	Locate central and peripheral chemoreceptors and explain their roles in the regulation of respiration.	
Res-P-007	Explain the effect of exercise on respiration.	Applied Physiology
	Define and classify different types and causes of cyanosis.	
	Define and differentiate types of hypoxia and explain their effects on the body.	
	Explain the mechanism and effects of carbon monoxide poisoning.	
	Define and differentiate sleep apnea, Cheyne–Stokes breathing, dyspnea, tachypnea, hypercapnia, asphyxia, and respiratory failure.	

BIOCHEMISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-B-001	Describe the major chemical components of the human body and explain their relative proportions.	Chemical Composition of the Human Body
Res-B-002	Explain the importance of water in the human body.	Water and Its Biological Importance
Res-B-003	Define intracellular and extracellular fluids and describe their functions.	Body Fluids
Res-B-004	Describe the ionization of water and define the ion product constant (Kw).	Ionization of Water
Res-B-005	Differentiate between strong and weak acids with suitable examples.	Acids and Bases
Res-B-006	Explain the concepts of pH, pH scale, Ka, and pKa.	pH and Acid–Base Concepts
Res-B-007	State the normal pH of various body fluids.	pH of Body Fluids

Res-B-008	Identify the sources of volatile (CO_2) and fixed acids in the human body.	Sources of Acids
Res-B-009	Describe methods used for approximate and accurate determination of pH.	Determination of pH
Res-B-010	Explain the effects of pH on the structure and function of biological macromolecules such as enzymes, nitrogenous bases, and plasma proteins.	Effect of pH on Biomolecules
Res-B-011	Interpret the titration curve of a weak acid with reference to buffering capacity.	Titration Curve and Buffering Capacity
Res-B-012	Write the Henderson–Hasselbalch equation and describe its applications in physiology.	Henderson–Hasselbalch Equation
Res-B-013	Calculate the pH of arterial blood using the Henderson–Hasselbalch equation.	pH Calculation
Res-B-014	Define alkali reserve and explain its physiological significance.	Alkali Reserve
Res-B-015	Define buffers and identify their components.	Buffer Systems
	Describe the factors determining buffering capacity.	
	Explain the mechanism of action of a buffer system.	
	List the principal buffers in various body fluids.	
	Explain the mechanisms of the bicarbonate and phosphate buffer systems.	
Res-B-016	Explain the respiratory mechanisms involved in hydrogen ion homeostasis.	pH Regulation Mechanisms
Res-B-017	Identify the first, second, and third lines of defense against changes in hydrogen ion concentration.	Defense Mechanisms in pH Regulation
Res-B-018	Classify acid–base disorders and describe their causes and compensatory mechanisms in: metabolic acidosis, respiratory acidosis, metabolic alkalosis, and respiratory alkalosis.	Acid–Base Imbalance
Res-B-019	Define metabolism and explain the concept of the metabolic map.	Introduction to Metabolism

Res-B-020	Compare anabolic and catabolic pathways.	Anabolism vs Catabolism
Res-B-021	Differentiate between biochemical cycles and pathways and between reversible and irreversible reactions, using suitable examples.	Biochemical Pathways and Reactions
Res-B-022	Define glycolysis and describe its reactions, regulation, significance, and energy yield under aerobic and anaerobic conditions.	Glycolysis
Res-B-023	Apply the knowledge of glycolysis to interpret clinical features of pyruvate kinase deficiency.	Clinical Correlation – Pyruvate Kinase Deficiency
Res-B-024	Identify the causes of lactic acidosis.	Lactic Acidosis
Res-B-025	Describe the conversion of pyruvate into lactate, acetyl-CoA, oxaloacetate, alanine, and ethanol.	Pyruvate Metabolism
Res-B-026	Elaborate the reaction catalyzed by the pyruvate dehydrogenase complex, highlighting the roles of E1, E2, and E3 components.	Pyruvate Dehydrogenase Complex
Res-B-027	Describe the reactions, regulation, and significance of the citric acid cycle, and calculate its total ATP yield.	Citric Acid Cycle
Res-B-028	Apply the knowledge of glycogen metabolism to interpret the biochemical basis of glycogen storage diseases (Type Ia, Ib, II, III, V, and VI).	Glycogen Storage Diseases
Res-B-029	Describe the oxidative and non-oxidative phases of the pentose phosphate pathway and identify the major product of each phase.	Pentose Phosphate Pathway
Res-B-030	Identify the reactions of the pentose phosphate pathway that yield NADPH and explain its major cellular uses.	NADPH and Cellular Function
Res-B-031	Explain the biochemical basis of hemolysis in glucose-6-phosphate dehydrogenase (G6PD) deficiency.	G6PD Deficiency
Res-B-032	Compare the pentose phosphate pathway with glycolysis in terms of function and products.	Comparison: PPP vs Glycolysis
Res-B-033	Identify the effects of ETC inhibitors and uncouplers on electron transport and ATP synthesis, and discuss their implications for cellular energy production.	ETC: Inhibitors, Uncouplers, and Energy Production

PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-Ph-001	Classify drugs used in the management of cough as antitussives, expectorants, and mucolytics.	Cough and Its Management
	Classify and describe mechanism of action for drugs used in the management of cough as antitussives, expectorants, and mucolytics.	
Res-Ph-002	Describe the pharmacological strategies for the treatment of asthma.	Asthma
	Enumerate the drugs used for prophylaxis of asthma.	
	Classify the drugs used in the treatment of asthma.	
	Explain the mechanism of action, clinical uses, and side effects of β_2-adrenergic agonists used in asthma.	
	Describe the salient features and adverse effects of methylxanthines.	
	Explain the pharmacological effects of antimuscarinic drugs, mast cell stabilizers, and leukotriene inhibitors in asthma management.	
	Elaborate on the anti-inflammatory effects of corticosteroids in asthma.	
	Explain the pharmacological management of an acute asthma attack.	
Res-Ph-003	Recall the histamine receptor subtypes and describe their mechanisms of action.	Antihistamines
	Explain the pharmacological effects and potential indications of histamine.	
	Enumerate the different types of histamine antagonists.	
	Classify antihistamines.	
	Discuss the pharmacology of H_1 antihistamines with emphasis on clinical uses, adverse reactions, and drug interactions.	

	Differentiate between first- and second-generation H_1 antihistamines.	
Res-Ph-004	Describe the different types of tuberculosis.	Antitubercular Drugs
	Enumerate the first-line and second-line antitubercular drugs.	
	Explain the mechanism of action, clinical uses, and adverse effects of isoniazid and rifampicin.	
	Explain the mechanism of action, clinical uses, and adverse effects of ethambutol and pyrazinamide.	
	Enumerate the drugs and doses used for tuberculosis prophylaxis.	
	Describe the standard treatment regimen for new tuberculosis patients.	
	Enumerate the drugs used for resistant, MDR, and XDR tuberculosis.	
GENERAL PATHOLOGY & MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-Pa-001	Define upper respiratory tract Infections and lower respiratory tract Infections. Enlist various Respiratory tract Infections causing agents	Respiratory tract Infections
Res-Pa-002	Explain the oral health implications of upper respiratory tract infections.	Oral Implications of URTIs
Res-Pa-003	Classify pneumonias into viral, bacterial, and hospital-acquired types.	Pneumonia
	Explain the pathological features of pneumonias caused by human coronavirus.	
	Describe the oral health considerations in pneumonias caused by human coronavirus.	
Res-Pa-004	Describe the basic epidemiology and transmission of common bacterial respiratory tract pathogens. Explain the key virulence factors and general pathogenesis of *Streptococcus pyogenes*, *Streptococcus pneumoniae*, and *Haemophilus influenzae*.	Common Bacterial Respiratory Tract Infections

	Outline the clinical significance of *Streptococcus pyogenes*, including immune-mediated complications. Describe the basic principles of laboratory diagnosis of common bacterial respiratory infections. Discuss general preventive measures, including vaccination and infection control practices.	
Res-Pa-005	Differentiate between typical and atypical bacterial respiratory pathogens. Describe the epidemiology and modes of transmission of atypical respiratory bacteria. Explain the basic pathogenic mechanisms of *Mycoplasma pneumoniae*, *Legionella pneumophila*, and *Klebsiella pneumoniae*. Outline the general laboratory approaches used for identification of atypical respiratory pathogens. Discuss preventive strategies, including environmental and hospital-based infection control measures.	Atypical and Opportunistic Bacterial Respiratory Infections
Res-Pa-006	Describe the epidemiology and clinical importance of *Pseudomonas aeruginosa* as an opportunistic pathogen. Explain the major virulence factors and basic pathogenesis of *Pseudomonas aeruginosa*. Outline the general principles of laboratory diagnosis of *Pseudomonas* infections. Discuss the importance of infection control and prevention of hospital-acquired infections.	Hospital-Acquired and Opportunistic Infections
Res-Pa-007	Describe the epidemiology and transmission of *Mycobacterium tuberculosis*. Explain the basic pathogenesis of tuberculosis. Outline the concept of drug-resistant tuberculosis, including MDR-TB and XDR-TB. Describe the general principles of laboratory diagnosis of tuberculosis. Discuss preventive measures, including public health strategies and infection control.	Tuberculosis and Chronic Respiratory Infections
Res-Pa-008	Describe the epidemiology and modes of transmission of common viral respiratory infections. Explain the basic pathogenesis of Influenza virus and SARS-CoV-2.	Viral Respiratory Infections of Public Health Importance

	Outline the general laboratory methods used for diagnosis of viral respiratory infections. Discuss preventive strategies, including vaccination and standard infection control precautions.	
Res-Pa-009	Describe the epidemiology and transmission of measles and mumps viruses. Explain the basic pathogenesis of measles and mumps infections. Identify common oral and salivary gland manifestations associated with these viral diseases. Outline general laboratory diagnostic approaches for these viral infections. Discuss preventive measures, including immunization	Viral Diseases with Oral and Salivary Gland Involvement
Res-Pa-010	Describe general oral health considerations in patients with respiratory infections.	Dental Management in Respiratory Diseases
Res-Pa-011	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of of Corynebacterium diphtheriae	Corynebacterium diphtheriae
Res-Pa-012	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of of Influenza Virus	Influenza Virus
Res-Pa-013	Discuss the importance of seasonal flu vaccines.	Vaccines
Res-Pa-014	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of chlamydia pneumoniae	Chlamydia pneumoniae
Res-Pa-015	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of chlamydia psittaci	Chlamydia psittaci
Res-Pa-016	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of Q.fever	Q.fever bacillus anthrax Aspergillus.
	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of bacillus anthrax	
	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of Aspergillus.	
Res-Pa-017	Discuss the microbiological characteristics, disease spectrum, and brief diagnosis of dermatophytes	dermatophytes
Res-Pa-018	Discuss the microbiological characteristics, disease spectrum and brief diagnosis of histoplasma	histoplasma

Res-Pa-019	Discuss the microbiological characteristics, disease spectrum and brief diagnosis of Coccidioides, Blastomyces Paracoccidioides.	Coccidioides, Blastomyces Paracoccidioides.

PRACTICALS / LAB WORK		
PHARMACOLOGY & THERAPEUTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-Ph-005	Demonstrate the routes of administration for anesthetic agents and pre-anesthetic medications.	General and Local Anesthetics: Routes of Administration and Pre-anesthetic Medications
Res-Ph-006	Write an appropriate prescription for the management of asthma and status asthmaticus.	Drugs Used in Bronchial Asthma
Res-Ph-007	Write an appropriate prescription for the treatment of hay fever and allergic rhinitis.	Antihistamines and Antiallergic Drugs
Res-Ph-008	Write an appropriate prescription for the management of chronic cough.	Antitussives and Expectorants
Res-Ph-009	Write an appropriate prescription for the treatment of tuberculosis.	Antitubercular Drugs
HISTOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-A-003	Identify and illustrate the histological features of the trachea under light microscope	Trachea
GENERAL PATHOLOGY & MICROBIOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
Res-Pa-020	Perform Ziehl-Neelsen staining to identify acid-fast bacilli, and accurately interpret the microscopic findings for the diagnosis of *Mycobacterium tuberculosis*.	Ziehl-Neelsen staining and acid-fast bacilli (AFB)

Res-Pa-021	Perform and interpret the oxidase test to identify oxidase-positive organisms, specifically *Pseudomonas aeruginosa*, in a clinical microbiology setting.	Oxidase test and identification of *Pseudomonas aeruginosa*

BDS Integrated Curriculum 2K25
Version 2.0

Module No.22

DENTAL MATERIALS & PRE-CLINICAL DENTISTRY-III

MODULE RATIONALE

This module provides an integrated understanding of dental polymers, alloys, waxes, and investment materials, emphasizing their properties, manipulation, and clinical applications in restorative dentistry and prosthodontics. It combines material science with practical skills, including denture fabrication procedures, use of articulators, and tooth arrangement for complete dentures. The module also focuses on principles and techniques of Class II cavity preparation, appropriate material selection, and use of matrix systems to achieve optimal restorations. Overall, it aims to develop students' competence in both laboratory and clinical procedures, ensuring accurate, functional, and aesthetically acceptable patient outcomes.

MODULE OUTCOMES

- Describe the structure, classification, composition, properties and uses of dental polymers and polymerization reactions.
- Classify denture base materials and explain the composition, manipulation and processing of acrylic denture base polymers.
- Describe wrought alloys and relate the mechanical properties of stainless steel.
- Define and classify investment materials based on composition and application.
- Explain the principles of finishing and polishing.
- Classify waxes. Also discuss components, properties of dental waxes.
- Demonstrate the mixing of PMMA and MMA exhibiting five stages and identify different types of waxes.
- Describe the use of articulators for oral rehabilitation in prosthodontics.
- Demonstrate the tooth arrangement for upper and lower complete dentures according to five reference planes.
- Explain principles of Class II cavity preparation and selection of amalgam vs composite.
- Demonstrate proper Class II cavity preparation with ideal proximal box form.
- Apply appropriate matrix systems and wedges to achieve proper contour and contact.
- Restore and evaluate Class II restorations for contact, contour, marginal integrity, and occlusion.
- Analyze the functional behavior of dental hard and soft tissues and evaluate the potential of oral stem cells and regenerative therapies in supporting restorative and prosthodontic procedure.

SUBJECTS INTEGRATED IN THE MODULE

- Science of Dental Materials

- Operative Dentistry
- Prosthodontics
- Oral Biology and Tooth Morphology


Syllabus

THEORY		
ORAL BIOLOGY AND TOOTH MORPHOLOGY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-OB-001	Analyze the functional behavior of dental hard and soft tissues in relation to restorative and prosthodontic procedures.	Functional Biology of Dental Hard and Soft Tissues
DMPD3-OB-002	Discuss the potential of oral stem cells and regenerative therapies in supporting dental tissue repair and rehabilitation.	Oral Stem Cells and Regenerative Dentistry
PRE-CLINICAL PROSTHODONTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-PD-001	Define articulation	Articulators: Types and uses
	Comprehend the purpose of articulation	
	Define articulator and enlist its various types	
	Comprehend uses of plane line and semi adjustable articulator in tooth setup.	
OPERATIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-OD-001	Describe the principles of Class II cavity preparation, including indications, outline form, resistance and retention features, Principles and Steps of Class 2 instrumentation, and the rationale for each step in relation to tooth morphology and caries progression.	Principles and Steps of Class II Cavity Preparation
DMPD3-OD-002	Enlist steps of applying liners & bases in a prepared class II cavity.	Application of Liners and Bases in Cavity Preparation

DMPD3-OD-003	Enlist the features that indicate an occlusal high spot.	Identification of Occlusal High Spots
DMPD3-OD-004	Enlist the complications that may arise due to unadjusted occlusal high spots in restorations.	Complications of Unadjusted Occlusal High Spots in Restorations
DMPD3-OD-005	Define a matrix system and explain its role in Class II restorations.	Matrix system
	Enlist the components of a matrix system (matrix band, retainer, wedge).	
	Identify the types of matrix systems used in operative dentistry: • Tofflemire (Universal matrix) • Ivory matrix • Sectional matrix system (introductory level) • Automatrix system	
DMPD3-OD-006	Explain the functions of wedges in Class II restorations.	Wedges
	Discuss the consequences of improper matrix or wedge placement, such as: • Open proximal contacts • Gingival overhangs • Poor contour and marginal leakage	
DMPD3-OD-007	Describe the principles of class I compound cavity preparation for amalgam, indications, outline form, resistance and retention features.	Class I compound restoration with amalgam
DMPD3-OD-008	Describe the indications and case selection for Class II composite restorations.	Class II Composite Restorations
	Explain conservative cavity design principles for posterior adhesive restorations.	
	Describe principles of proximal box preparation and gingival margin management for class II cavity.	

SCIENCE OF DENTAL MATERIALS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-DM-001	Describe the structure and classification of polymers relevant to dental applications.	Dental Polymers
	Explain the composition, properties, and uses of polymers used in dentistry.	
DMPD3-DM-002	Differentiate between the various types of polymerization reactions, explaining their chemistry and mechanisms.	Polymerization
	Discuss the steps and factors influencing the polymerization reaction and its impact on material performance.	
	Classify denture base materials and explain the essential requirements for ideal denture base materials.	
	Explain the composition, manipulation and processing of acrylic denture base polymers and relate their properties to clinical performance.	
	Enumerate and demonstrate stepwise procedures for manipulation, processing, finishing and maintenance of acrylic denture.	
	Identify and describe alternative denture base materials with their advantages and limitations.	
	Define and differentiate self-cured, light-cued and heat-cured polymethyl methacrylate based on composition, polymerization and clinical application.	
	Identify and describe the physical stages of PMMA polymerization during cold cure processing.	
	Compare acrylic and porcelain teeth in terms of composition, bonding, esthetics and wear-resistance.	
	Justify the selection of artificial teeth based on occlusal requirements, esthetics and patient needs.	
DMPD3-DM-003	Identify and describe wrought alloys used in prosthodontic applications. Correlate the mechanical properties of stainless steel with its prosthodontic uses.	Wrought alloys
	Define annealing and describe its importance in modifying the properties of alloys after work hardening.	
DMPD3-DM-004	Classify the type of waxes used in dentistry according to their use as pattern, processing and impression waxes.	Waxes

	Explain ideal properties of dental waxes.	and Separating media
	Discuss the components, properties and applications of dental waxes.	
	Explain the ideal requirements for inlay wax.	
	Identify and classify the various separating media used in dental laboratory procedures.	
	Explain the purpose and mechanism of separating media in preventing material adhesion during processing.	
	Describe the composition, manipulation and clinical relevance of commonly used separating media.	
DMPD3-DM-005	Define investment materials and classify them based on composition and application.	Investment Materials
	Describe the components of gypsum-bonded, phosphate-bonded, and silica-bonded investment materials.	
	Explain the functions of investment materials in the dental casting process.	
	Define setting and thermal expansion in investment materials	
	Describe the desirable properties of dental investment materials.	
	Describe and sequence the steps in the dental casting procedure from pattern fabrication to finishing.	
	Identify different types and causes of porosity in dental castings.	
	Analyze the causes of common casting defects and suggest preventive measures.	
	Describe the design, types, and functions of sprue formers in dental casting.	
DMPD3-DM-006	Explain Principles of cutting, grinding, finishing and polishing.	Finishing and polishing
	Identify significance of finishing and polishing procedures.	

	Compare two body and three body wear.	
	Define abrasion, erosion and air abrasion technology	
	Enlist hazards of abrasive procedures	
	Enumerate different types of abrasives and their uses in dentistry	

PRACTICALS / LAB WORK		
PRE-CLINICAL PROSTHODONTICS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-PD-002	Construct occlusal rims on trial denture upper and lower base plates with appropriate dimensions and contours.	Fabrication of Occlusal Rims
DMPD3-PD-003	Mount upper and lower base plates with occlusal rims on semi-adjustable articulators.	Articulation of Base Plates with Occlusal Rims
DMPD3-PD-004	Arrange upper anterior teeth on the occlusal rim alignment as per the given 5 planes (Faciolingual, Mesiodistal, Occlusal plane, Ridge relation and Rotational curve)	Setup of Upper Anterior Teeth
DMPD3-PD-005	Arrange lower anterior teeth ensuring correct overbite and overjet as per the given 5 planes (Faciolingual, Mesiodistal, Occlusal plane, Ridge relation and Rotational curve)	Setup of Lower Anterior Teeth
DMPD3-PD-006	Arrange upper posterior teeth correctly on occlusal rims following alignment in all planes and anatomical guidelines.	Setup of Upper Posterior Teeth
DMPD3-PD-007	Arrange lower posterior teeth correctly on occlusal rims following alignment in all planes to create ideal occlusion, in maximum intercuspation.	Setup of Lower Posterior Teeth
DMPD3-PD-008	Perform wax finishing, carving, and festooning.	Wax-Up, Carving, and Festooning
DMPD3-PD-009	Demonstrate correct flasking and dewaxing procedures for processing complete dentures.	Flasking and Dewaxing of Complete Dentures
DMPD3-PD-010	Perform packing and curing of complete dentures using appropriate resin materials and curing cycles	Packing and Curing of Complete Dentures
	Perform denture finishing & polishing.	
OPERATIVE DENTISTRY		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-OD-009	Prepare Class II cavity on typodont for an amalgam restoration. (Maxillary and Mandibular molar)	Class II Cavity Preparation for

		Amalgam Restoration
DMPD3-OD-010	Place a matrix band correctly and stabilize it using a wedge to achieve proper gingival adaptation.	Matrix Band Placement
DMPD3-OD-011	Demonstrate correct wedge insertion technique (direction, size, and position) on a typodont.	Wedge insertion technique
DMPD3-OD-012	Apply liners & bases in a prepared cavity.	Application of Liners and Bases
DMPD3-OD-013	Restore a prepared Class II cavity on a typodont with dental amalgam, following standardized techniques of trituration, condensation, carving, and finishing.	Amalgam Restoration Technique in class II
DMPD3-OD-014	Assess the completed restoration for gingival overhangs, marginal adaptation, and proximal contact after removal of the matrix and wedge.	Assessment of completed restoration
DMPD3-OD-015	Prepare Class I compound cavity on typodont for amalgam (maxillary & mandibular molars).	Class I compound restoration with amalgam
DMPD3-OD-016	Perform quadrant isolation for posterior composite restorations using rubber dam on typodont. Prepare conservative Class II cavity on typodont for composite restoration. Select and place appropriate matrix systems and wedges for proximal restorations.	Cavity preparation for class II composite restoration
DMPD3-OD-017	Demonstrate adhesive protocol, including: • Etching strategy (total-etch/self-etch) • Primer and bonding application • Solvent evaporation and light curing Place composite using appropriate incremental techniques to minimize shrinkage stress and establish proper contour and contact.	Adhesion and composite restoration
DMPD3-OD-018	Finish and polish restorations while maintaining marginal integrity and anatomy. Evaluate and adjust occlusion to ensure proper functional contacts.	Finishing and Polishing

SCIENCE OF DENTAL MATERIALS		
CODE	**SPECIFIC LEARNING OUTCOMES**	**TOPIC**
DMPD3-DM-007	Differentiate between study casts, working casts, and refractory casts based on purpose and fabrication.	Waxes
	Identify and classify the different types of dental waxes used in dentistry based on their usage	
	Demonstrate the correct manipulation techniques for inlay and base plate waxes, applying them appropriately in laboratory procedures.	
DMPD3-DM-008	Demonstrate the mixing of polymer PMMA and monomer MMA to a doughy consistency exhibiting five stages sandy, stringy, doughy, rubbery and stiff for denture base fabrication.	Denture base materials


UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
Section-05
Curriculum 2025

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-02

PROFESSIONALISM		
Year	**Block**	**Learning Outcomes (LOs)**
II	IV	Demonstrate respect, integrity, accountability in group/clinical tasks/social media.
		Apply professionalism in simulated patient interactions
		Write structured reflections on professional experiences
		Demonstrate patient-centered communication in structured interviews
		Discuss simple ethical dilemmas
	V	Utilize effective communication techniques with dental patients while history taking.
		Develop rapport with patients using rapport building steps.
		Enhance emotional literacy in handling pediatric & adult dental patients.
	VI	Identify patients whose physical symptoms (in conditions like bruxism, TMJ issues, Muscle spasms, angina referral, etc.) may be stress-related and communicate this professionally and empathetically, offering appropriate initial management or referral.
		Develop coping strategies for managing stress in personal and professional life.
		Provide effective counseling to patients undergoing dental treatments.
		Develop therapeutic relationships with parents of pediatric dental patients.

RESEARCH		
Year	**Block**	**Learning Outcomes (LOs)**
II	IV	Formulate research questions (PICO/PECO)
		Select an appropriate research title
		Develop basic literature search strategy (databases, keywords)
		Conduct literature search in PubMed/Google Scholar
		Summarize research findings using a literature matrix
		Explain purpose and steps of a literature review
		Conduct a simple literature review on a selected topic
	V	Identify referencing styles & use referencing software (Vancouver)
		Submit structured literature review (portfolio task)
		Design the basic framework of an epidemiological study relevant to dental public health.
		Apply techniques such as randomization and blinding to minimize bias in studies.
	VI	Design and conduct a simple oral health survey following standardized steps.
		Describe data types, variables, statistical methods, sampling techniques, and present findings graphically
		Formulate clear, measurable research objectives for oral health research projects.
		Interpret and calculate various measures of data
		Correlate standard deviation with mean and the concept of normal distribution

INFORMATICS		
Year	**Block**	**Learning Outcomes (LOs)**
II	**IV**	Search academic databases & journals online
		Use Word advanced features & Excel basics
	V	Apply citation managers (Zotero/Mendeley/EndNote)
	VI	Describe plagiarism & academic integrity issues

SOCIAL RESPONSIBILITY, CULTURAL SENSITIVITY, ETHICS & JURISPRUDENCE		
Year	**Block**	**Learning Objectives**
II	**IV**	Practice communication skills with culturally diverse patients through role play
		Apply ethical principles in case-based discussions
		Describe basics of patient rights and informed consent
	V	Develop empathy and cultural competence.
		Manage patient anxiety during procedures
		Explore psychological responses to dental-related illnesses.
		Apply SPIKES protocol in delivering bad news.
		Maintain professional boundaries with patients.
		Manage patient expectations regarding dental procedures.
	VI	Educate patients on managing periodontal conditions.
		Set realistic expectations for dental treatments.
		Promote healthy oral behaviors in community.
		Apply palliative care principles.

MANAGEMENT & ENTREPRENEURSHIP		
Year	**Block**	**Learning Objectives**
II	V	Collaborate effectively with dental laboratory technicians to ensure accurate fabrication and timely delivery of restorative and rehabilitative appliances.
		Execute assigned tasks within time limits using planning strategies.
	VI	Identify errors and suggest improvements in lab or workflow.
		Demonstrate awareness of safety and quality measures in pre-clinical settings.

EVIDENCE BASED DENTISTRY		
Year	**Block**	**Learning Objectives**
II	IV	Describe and differentiate levels/types of evidence (systematic reviews, RCTs, cohort, case reports) and strengths/limitations
	V	Apply basic behavior-change models (e.g., Health Belief Model) to design patient education
	VI	Implement simple behavior-change strategies for routine dental problems (oral hygiene)
		Explain the basic principles of cognitive behavioral therapy (CBT) relevant to the management of dental anxiety.

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
02

Block IV	
1.	**Interpretation of baseline reports** Interpret CBC, LFTs, & RFTs reports.
2.	**Interpretation of coagulation profile** Interpret BT, CT, PT, APTT, and INR reports.
3.	**Patient Centered Communication** Apply patient-centered communication strategies and shared decision-making when managing medically compromised patients.
4.	**Communication in non-stigmatizing language** Communicate diagnosis, treatment modifications, and infection-control rationale in a non-stigmatizing manner.
5.	**Empathy & emotional intelligence** Apply empathy and emotional intelligence in patient interaction role plays.

Block V	
1.	**History Taking** Demonstrate the process of history taking for dental caries, including eliciting relevant risk factors, symptoms, and patient concerns.
2.	**Tooth Charting and Numbering** Accurately chart and record teeth using different dental numbering systems (Universal, FDI, Palmer) in diagrams.
3.	**Fluoride Application** Perform topical fluoride application on a typodont, or phantom head.
4.	**Patient and Operator Positioning** Demonstrate correct patient and operator positioning for extraoral and intraoral examination.
5.	**Extraoral Examination** Perform extraoral examination of the face & neck (inspection, palpation, lymph node check) on a simulated patient or peer.
6.	**Intraoral Examination** Demonstrate intraoral examination techniques using a mouth mirror, explorer, and probe on a typodont or peer.
7.	**Plaque Disclosure Technique**

	Demonstrate correct application of disclosing agent and record plaque distribution accurately.

Block VI	
1.	**Waste Disposal in Dentistry** Identify color codes, segregation, and uses of biomedical waste disposal in dental practice according to infection-control protocols.
2.	**Sterilization & Disinfection** Demonstrate understanding and application of sterilization and disinfection protocols to ensure infection control in the clinical setting.
3.	**Needle Stick Injury** Identify and explain the standard protocol to be followed after a needle stick injury in a dental setting.
4.	**Prescription Writing** Write accurate and complete dental prescriptions, adhering to legal, ethical, and pharmacological principles.
5.	**Measurement of Respiratory Rate** Identify normal physiological range for respiration, measure respiratory rate, and recognize abnormal breathing patterns.
6.	**Inhaler and Spacer Use** Demonstrate correct technique for using an inhaler or spacer and counsel patients on proper usage for effective drug delivery.

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	


UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
Section-06
Curriculum 2025


Curriculum 2K25
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 Medical 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 Medical Education needs to play the integral role in the implementation and adoption of **BDS Integrated Curriculum 2K25** *version 1.0*.
- DDE will be overall responsible for the spirals of PERLs & 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


UNIVERSITY OF HEALTH SCIENCES LAHORE
UHS
Section-07
Curriculum 2025


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 Year-2							
Subject	**Theory**		**Practical**				**Total**
Block IV	Cariology II – 18 MCQs	120 Marks	Practical/ Clinical Examination	08 OSPE (09 marks each)	08 Stations x 09 = 63 Marks	120 Marks	**300**
	Community Dentistry & Public Health-I - 27 MCQs						
	Dental Materials & Pre-Clinical Dentistry-I – 45 MCQs			08 OSVE (06 marks each)	08 Stations x 06 = 48 Marks		
	Hepatorenal - 28 MCQs						
	PRISME - 02 MCQs						
	Internal Assessment 10%		Internal Assessment 10%				
Block V	Endocrinology - 22 MCQs	120 Marks	Practical/ Clinical Examination	08 OSPE (09 marks each)	08 Stations x 09 = 63 Marks	120 Marks	**300**
	Occlusion-II – 20 MCQs						
	Community Dentistry & Public Health-II – 30 MCQs			08 OSVE (06 marks each)	08 Stations x 06 = 48 Marks		
	Dental Materials & Pre-Clinical Dentistry-II – 46 MCQs						
	PRISME - 02 MCQs						
	Internal Assessment 10%		Internal Assessment 10%				
Block VI	Craniofacial-III – 37 MCQs	120 Marks	Practical/ Clinical Examination	08 OSPE (09 marks each)	08 Stations x 09 = 63 Marks	120 Marks	**300**
	Respiration – 35 MCQs						
	Dental Materials & Pre-Clinical Dentistry-II – 46 MCQs			08 OSVE	08 Stations x 06 = 48 Marks		

	PRISME - 02 MCQs			(06 marks each)			
	Internal Assessment 10%		Internal Assessment 10%				
Total Marks:							**900**

Note:

- The time allotted for theory exam shall be 130 minutes.
- Time for each OSPE/ OSVE station will be six (06) minutes
- No grace marks shall be allowed in any examination or practical under any guise or name.

BDS 2nd Year, BLOCK-04								
Sr. No.	Written Exam				Oral/Practical exam			Total
	Modules	Subjects	No. of MCQs	Total MCQs	Subjects	OSPE/ OSCE (9 marks)	OSVE (6 marks)	
1	Cariology-II	Oral Biology & Tooth Morphology	12	18	Oral Biology & Tooth Morphology	-	01	06
2		Oral Pathology	03		Oral Pathology/ Oral Medicine	-	01	06
3		Operative Dentistry	02		Operative Dentistry	01	01	15
4		Oral Medicine	01		Community & Preventive Dentistry	01	01	15
5	Community Dentistry & Public Health-I	Community & Preventive Dentistry	11	27	Behavioral Sciences	01	01	15
6		Behavioral Sciences	16		Prosthodontics	01	01	15
7	Dental Materials & Pre-Clinical Dentistry-I	Operative Dentistry	10	45	Science of Dental Materials	01	01	15
8		Prosthodontics	10		Biochemistry	-	01	06
9		Science of Dental Materials	25		Pharmacology & Therapeutics	01	-	09
10	Hepatorenal	Physiology	07	28	PRISME	01	-	09
11		Biochemistry	09		CFRC	01	-	09
12		General Pathology & Microbiology	06		-	-	-	-
13		Oral Medicine	01		-	-	-	-
14		Behavioral Sciences	03		-	-	-	-
15		Pharmacology & Therapeutics	02		-	-	-	-
16	PRISME		02	02	-	-	-	-
Total				120	Total	8 OSPE= 72 marks	8 OSVE= 48 marks	120

BDS 2nd Year, BLOCK-05								
Sr. No.	Written Exam				Oral/Practical exam			Total
	Modules	Subjects	No. of MCQs	Total MCQs	Subjects	OSPE/ OSCE (9 marks)	OSVE (6 marks)	
1	Endocrinology	Physiology	10	22	Physiology	-	01	06
2		Biochemistry	6		Biochemistry	-	01	06
3		General Pathology & Microbiology	3		Oral Biology & Tooth Morphology	01	01	15
4		Pharmacology & Therapeutics	3		Prosthodontics	01	01	15
5	Occlusion-II	Oral Biology & Tooth Morphology	13	20	Community & Preventive Dentistry	01	01	15
6		OMFS	2		Behavioral Sciences	01	01	15
7		Periodontology	2		Operative Dentistry	01	01	15
8		Prosthodontics	2		Science of Dental Materials	01	01	15
10		Orthodontics	1		PRISME	01	-	09
11	Community Dentistry & Public Health-II	Community & Preventive Dentistry	11	30	CFRC	01	-	09
12		Behavioral Sciences	19		-	-	-	-
16	Dental Materials & Pre-Clinical Dentistry-II	Operative Dentistry	11	46	-	-	-	-
17		Prosthodontics	10		-	-	-	-
18		Science of Dental Materials	25		-	-	-	-
19	PRISME		02	02	-	-	-	-
Total				120	Total	8 OSPE= 72 marks	8 OSVE= 48 marks	120

BDS 2nd Year, BLOCK-06								
Sr. No.	Written Exam				Oral/Practical exam			Total
	Modules	Subjects	No. of MCQs	Total MCQs	Subjects	OSPE/ OSCE (9 marks)	OSVE (6 marks)	
1	Craniofacial III	Anatomy	14	37	Anatomy	1	1	15
2		Oral Pathology	2		Oral Pathology	-	1	6
3					Pharmacology		1	6
4		General Pathology & Microbiology	13		Physiology	-	1	6
5		Pharmacology & Therapeutics	7		General Pathology & Microbiology	1	1	15
6		Community & Preventive Dentistry	1		Operative Dentistry	1	1	15
7	Respiration	Anatomy	2	35	Prosthodontics	1	1	15
8		Physiology	11		Science of Dental Materials	2	1	24
9		Biochemistry	13		PRISME	1	-	9
10		General Pathology & Microbiology	6		CFRC	1	-	9
11		Pharmacology & Therapeutics	3		-	-	-	-
12	Dental Materials & Pre-Clinical Dentistry-III	Oral Biology & Tooth Morphology	2	46	-	-	-	-
13		Operative Dentistry	12		-	-	-	-
14		Prosthodontics	10		-	-	-	-
15		Science of Dental Materials	22		-	-	-	-
16	PRISME		02	02	-	-	-	-
Total				120	Total	8 OSPE= 72 marks	8 OSVE= 48 marks	120

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 %


UNIVERSITY OF HEALTH SCIENCES LAHORE
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Section-08
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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	6. Guyton & Hall. Textbook of Medical Physiology (14th ed.). 7. 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).
General 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)
Prosthodontics	1. McCracken's Removable Partial Prosthodontics (13th Edition) 2. Boucher's Prosthodontic Treatment for Edentulous Patients (12th Edition)
Orthodontics	1. Proffit's Contemporary Orthodontics (6th Edition)
Science of Dental Materials	1. Philips Science of Dental Materials (12th Edition) 2. McCabe Applied Dental Materials (15th 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 Medical 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**