MUHAMMAD DENTAL COLLEGE

CONSOLIDATED
INTEGRATED CURRICULUM DOCUMENT
BDS PROGRAM
2024-2025

ABBREVIATIONS	
BCQs	**Best Choice Questions**
BST	**Bedside Teaching**
CBL	**Case-Based Learning**
CC	**Curriculum Committee**
CR	**Clinical Rotation**
C-FRC	**Clinical Skills Foundation Rotations**
CPC	**Clinical Pathological Conference**
CQ	**Class Quiz**
CR	**Class Representation**
CME	**Continuous Medical Education**
DSE	**Directed Self-Learning**
HO	**House Officers**
HOD	**Head of Department**
HEC	**Higher Education Commission**
LGIT	**Large Group Integrated Teaching**
MIT	**Modes of Information Transfer**
OSPE	**Objective Structured Practical Examination**
OSCE	**Objective Structured Clinical Examination**
OSVE	**Objective Structured Viva Examination**
PBL	**Problem Based Learning**
PERLs	**Professionalism, Ethics, Research Leadership Skills**
PMP	**Patient Management Problem**
PSIL	**Problem Solving Integrated Learning**
PM&DC	**Pakistan Medical & Dental Council**
PW/Lab	**Practical work**
QEC	**Quality Enhancement Cell**
SS	**Self Study**
SL	**Skills Lab**
SGD	**Small Group Discussion**
SIM	**Simulation**
SEQs	**Short Essay Questions**
UHS	**University of Health Sciences**
TBL	**Team-Based Learning**
WBT	**Ward-Based Teaching**
WPBA	**Work-Place Based Assessment**

PREAMBLE

Muhammad Dental College is located just outside Mirpurkhas (6 km from Zero point) on Hyderabad Road. This is opposite Ratanabad Railway Station near the main bus stand. It spreads over 40 acres owned by the Muhammad Foundation Trust for its projects. All necessary facilities, including building, gas, electricity, telephone, and e-mail. Internet, transport, accommodation, food, and drink spots are available. Public transport operating along the Hyderabad road provides frequent and regular access to the college. The college building is more than sufficient to the requirements and has all the necessary departments. Each department has its own museum, laboratory, and tutorial room, which are well-equipped and fascinating. All facilities are modern and up-to-the-mark. Students will get clinical training at the 540-bedded hospital at Muhammad Medical College Hospital, Mirpurkhas, on campus, and the facility of 120 beds at the Muhammad Medical College Hospital, Mirpurkhas City campus. There are hostels for boys and girls on-site and in the city. A new, large state-of-the-art 3-story girls' hostel has just been established on-site

The word curriculum comes from the Latin word curare, which means "racecourse." It is, to put it simply, the study path. "Planned educational experience or activity" is the definition of it in medical education.

The idea of a curriculum is as fluid as societal transformations. Curriculum is understood narrowly to be nothing more than a list of subjects that need to be taught in a classroom. Broadly speaking, it encompasses people's whole educational journeys, both inside and outside of institutions. Numerous curriculum approaches exist, including competency based, problem-based, outcome-based, discipline-based, integrated, and apprenticeship programs.

Globally, the idea of the Integrated Medical Curriculum is gaining traction. With an integrated medical curriculum, students will receive clinical experience in addition to scientific information, allowing them to study the subject matter by theme rather than by specialty.

Dismantling the existing boundaries that exist between the clinical and basic sciences in the context of the Traditional Medical Curriculum is the aim of integration. Through the iterative and progressive development of concepts and their application, integration should support the retention of knowledge and the learning of skills.

In order to provide a more comprehensive understanding of how to teach and learn medicine, vertical integration should incorporate not only the basic and clinical sciences but also the socio-humanistic and population health sciences. "Education that is organized so that it cuts across subject matter lines, bringing various aspects of the curriculum into meaningful association to focus upon broad areas of study" is what is meant to be understood by an integrated curriculum.

The conventional medical curriculum suggests that before moving on to clinical sciences, students should first study basic and paraclinical/biomedical sciences; however, this is not how patients present in real-world situations. This approach is frequently criticized for failing to show students how basic and biological sciences relate to clinical practice; instead, it is thought that students should be encouraged to think like doctors from the moment they enroll in medical school. Because basic science education is placed in the context of clinical and professional practice, students view it as being more meaningful and relevant. For this reason, integration is crucial to medical education.

Parts of both integrated and traditional curricula are applied in a learning environment in a hybrid medical curriculum.

More than 90% of schools and medical universities took part in a recent poll sponsored by PM&DC, and the majority (65%) still follow traditional or subject-based curricula with little to no horizontal or vertical integration. 25% of schools use an integrated curriculum, while the remaining 75% use a hybrid. The majority

of proponents of the traditional, subject-based curriculum are open to switching to an integrated modular curriculum; however, they would want a grace period and university support.

Based on data from multiple meta-analyses (1-4), senior medical educators' opinions from every province, and feedback from AJK, CAC is agreed that integrated curricula are more beneficial than traditional ones and are well-liked by faculty and students. The teaching innovation has been well-received by both faculty and students. Consequently, it is now appropriate to formally introduce the integrated medical curriculum. It is suggested that medical and dental schools and universities transition to an integrated curriculum, finishing the process by 2025 to ensure full implementation for the 2026 class.

Integration is now acknowledged as a crucial teaching tactic in the education of medical students. PMDC & LUMHS support ongoing curriculum revision by routinely reviewing and gathering input from stakeholders. A minimum level of integration in MBBS, known as correlation, has been included to this new curriculum. This curriculum improves health and avoids disease and is outcome-based, patient-centered, and relevant to the community. In cooperation with the MMC Department of Medical Education and the LUMHS Academic Directorate, the faculty of fundamental and clinical medical sciences has amended it.

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Prof Dr Syed Razi Muhammad
Chancellor
Ibne-Sina University
Mirpurkhas

STANDARD 1: MISSION STATEMENT OF MDC & VISION OF ISUM & LUMHS

1.1: MISSION STATEMENT OF MOHAMMAD DENTAL COLLEGE

Nurturing students' potential by providing them with the highest quality education, thereby producing individuals with strong values, compassion, **inclusiveness, leadership** and professionalism, emphasizing community engagement, particularly with marginalized segments of the rural population, encouraging students to become empathetic and socially responsible professionals by training them in the best evidence- based practice, capable of contributing to advancements through research and innovation.

1.2: VISION OF ISUM

To be an internationally recognized institution, famous for its ethical work, emphasizing the importance of integrity, honesty and moral principles, highlighting the University's commitment to serving the community and producing unbiased and empathetic educated people, **who are inclusive and have leadership skills**, encouraging them to engage in research, critical thinking, innovation and evidence- based best practices.

1.3: VISION OF LIAQUAT UNIVERSITY OF MEDICAL AND HEALTH SCIENCES (LUMHS)

Liaquat University of Medical and Health Sciences (LUMHS) seek to be a top-tier healthcare Institution, producing ingenious academic leaders, medical researchers, and health care advocates to serve global community.

STANDARD-2: BDS PROGRAM OUTCOME

By the end of the four years of the BDS program at MUHAMMAD DENTAL COLLEGE (aims to produce dental graduates who can:

- Demonstrate appropriate basics knowledge of medical and dental sciences.
- Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking.
- Recognize patients with special care and perform dental emergencies having good communication skills.
- Engage in research activity aimed at improving of quality of health care including behaviour modification of individuals and communities for quality life
- Elicit professional skills while providing patient centered care by relevant and comprehensive physical and dental examination.
- Commit to lifelong learning to keep up to date with developments in dental practice and trends in disease at the population level by strong leadership and management skills.
- To exhibit ethical patient-centred care based on integrity, humility, social accountability and high ethical values of this sacred profession

MUHAMMAD DENTAL COLLEGE (MDC)

3.1: ALIGNMENT OF ISU VISION WITH MDC MISSION

ALIGNMENT OF ISU VISION WITH MDC MISSION AND BDS PROGRAM OUTCOME

ALIGNMENT OF BDS PROGRAM OUTCOME WITH KNOWLEDGE, ATTRIBUTE AND SKILLS

ISU Vision	MDC Mission		Program Outcomes	Blooms Taxonomy	PMDC'S 7 STAR DOCTOR
Internationally Recognized Institute	**Highest quality education**		1. Demonstrate appropriate basic knowledge of medical sciences and dental sciences.	Cognitive, Affective, Psychomotor	Care Provider. Decision Maker.
Famous for Ethical Work	**Producing individuals with strong values**		2. To exhibit ethical patient centered care based on integrity, humility, social accountability and high ethical values of this sacred profession	Cognitive, Affective, Psychomotor	Care Provider.
Importance of Integrity, Honesty, Moral Principles	**Compassion,** inclusiveness, leadership	**Professionalism**	3. Recognise patient with special care and perform dental emergencies having good communication skills	Cognitive, Affective, Psychomotor	Care Provider. Communicator.
Commitment to Serving the Community	**Emphasizing community engagement**	**Marginalised segment of rural population**	4. Engage in research activity aimed at improvement of quality of health care including behaviour modification of individual and community for quality life.	Cognitive, Affective, Psychomotor	Community Leader. Communicator. Decision Maker. Manager.
Producing Unbiased and Empathetic Educated People	**Become Empathetic**				
Engaged in Research	**Contributing to advancements through research**				
Critical Thinking	**Socially responsible professionals**		5. Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision making by critical thinking.	Cognitive, Affective, Psychomotor	Researcher. Lifelong learner.
Innovation	**Training**	**Innovation**	6. Commit to lifelong learning to keep up to date with developments in dental practice and trends in disease at population level by strong leadership and management skills.	Knowledge, Attitude, Skills	Researcher. Lifelong learner.
Evidence Based Best Practices	**Best Evidence-Based Practice**		7. Elicit professional skills while providing patient centered care by relevant and comprehensive physical and dental examination.	Cognitive, Affective, Psychomotor	Decision Maker. Manager.

OPERATIONAL DEFINITIONS

1. **TRADITIONAL CURRICULUM:** Pakistan is among the countries where certain medical schools still use the old discipline-based curriculum. It is not until the third year of their medical degree that students are introduced to clinical instruction or patients. The curriculum for the first two years of medical school is entirely devoted to basic sciences. It is common practice to teach the first two years in a didactic, discipline-based manner.
   The earliest form of education is a discipline-based curriculum that does not attempt to teach the fundamental sciences in a clinical setting.
2. **INTEGRATED CURRICULUM:** It is described as combining and arranging the various components to create a brand-new curriculum. When learning is provided within a framework and is organized into blocks or units that correspond to body systems, individual departments, or subject areas make meaningful, holistic contributions to the development and delivery of learning. This is known as horizontal integration.
   Information from all of the curriculum phases is taught simultaneously in vertical integration, with an emphasis on major ideas or themes that are covered year-round and require knowledge to be revisited. Alongside the fundamental sciences, therapeutic skills are introduced early and developed.

3. **HYBRID CURRICULUM:** The program blends didactic coursework with clinical rotations to provide students with the skills they need to become competent and good doctors. It includes both conventional teaching methods and some integration. It seems more practical for underdeveloped nations.
4. **COMPETENCY-BASED MEDICAL EDUCATION (CBME):** CBME is a physician training approach that focuses on achieving specific, measurable skills and abilities rather than simply completing a set amount of time in training.
    - It emphasizes the continuous development of competencies, often using frequent, low-stakes assessments and feedback, and a learner-centered model where progression is based on demonstrated competence rather than time spent.

Key principles of CBME

- **Focus on outcomes:** CBME is an outcomes-based approach that designs curricula around the abilities physicians need to have, derived from the needs of society.
- **Shifts from time-based to competency-based progression:** In a traditional model, learners progress after a fixed period. In CBME, learners progress at their own pace based on their demonstrated abilities, making training more flexible and tailored to individual needs.
- **Emphasis on coaching and feedback:** CBME integrates frequent, real-time feedback and coaching into daily clinical work, providing more timely and task-specific guidance compared to traditional, time-based assessments.
- **Use of Entrustable Professional Activities (EPAs):** EPAs are work-based assessments that allow for the explicit documentation of a resident's completed tasks and provide more data points for understanding a learner's abilities.
- **Promotes learner-centeredness:** The curriculum provides clear goals and milestones, allowing learners to manage their own development and engagement actively.

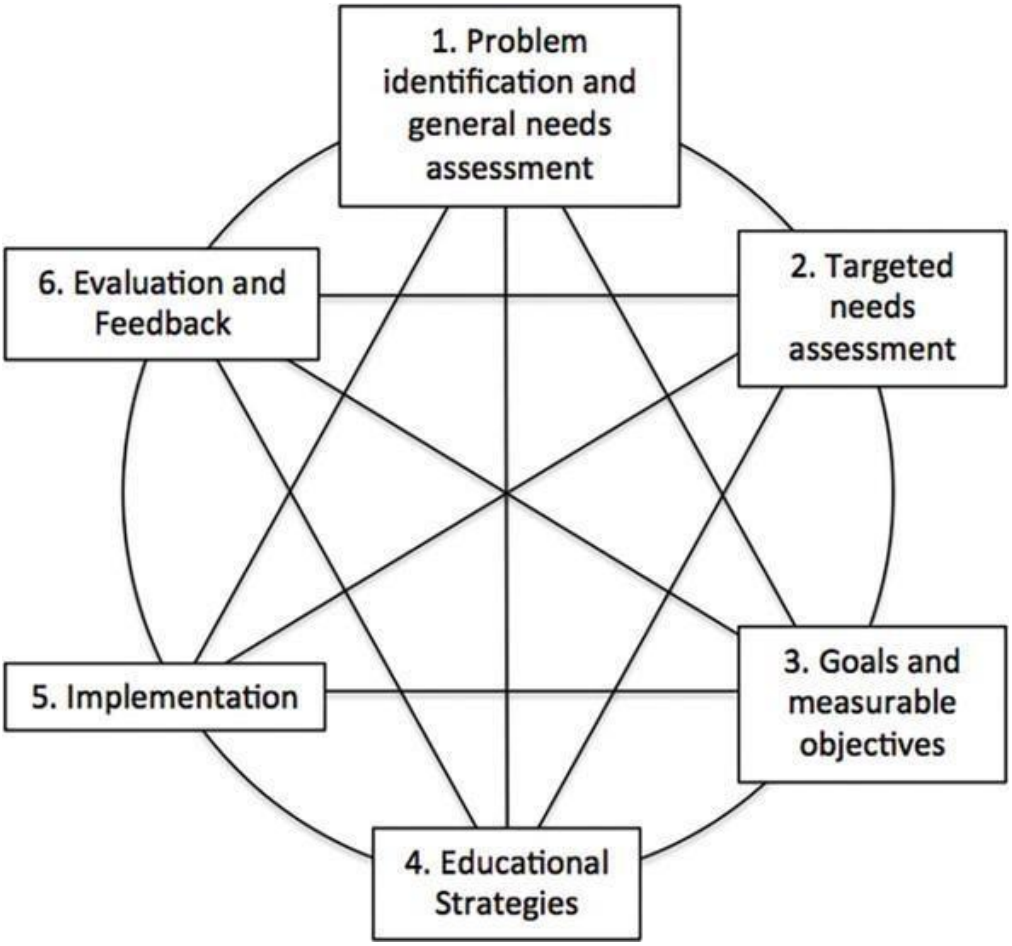
Benefits of CBME

- **More visible and measurable training:** It makes the process and outcomes of training more transparent and easier to assess.
- **Clearer expectations:** EPAs clearly communicate the expectations for each task, helping to improve understanding of a resident's abilities.
- **More data points for assessment:** The frequent, low-stakes assessments provide more data points for each rotation, allowing for a more comprehensive view of a learner's progress.

5. **Greater efficiency:** Tailoring the training to the individual's needs can make the overall educational process more efficient and engaging

STANDARD 4: GUIDELINES FOR CURRICULUM DEVELOPMENT

The guidelines for the development of the Comprehensive Curriculum framework at Ibn-E-Sina University Mirpurkhas, are based on the following six headings as depicted below.



The Sina University is introducing a modular integrated undergraduate curriculum for its constituent and affiliated medical colleges in order to fulfill its mission of producing a seven-star physician with the generic competencies of "Skillful, Knowledgeable, Community Health Promoter, Critical Thinker, Professional, Scholar, Leader, and Role Model." These competences are further defined by a variety of enabling attributes that include attitude, knowledge, and abilities. The Kern's approach for developing medical curriculum serves as the foundation for both our curriculum development process and concept.

Encouraging students to think like doctors from the moment they enroll in medical school is the goal of the integrated modular curriculum. The vertical integration strategy broadens the idea of how to teach and study medicine by situating behavioral sciences and basic scientific education within the framework of clinical and professional practice. Content overlap across multiple subjects slows down the formation of concepts and makes people less eager to study. This needs to be reduced via an integrated strategy. An additional element that promotes the importance of information acquisition in formal undergraduate settings is the availability of knowledge. Core ideas and the "must know" principles for a student are given priority in these calibrations and refinements made possible by an integrated approach.

STEP 4.1: PROBLEM IDENTIFICATION AND GENERAL NEED ASSESSMENT

Muhammad Dental College (MDC) is a vibrant Institute that strives to meet all international health standards and is always developing to incorporate new and cutting-edge approaches. The practice of incorporating both local demands and international standards into the curriculum is known as contextualization. It guarantees that the curriculum satisfies both international standards and the needs of the local community.

Contextualization is crucial for health professionals because it makes students more ready for the real world, where they will be offering healthcare services to a variety of people.

When making a curriculum, leaders and experts must think about what people need locally and also what the global standards are. They must do this at the same time. Muhammad Medical College engaged medical educators and subject matter professionals to accomplish this. The university intends to solicit feedback from all relevant local parties. This will assist in making sure the program satisfies the requirements as they stand right now.

Contextualization is necessary in Pakistan, where the curriculum is still based on an antiquated discipline, to make sure that it meets the needs of the community. Due to the nation's particular healthcare issues, including the high prevalence of infectious diseases, malnutrition, and maternal and child mortality, in addition to socioeconomic concerns, contextualization is clearly needed while developing curricula in Pakistan. A customized approach to medical education is necessary due to the high burden of both communicable and non-communicable diseases, the scarcity of healthcare resources, and the diversity of cultures and languages.

Graduate students' performance is probably going to improve with the curriculum contextualization. Through the integration of foundational and clinical disciplines, early clinical orientation, and the development of a contextual understanding of learning through a practical approach, graduates will be more equipped to handle health issues in their local communities. This will raise their level of proficiency, self-assurance, and capacity to offer varied populations high-quality healthcare services.

In the past, the curriculum was constantly increased to cover more ground and develop more skills. But today's social consciousness, legal obligations, growing responsibility, and community relations demanded that the young learners receive categorically structured instruction in the "affective" domain. When creating a special "spiral" for the emotional training, this viewpoint was also maintained. In order to guarantee the training of this field and establish its objective nature, the spiral of "PERLs" will also undergo evaluation.

Ultimately, the most important foundation for any curriculum's success is "student centeredness," which was ingrained in the delivery method. Students will have more control over their education with the introduction of problem-based learning and its components, such as "Electives," self-directed learning sessions, and portfolio construction.

Learning is a lifelong process for Tomorrow’s Doctor. Learning and training in Medicine have different periods as formal/undergraduate/foundation education is articulated in the Curriculum.

STEP 4.2: TARGETED NEED ASSESSMENT

The Curriculum Document of Muhammad Dental College (MDSC) Program is addressing the content provided by the accreditation/regulator bodies, such as Pakistan Medical & Dental Council (PM&DC) & Higher Education Commission (HEC). This document is developed to guide dental undergraduates who are capable to provide quality and competent healthcare to the patients by addressing the needs of society.
The graduate program of MBBS was initiated in 1999 and the curriculum is merged in the study guides of every year, which is provided to every student and the teaching faculty of the respective year. The study guide will be revised every year according to need. The curriculum highlighted integration of the disciplines in a horizontal & vertical manner. Integration is what is needed by the graduate to function competently in real-world practice settings.
The curriculum document of MBBS graduate program addresses the elements mentioned in the document of the Pakistan Medical & Dental Council (National Accreditation Framework for Medical and Dental Schools in Pakistan 2019) & standards/framework/Guideline for the development of Competency-Based Medical education. This document expressed the quality standards for accreditation of Medical and Dental Colleges in Pakistan such as vision and mission statement of the Institute which should be reflected in the outcome of the extended MBBS Program, Curricular Organization, Educational Content, Curriculum Management, Assessment Plan, Student Awards, Faculty Development, Program Evaluation and Continuous Renewal, Governance Services and Resources and Research and Scholarship.
The syllabus/educational content that needed to be covered during the five years of the MBBS program was provided by PMDC as well as the number of hours each subject needed to be taught. Guidance was sought from the Pakistan Medical & Dental Council & LUMHS in this regard and the University's proposal of curricular review was endorsed by both bodies.

The curriculum document of Muhammad Medical College (MMC) is developed according to the syllabus provided by the Liaquat University of Medical and Health Sciences (LUMHS) which was initially traditional based. LUMHS has introduced integrated Modular Curriculum for the first time in 2021 for First Year MBBS & BDS. This was the start of the needs assessment process as per PMDC standards. The curriculum of MMC & MDC is hybrid curriculum which is the combination of traditional and integrated curricula implemented as modular in the learning environment of MDC. Hopefully, with the passage of time, this document will prove to be the step ahead in continuing curricular reforms in medical and dental colleges of our country as it is an imperative step which is needed to be taken to produce graduates who can accomplish what society demands from them, that is quality patient care.

The curriculum document of MDC is developed according to the syllabus provided by the Liaquat University of Medical and Health Sciences (LUMHS) which was initially traditional based. LUMHS has introduced integrated Modular Curriculum for the first time in 2021 for First Year BDS. This was the start of the needs assessment process as per PMDC standards. The curriculum of MDC is hybrid curriculum which is the combo of traditional and integrated curriculum implemented as modular in the learning environment of MDC. Hence, curricular committee was developed and comprised of principal Dental (MD C), all subject specialists and Medical Educationists to suggest methodologies to cultivate a curriculum. Various learning strategies were incorporated such as interactive lectures, tutorials, case-based learning, PBLs, self-directed learning and directed self-learning. All teaching strategies are interactive & small group format. In addition, non-formal experiential learning for student is promoted by CME. All this has been structured taking into account the Best Evidence Based Medical Education literature and our local culture and context. Moreover, the Electives are not part of the curriculum. Students can avail electives whenever he/she has completed the Academic Contact Session and during vacations. PERLs (Professionalism, Ethics, Research and Leaderships Skills) are part of the Curriculum and will be taught in every year.

No transformation is possible without the involvement of a dedicated faculty and staff, which took on the task with unfathomed zeal and through their efforts, the outcomes which initially were thought to be a dream took on the shape of reality.
Hopefully with the passage of time this document will prove to be the step ahead in continuing curricular reforms in medical and dental colleges of our country as it is an imperative step which is needed to be taken to produce graduates who can accomplish what society demands from them that is quality patient care.

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STEP 4.3: GOALS AND OBJECTIVES: COMPETENCIES REQUIRED IN A DENTIST TO BE ACHIEVED AT THE UNDERGRADUATE LEVEL
STANDARDS OF SEVEN STARS COMPETENCIES

The goal of creating a medical curriculum is to create skilled, compassionate, and effective medical professionals who can offer patients high-quality care. A modular integrated curriculum that synchronizes the BDS program results with the nationally designated seven-star doctor competencies has been developed in order to accomplish this goal.
The following are the anticipated general competencies for a medical/dental graduate:

1. **Skillful**
2. **Knowledgeable**
3. **Community Health Promoter**
4. **Critical Thinker**
5. **Professional**
6. **Scholar**
7. **Leader and Role Model**

"A seven-star physician" A Pakistani medical graduate ought to exhibit the different qualities listed under each competency. These qualities are the absolute necessities.
The program's results are comparable to those that the country's regulatory bodies have processed for BDS graduates up to this point. These seven-star competencies are translated into the session-specific learning objectives by the curriculum outcomes.
A Pakistani medical graduate who has become a "seven-star doctor" is supposed to exhibit a range of qualities within each competency, according to the national regulating authorities. These characteristics are deemed necessary and need to be demonstrated by the person both personally and professionally.

A 'seven-star doctor' Pakistani medical/dental graduate should be able to demonstrate various traits as detailed under each competency. These attributes are minimum and not exhaustive by any means.

I. **Skills:** *Under Graduates must be competent to:*

1.1 Apply appropriate interpersonal and communication skills.
1.2 Apply psycho-social and behavioral principles in patient-centred health care.
1.3 Communicate effectively with individuals from diverse populations.
1.4 Well versed with basic dental morphology and application of dental materials

II. Knowledgeable:

A. Assessment, Diagnosis, and Treatment Planning: *Undergraduates must be competent to:*

2.1 Manage the oral health care of the infant, child, adolescent, and adult, as well as unique needs of women, geriatric, and special needs patients.
2.2 Identify, prevent, and manage trauma, oral diseases, and other disorders.
2.3 Obtain and interpret patient / medical data, including a thorough intra/extra oral examination, and use these findings to accurately assess and manage patients.

2.4 Select, obtain, and interpret diagnostic images for the individual patient.
2.5 Recognize the manifestations of systemic disease and how the disease and its management may affect the delivery of dental care.
2.6 Formulate a comprehensive diagnosis, treatment, and/or referral plan for the patients.

B. Establishment and Maintenance of Oral Health: *Under Graduates must be competent to:*
2.7 Utilize universal infection control guidelines for all clinical procedures.
2.8 Prevent, diagnose, and manage pain and anxiety in the dental patient.
2.9 Prevent, diagnose temporo-mandibular joint disorders.
2.10 Prevent, diagnose, and manage periodontal diseases.
2.11 Develop and implement strategies for the clinical assessment and management of caries.
2.12 Manage restorative procedures that preserve tooth structure, replace missing or defective tooth structure, maintain function, are esthetic, and promote soft and hard tissue health.
2.13. Diagnose and manage developmental or acquired occlusal abnormalities.
2.14 Manage the replacement of teeth for the partially or completely edentulous patient.
2.15 Diagnose, identify, and manage pulpal and peri-radicular diseases.
2.16 Diagnose and manage oral surgical treatment needs.
2.17 Prevent, recognize, and manage medical and dental emergencies.
2.18 Recognize and manage patient abuse and/or neglect.
2.19 Recognize and manage substance abuse.
2.20 Evaluate outcomes of comprehensive dental care.
2.21 Diagnose, identify, and manage oral mucosal and osseous diseases.

III. **Community Health Promoter:** *Under Graduates must be competent to:*
3.1 Provide prevention, intervention, and educational strategies.
3.2 Participate with dental team members and other health care professionals in the management and health promotion for all patients.
3.3 Recognize and appreciate the need to contribute to the improvement of oral health beyond those served in traditional practice settings.

IV. Critical Thinker: *Under Graduates must be competent to:*
4.1 Evaluate and integrate emerging trends in health care as appropriate.
4.2 Utilize critical thinking and problem-solving skills.
4.3 Evaluate and integrate best research outcomes with clinical expertise and patient values for evidence-based practice.

V. Professional and Role Model: *Under Graduates must be competent to:*
5.1 Apply ethical and legal standards in the provision of dental care.
5.2 Practice within one's scope of competence and consult with or refer to professional colleagues when indicated.

VI. Researcher: *Under Graduates must be competent to:*
6.1 Apply the current research for innovations in treatment, keeping at par with international standards
6.2 Conduct independent research based on the community requirements

VII. Leader: *Under Graduates must be competent to:*
7.1 Manage self, taking responsibility and utilizing the time to the best of his/her ability.
7.2 Effectively work in a group, as a leader or as a team member
7.3 recognize and comply with the working system of any Institute.

COMPETENCIES REQUIRED IN A DOCTOR TO BE ACHIEVED AT THE UNDERGRADUATE LEVEL

Students should graduate from a four-year BDS program with the following competencies combination of knowledge, skills, and attitude.

KNOWLEDGE	SKILLS	ATTITUDE
• UUnderstand the diagnostic processes, clinical and analytical techniques used to treat prevalent health conditions in society.	• Conduct comprehensive physical examinations, request and interpret diagnostic testing, create appropriate treatment plans, and deliver follow-up care.	• Demonstrating compassion for patients, honoring their individuality and autonomy, and being committed to providing excellent, patient-centered care that is grounded in the best available evidence.
• Knowledge of the ethical and legal guidelines, including as those pertaining to informed consent, patient rights, and confidentiality, that control the practice of medicine.	• To apply these concepts in clinical settings, appropriately record patient care, and handle any possible medicolegal issues.	• To uphold ethical standards and respect patient autonomy in order to maintain the respect and confidence of both patients and the general public.
• Comprehending the anatomy, physiology, and pathophysiology of common illnesses, together with the principles of evidence-based medicine and clinical decision-making.	• To evaluate patient information from multiple sources, including imaging scans, laboratory testing, physical examinations, and clinical histories, and use this information to create a treatment plan and differential diagnosis.	• Committed to provide patient-centered care that is based on the best available evidence and customized to meet each patient's needs and preferences.
• Recognizing the concepts of disease prevention and promotion, as well as epidemiology, environmental health, social determinants of health, and behavioral and lifestyle factors impacting illness and injury.	• To design and implement efficient preventive and management strategies, such as patient education, behavior modification interventions, and community-based therapies, as well as to conduct a full assessment of the health hazards to the individual and the community.	• Committed to advancing health equity and addressing the social and environmental determinants of health, as well as an appreciation of the role that prevention plays in improving health outcomes and reducing healthcare costs.
• Comprehend the principles behind surgical techniques, infection prevention, sterile technique, and patient safety.	• To perform both standard and emergency surgeries, including CPR, births, and other life-saving procedures, using the	• Committed to provide high standards of care and patient safety as well as an awareness of the need of acting quickly and effectively

	appropriate equipment and methods, and to deal with challenges as they arise.	in emergency situations.
• Having a solid understanding of anatomy, physiology, and pathophysiology as well as principles of patient evaluation, diagnosis, and treatment planning.	• To perform a complete and accurate physical examination, including a system review and a mental state evaluation, and to use the information gathered to develop and implement successful treatment plans for patients.	• Committed to providing patient-centered care delivery and recognition of the significance of conducting a thorough assessment to inform efficient treatment planning.
• Comprehend the principles of patient-centered care and evidence-based practice, as well as the pathophysiology, epidemiology, and current treatments for a range of acute and chronic health conditions.	• To design and carry out suitable patient-centered care plans for patients with common diseases	• Comitted to provide patient-centered care and recognition of the significance of evidence-based practice in enhancing patient outcomes.
• Awareness of the fundamentals of good communication, including appropriate language use, nonverbal clues, and active listening strategies.	• To establish rapport and build trust through efficient communication with patients and other medical professionals by utilizing suitable language and nonverbal clues	• Committed to providepatient-centered care and recognition of the importance of good communication in fostering trust and promoting positive patient outcomes.
• Recognize the basic principles of medicine, such as the physical, emotional, social, and spiritual dimensions of health and wellbeing as well as the promotion, prevention, treatment, and rehabilitation of common diseases.	• To implement a holistic approach to patient care, encompassing the ability to recognize and address patients' physical, emotional, social, and spiritual requirements; developing and implementing patient-centered treatment plans incorporating preventive, promotional, curative, and rehabilitative components of care; and collaborating with interdisciplinary healthcare teams to provide comprehensive and integrated care.	• Committed to provide patient-centered care and knowledge of the need of attending to patients' physical, emotional, social, and spiritual needs in order to support the best possible outcomes for their health.

• Knowing pharmacology, including the side effects, mechanism of action, and contraindications of commonly prescribed drugs, and safe and effective prescribing techniques.	• To prescribe medications that are both safe and effective while taking into account factors specific to the patient, including as age, gender, comorbidities, past medication history, cost-effectiveness, and potential side effects. being able to follow dosage, interaction, and contraindication guidelines as directed	• To patient safety and a recognition of the need of offering safe and affordable medications. An understanding of the possible impact of medications on patient outcomes as well as the ability to track and manage medication-related interactions and adverse effects.
• Understanding of human psychology, encompassing the principles of psychological assessment and intervention as well as the impact of social and psychological factors on health outcomes.	• To recognize and assess psychosocial factors that may impact a patient's health results, to develop and implement effective management plans incorporating social and psychological therapies, and to collaborate with mental health professionals to provide holistic care.	• Committed toproviding evidence-basedd care that takes these elements into account as well as knowledge of how social and psychological factors affect health outcomes.

STEP 4.4: EDUCATIONAL ROADMAP

CURRICULUM FRAMEWORK OF A FOUR-YEAR BDS PROGRAM

The BDS Curriculum in MDC is spiral in which students will learn the same topics throughout their education program with each encounter increasing in complexity and reinforcing previous learning.
Vacations: Students will avail vacations in accordance with the schedule decided by the College Academic Council. Hospital teaching continues during summer vacation. Students performing hospital duty will be divided in batches.

Timetables for various batches will be prepared by the timetable Committee as received the timetable grid from LUMHS. If needed, classes may also be continued during the summer vacation. Timetable of lectures, SGDs, practical classes and hospital training will be notified by the head of the institution before the commencement of the academic session and during the session if a change is required. Classes teaching, training, syllabus, courses, End of Module examinations & final professional examination are carried out according to the rules and regulations of the LUMHS.

- The Liaquat University of Medical & Health Sciences (LUMHS) has designed a four-year modular framework for Integrated Curriculum based on Specific Themes, Clinical Clerkships, Quran and Professionalism, Ethics, research & Leadership.
- The time calculation for completion of module is based on 35 hours per week.
- Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are 1200.

Year	Module	Modular Configuration	Weeks
First Year BDS	**1**	Block I	**12 Weeks**
	2	Block II	**12 Weeks**
	3	Block III	**12 Weeks**
	General Education	General education (including Islamic studies, Pakistan studies, English, Arts & humanities, behavioral sciences, and research)	**Parallel Subject**
		Pre-Clinical Rotation in (Operative, Prosthodontics, Clinical Care, Dental Anatomy)	**9*3=36 Weeks**
Second Year BDS		Disease, Infections & Therapeutics I	**17 Weeks**
		Disease, Infections & Therapeutics II	
		Neoplasia, Hemodynamics & Genetics	**10 Weeks**
		Parallel Subject: Science of Dental Materials	**36 Weeks**
		Pre-Clinical Rotation in (Pre-Clinical Dental Sciences (Dental material, Operative & Prosthodontics) & Clinical care & Professionalism)	**9*3=36 Weeks**
	General Education	General education, including behavior science, ICT, and research	**Parallel Subjects**
Third Year BDS	1	Removal Prosthesis+ Research	**9 Weeks**
	2	Oral Medicine, Exodontia, Pain Control & Oral radiology (OMFS+ Oral Medicine & Diagnosis)	**9 Weeks**
	3	Cariology (Operative Dentistry)	**9 Weeks**

	4	Periodontics (Gingiva & Periodontal Disease) + Behavioral Sciences	**9 Weeks**
	5	Community Dentistry & Public Health Services & Oral Radiology	**36 Weeks**
		General Medicine & General Surgery	**36 Weeks**
	General Education	**PERLs 3** (Professionalism, Ethics, Research & Leadership), Behavioral Sciences, Medical Education & ICT.	**Parallel Subjects**
Final Year BDS	1	**Oral Maxillofacial Surgery**	**8 Weeks**
	2	**Operative Dentistry & Endodontic**	**8 Weeks**
	3	**Orthodontics**	**8 Weeks**
	4	**Prosthodontics**	**8 Weeks**
	5	**Paediatric Dentistry**	**8 Weeks**
	General Education	**PERLs 4** (Professionalism, Ethics, Research & Leadership), Behavioral Sciences, Medical Education & ICT.	**Parallel Subjects**

A few salient features that have been incorporated for all the three domains of training after deliberations and through an iterative process by subject experts, medical educationists and the university lead as follows.

- **Horizontal Integration- COGNITIVE:**

  The Curriculum framework has 15 modules spanning 03 years. Horizontalintegration is evident in the modular configuration where different basic disciplines approach the themes simultaneously. Modules have been structured where all the basic disciplines are represented based on their respective weightage of content. Assessment framework ensures that the applied/clinical aspect also is inculcated in the concept development of the learner keeping the clinical relevance and context at the core.

- **Clinical Relevance & Theme-COGNITIVE:**

  All module objectives are preceded by the recommended themes and clinical relevance. These are grounded in the rationale of the module so that pattern of learning could be steered for a practical professional approach. However institutional discretiondoes not prohibit adopting any other thematic approach provided that the program outcomes are adequately achieved.

- **Vertical Integration- COGNITIVE:**

  Spiral placement of the modules within the frameworkensures a revisit of the basic sciences. In the first step the applied / clinical learning objectives orient the learner and the repetitive module horizontally rhymes with the clinical rotations with a backdrop of basic sciences. The final year of clerkship is the final revisit, which is primarily workplace based/log books and principally involves the perfect integrated blend of tri-domain learning.

- **C-FRC-PSYCHOMOTOR:**

  Clinical Skills follow a spiral which is entirely skills dominant. This spiral is the core of psychomotor training. The first two years will be of **Clinical Skills- Foundation** which will represent clinical orientation. The clinical orientation will be conducted in OPD, skills lab and simulation centers (depending on the available resources). The clinical orientation along with the applied/clinical component of the knowledge base will channelize the learner for the practical and professional aspect of learning.

  The subsequent two years the spiral will move on to **Clinical Skills Rotations**. The

rotations in different wards will be based on foundational developmental already commenced in pre-clinical years. The year 3 and year 4 which have the rotations will also have the second visit of the modules which would now be more clinically inclined with a stronger base of Pharmacology and Pathology. Community oriented practices will also be broadening the element of systems thinking and diversity of practice for ahealthcare leader of tomorrow.

- **Clinical Clerkship:** Finally, **Clinical Clerkships** are aimed to be entirely facilitated in workplace environments. The clerkship model will involve the delegation of duties thus adding to the acquisition of professional accountability as a competency.The psychomotor training and skills acquisition will be the maximum in the year of clerkship. The entire process of Clinical competencies will be endorsed in a logbook which would be the training base of the learner for future references and exam evaluations.

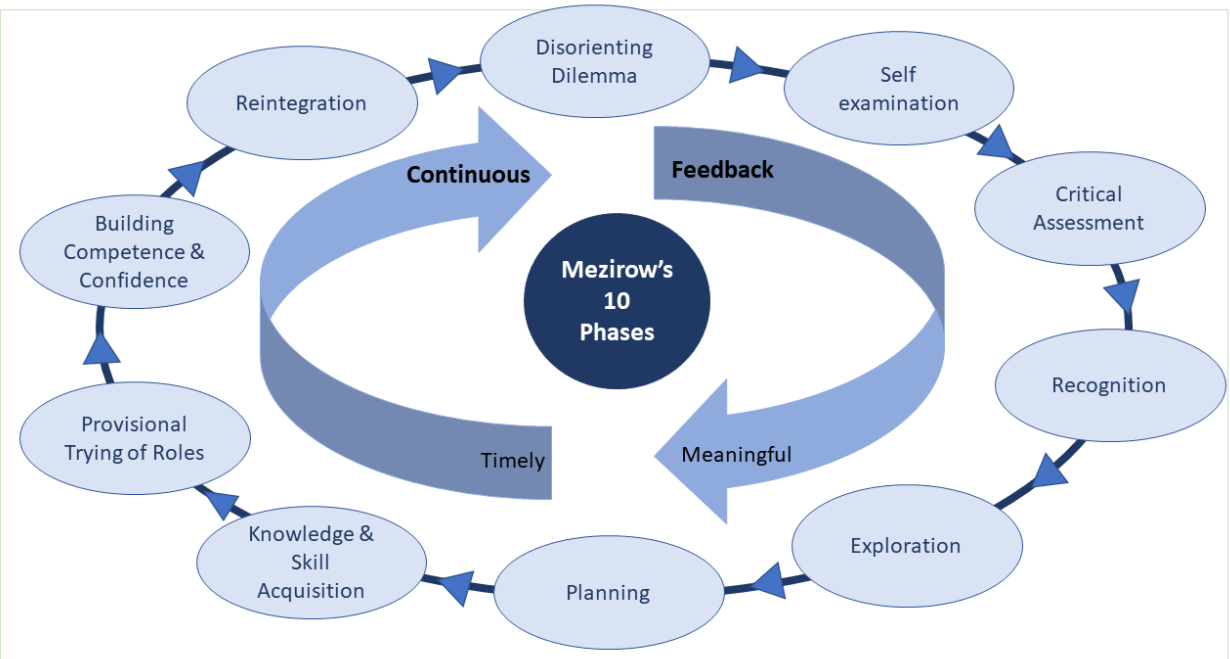
- **PERLs-AFFECTIVE:**

  Affective training has been formally inculcated in the curricular framework. The model of PERLs has been introduced so that the yield of doctors has a strong, resilient, ethically driven character. PERLs stands for Professionalism, Ethics, Research and Leadership skills. PERLs rounds up professional development for the effective application of the knowledge and skills base achieved. For a professional to be social accountable and to be able to play the healthcare leadership role for societal elementslike advocacy, equity or resources and healthcare access, a formal training is a must.

  The spiral of PERLs will be monitored directly by the respective department of Medical Education. However, the teaching sessions, and mentoring process, can and will be assigned to other disciplines. For example, communication skills can have an input from the faculty of Family Medicine and research can be facilitated by the Community Medicine & Public Health faculty. Ethics can be jointly covered by the Behavioral sciences. Leadership is an ambit where the students will be motivated if the institutional leads themselves get involved and can also have the input of the successful alumni. The Faculty of Medical Education will look after the entire process and will also engage in the teaching sessions, when and wherever required.

SCOPE OF INTEGRATION

Curricular reforms and program assessments are essential for maintaining learning, implementing innovations, contextualizing educational processes with societal requirements, and keeping up with technological and healthcare improvements. Muhammad Medical College wholeheartedly supports these change-inducing factors, and the university's goal is consistent with such dynamic maintenance.
These days, a century-old idea—which was based on Flexner's study and divided the field into pre-clinical and clinical stages—is giving rise to emerging paradigms of integration across disciplines and years. Another foundation for curriculum revisions is Meizrow's notion of "transformative learning," which is based on developing dynamic interactions between teachers and students as well as a common body of knowledge to support student learning and personal development.



The nationally mandated competencies of seven-star physicians are aligned with the outcomes of the MBBS program through the use of a modular, integrated curriculum. The program's results are comparable to those that the country's regulatory bodies have received from MBBS graduates thus far. ISU The seven-star competencies are translated into the session-specific learning results by the curriculum outcomes. The objectives are broken down into smaller goals that represent the three learning domains. These goals are then graduated in spirals and horizontally integrated to foster higher order thinking, professional approach acquisition, practical knowledge with a broad base, and learner curiosity.
Integrating a component of individual learning into larger practices and group learning scenarios is another facet of curriculum design that has been maintained.
MITs that encourage the growth of individual learning inclinations include PBL and small-group discussions.
Early clinical exposure is necessary for practicality and applied knowledge, and this has been the main consideration in developing the spiral of Clinical Skills Foundation, Rotation, and Clerkships. Even with its limitations, an early clinical exposure over the first two year's fosters interest and creates clinical learning contexts.

4.5: TOTAL CONTACT HOURS AND CALCULATION OF CREDIT HOURS YEAR-WISE AND MODULE WISE FOR THE UNDERGRADUATE FOUR YEARS OF (BDS) PROGRAM -2025 AT MUHAMMAD DENTAL COLLEGE, MIRPURKHAS						
SUBJECTS AND YEAR-WISE CONTACT HOURS BY PMDC	**1ST YEAR= 1200 (36 Weeks)**	**2ND YEAR =1138 (36 Weeks)**	**3RD YEAR= 1190 (36 Weeks)**	**4TH YEAR= 1200 (40 Weeks)**	**CONTACT HOURS=4728**	**CREDIT HOURS 1 Credit hr. 16 Contact hours**
YEAR-WISE CONTACT HOURS IN MDC TT	**1384**	**1310**	**1310**	**1310**	**5314**	
SURPLUS HOURS	**184**	**172**	**120**	**110**	**586**	
Year-wise Credit Hours	**81.8**	**81.8**	**81.8**	**81.8**	**327.5**	**327.5 Total Credit Hours in 4 years of BDS**
Total Modules in Every Year	**3**	**3**	**4**	**5**		**15 Total Modules**
Total Credit Hours in Every Module	**27.2*3=81.8**	**27.2*3=81.8**	**20.45*4=81.8**	**16.36*5=81.8**		**321.26 Total Credit Hours in 4 years of BDS**
Anatomy (Embryology, Histology, Gross Anatomy)	300		--	--	300	20
General Physiology	300		--	--	300	20
Biochemistry	180		-	-	180	12
Oral Biology & Tooth Morphology	300				300	20
Pharmacology	-	220			220	15
Pathology (General Pathology, Special Pathology, haematology, Parasitology etc)		220			220	15
Dental Materials Sciences	72	228		-	300	20
Oral Pathology		180			180	12
Dental Public Health/Preventive Community Dentistry			200		200	13.3
Oral Medicine/Diagnosis/Radiology		30	120		150	10
Periodontology			180		180	12
General Medicine			180		180	12
General Surgery			170		170	11.3
Pre-Clinical (Operative, Prosthodontics,	36 36	80 80	80 80		400	5.5+5.5 5.5+5.5
Oral Surgery (Forensic Odontology assessed with OMFS)			75+5=80	250	335	5.6+16.66
Paediatric Dentistry				100	100	6.6
Orthodontics				250	250	16.66

Operative Dentistry				250	250	16.66
Prosthodontics				250	250	16.66
General Education (Behavioural Sciences, Communication Skills, Clinical Care, Professionalism, Leadership, Management, Dental Ethics, Patient Safety & Infection Control, (Computer Skills,	36	100	100	100	420	8+6.6+6.6+6.6= 27.8
Research	25	20	14	14		
English	**32**					
Art & Humanities	**13**					
Islamiat, Pak Studies	**9+9=18** **124**					
Total Modules in Every Year	**3**	**3**	**4**	**5**		15 Total Modules

First Year BDS: Session was started on 20th-January-2025-36 Weeks)

- **Teaching hours from 8:00 to 4:00 PM (Monday to Friday) =8 hours/day, 7.5 hrs., excluding a break of 30 minutes (7.5 hours*5=37.5 hours/week. Total 37.5 hours*12 weeks= 450 hours per module/Block of 11 weeks + 1 week module exam at LUMHS/MMDC.**
- **Total 36 weeks of teaching in the entire academic calendar for the first year of BDS.**
- **Total teaching weeks are 36 (33 content and assessment + 3 Weeks of Revision and module exams in LUMHS) =Total 450*3=1350 contact hours per 3 blocks in academic years of 36 weeks**
- **Total teaching weeks are 36. In Ramadan (total contact hours are 40 hours, Less teaching from 8:00 am to 2:00 pm) =40 hours per *4 weeks. 1350-40=1310**
- **However, 32 hours of mentoring and 36 hours of SURVIVE per 36 weeks of the academic calendar=72 hours are already included in 1310.**
- **Total 1230 Contact Hours (84.37 Credit Hours, instead of 1180 Contact Hours (75 Credit Hours in first year BDS.)**

Second Year BDS: Session was started on 20-January-2025-36 Weeks)

- **Teaching hours from 8:00 to 4:00 PM (Monday to Friday) =8 hours/day, 7.5 hrs., excluding a break of 30 minutes (7.5 hours*5=37.5 hours/week. Total 37.5 hours*12 weeks= 450 hours per module of 11 weeks + 1 week module exam at LUMHS/MMDC.**
- **Total 36 weeks of teaching in the entire academic calendar for the Second year of BDS.**
- **Total teaching weeks are 36 (33 content and assessment + 3 Weeks of Revision and module exams in LUMHS) =Total 450*3=1350 contact hours per 3 blocks in academic years of 36 weeks.**
- **Total teaching weeks are 36. In Ramadan (total contact hours are 40 hours, Less teaching from 8:00 am to 2:00 pm) =40 hours per *4 weeks. 1350-40=1310**
- **However, 32 hours of mentoring and 36 hours of SURVIVE per 36 weeks of the academic calendar=72 hours are already included in 1310.**

Total 1230 Contact Hours (84.37 Credit Hours, instead of 1180 Contact Hours (75 Credit Hours in Second year BDS.)

Third Year BDS: Session was started on 20-January-2025-36 Weeks)

- **Teaching hours from 8:00 to 4:00 PM (Monday to Friday) =8 hours/day, 7.5 hrs., excluding a break of 30 minutes (7.5 hours*5=37.5 hours/week. Total 37.5 hours*9 weeks=337.5 hours per module for 9 weeks, including 11-week module exam at LUMHS/MMDC. =1350 hours for 36 weeks.**
- **Total teaching weeks are 36. In Ramadan (total contact hours are 40 hours, Less teaching from 8:00 am to 2:00 pm) =40 hours per *4 weeks. 1350-40=1310**
- **However, 32 hours of mentoring and 36 hours of SURVIVE per 36 weeks of the academic calendar=72 hours are already included in 1310.**
- **Total 1310 Contact Hours (84.37 Credit Hours, instead of 1180 Contact Hours (75 Credit Hours in Third year BDS.)**

Final Year BDS: Session was started on 27-January-2025-40 Weeks)

- **Timetable is from 8:30 to 4:00 PM (Monday to Friday) =7.5 hrs. /day, 6.7 hrs. excluding break of 50 mins (6.7 hours*5=33.5 hours/week,33.5*8=268 hours per module of 8 weeks in 40 weeks of academic calendar in final year BDS**
- **A total of 268*5=1340 in total, five modules are devoted to teaching in the Final year of BDS.**
- **In Ramadan, a Total of 30 hours for teaching in all five modules is deducted. Hence, 1340-30= 1310 are devoted to teaching in the Final year of BDS.**
- **However, 32 hours of mentoring and 40 hours of SURVIVE per 40 weeks of the academic calendar=72 hours per academic year, which are already included in all module TT (Mentoring was started from 17-2-2025 and ended on 29-10-2025.**

In Paediatric/General Education: Same 268 hours for 8 weeks, in which 160.8 hours of paediatric dentistry and 107.2 hours for general education.

1310, Contact Hours (86 Credit Hours, instead of 1200 Contact Hours (80 Credit Hours Per Year.

STEP 4.6: CURRICULUM IMPLEMENTATION

For Curriculum Implementation, a curricular committee was developed and comprised of the principal of Muhammad Medical College (MMC), all subject specialists, and Medical Educationists to suggest methodologies to cultivate a curriculum. Various learning strategies were incorporated, such as interactive lectures, tutorials, case-based learning, PBLs, self-directed learning and directed self-learning. All teaching strategies are interactive & small group format. In addition, non-formal experiential learning for students is promoted by CME. All this has been structured taking into account the Best Evidence Based Medical Education literature and our local culture and context.
Moreover, the Electives are not part of the curriculum. Students can avail electives whenever he/she has completed the Academic Contact Session and during vacations. PERLs (Professionalism, Ethics, Research, and Leadership Skills) are part of the Curriculum and will be taught every year. Formative and summative evaluations are used to evaluate the students; internal exams receive 20% of the total weight, while university-conducted professional exams receive 80% of the weight.

No transformation is possible without the involvement of a dedicated faculty and staff, who took on the task with unfathomable zeal and through their efforts, the outcomes that initially were thought to be a dream took on the shape of reality.

CURRICULAR COMMITTEE STRUCTURE

INTRODUCTION:

Muhammad Medical College strives to create a supportive learning environment that supports student learning, encourages professionalism, and prepares students for lifelong self-directed learning in accordance with the Pakistan Medical & Dental Council requirements.

PURPOSE:

The Muhammad Medical College Curriculum Committee's goals are to:

1. Create, administer, and assess curriculum that meets PMDC criteria, reflects current medical knowledge and practice, and both.
2. To guarantee that the five-year MBBS program's learning objectives are met and are based on PMDC's seven-star doctor’s ideology

RESPONSIBILITIES:

The Curriculum Committee is in charge of three things. The PMDC's accreditation requirements and the Muhammad Medical College's overarching goal are followed in carrying out these duties.

1) Organizing and creating the curriculum.
2) Management and implementation of curricula
3) Reviewing and revising the curriculum.

In order to achieve these goals, the curriculum committee has to:

- Participate in curriculum meetings and work in tandem with the medical education and research department
- Establish the general goals, the substance of the curriculum, and the pedagogical framework for the MBBS curriculum.
- Provide enough time (i.e., teaching hours) to meet the learning objectives in accordance with PMDC criteria
- Suggest allocating resources appropriately to guarantee that teaching and learning approaches adhere to national and international standards.
- Create evaluation procedures that adhere to the fundamentals of medical education.

- The Curriculum Committee will routinely evaluate the curriculum and its components to ensure ongoing quality improvement.
  - Evaluations and results of board performance, courses, clerkships, and teachers are taken into account by the Curriculum Committee while assessing the calibre of the curriculum.
  - To make sure that learning objectives are appropriate and clearly stated, course content is relevant, methods are matched to the level of learning, appropriate reinforcement is included, and needless redundancy is eliminated, there are multi-source, periodic, systematic reviews of the design, content, and instruction in each course
  - Faculty development programs, coaching and feedback, and systematic faculty assessments are among the resources and tools that are given to them so they can become successful educators

The Curriculum Committee has the authority to organize subcommittees comprising of teachers, staff, and students who possess particular knowledge or abilities to aid in the committee's work in creating, overseeing, and enhancing the curriculum.

SRMLG SYSTEM IN ISUM FOR CURRICULUM IMPLEMENTATION

The Medical Education department of ISUM & MMC has worked hard to achieve the following goals:

A. To develop a curriculum that fulfils the directions of PM&DC as well as LUMHS & ISU vision and mission simultaneously.
B. To develop a plan and system to execute and monitor the curriculum that achieves the core competencies described by the WHO & PM&DC, and yet take into account local dynamics, resources, limitations, strengths, and weaknesses.
C. SRMLG System was developed to fulfill the guidelines of PMDC , LUMHS and ISUM Vision and Mission and to smoothly implement the curriculum.

A. FULFILLING THE DIRECTIONS OF PM&DC AS WELL AS LUMHS & ISUM VISION AND MISSION:

One of the difficulties that any medical/dental college faces in the transition period while switching from one University to another is aligning the vision and mission of the two universities with the program outcome & Bloom's taxonomy. As Muhammad Medical & Dental Colleges' programs are well aligned with the LUMHS' vision and mission, and in the near future, they have to be aligned with the ISU's vision and mission, we expect that a fair amount of work will be needed. However, there are striking similarities in the contents and directions of the vision and mission of the two universities. These may be due to the following facts

- Both are offering the same programmes of MBBS & BDS.
- Both are working in lines and directions given by the same regulatory bodies (PMDC).
- Both are working to produce a Global Five Star Doctor award, first described by Dr Charles Boelen, then of WHO, in 2000, and is judged on the following five criteria:

1. A **CARE PROVIDER**, who considers the patient holistically as an individual and as an integral part of a family and the community, and provides high-quality, comprehensive, continuous, and personalized care within a long-term, trusting relationship.
2. A **DECISION MAKER**, who makes scientifically sound judgments about investigations, treatments and use of technologies that take into account the person's wishes, ethical values, cost- effective considerations, and the best possible care for the patient.
3. A **COMMUNICATOR**, who is able to promote healthy lifestyles by effective explanation and advocacy, thereby empowering individuals and groups to enhance and protect their health.

4. A **COMMUNITY LEADER**, who, having won the trust of the people among whom he or she works, can reconcile individual and community health requirements, advise citizen groups, and initiate action on behalf of the community.
5. A **MANAGER**, who can work harmoniously with individuals and organizations both within and outside the health system to meet the needs of individual patients and communities

Pakistan Medical and Dental Council (PMDC) is the main governing and statutory body that ensures the ethical and standardized medical and dental teaching, learning, training, and practice all over the country. One of the major achievements of this council is to establish 7 core competencies that a Pakistani doctor should achieve at the time of his/her graduation, and named it as PMDC's seven-star doctor. These include all 7 attributes of a 5-star doctor and add it to include researcher and lifelong learner. These attributes are meant to warrant the standardization and uniformity among the medical graduates.

1. Care Provider.
2. Decision Maker.
3. Communicator.
4. Community Leader.
5. Manager.
6. Researcher.
7. Lifelong learner.

Hence, once we have aligned the vision and mission of the one university with the program outcome & Bloom's taxonomy, we find that it is in line with the vision and mission of the other university too.

LUMHS'S VISION	ISU VISION	LUMHS'S MISSION	ISU MISSION
Liaquat University of Medical & Health Sciences seeks to be a top-tier healthcare institution, producing ingenious academic leaders, medical researchers, and healthcare advocates to serve global community.	To be an internationally recognized institution, famous for its ethical work, emphasizing the importance of integrity, honesty and moral principles, highlighting the University's commitment to serving the community and producing unbiased and empathetic educated people, **who are inclusive and have leadership skills,** encouraging them to engage in research, critical thinking, innovation and evidence- based best practices.	Fostering ideal learning environment to ensure modern scientific evidence-based practices by imparting critical knowledge, analytical and psychomotor skills, and professional dedication among healthcare students, under the umbrella of virtuous professional, moral and ethical standards.	Nurturing students' potential by providing them highest quality education thereby producing individuals with strong values, compassion, **inclusiveness, leadership** and professionalism, emphasizing community engagement particularly with marginalized segments of rural population, encouraging students to become empathetic and socially responsible professionals by training them in the best evidence- based practice, capable of contributing to advancements through research and innovation.

B. DEVELOPING A PLAN AND SYSTEM TO EXECUTE AND MONITOR THE CURRICULUM:

Some people like to fondly remember these pillars by “Syed Razi Muhammad’s Learning Group” (SRMLG).

Ibn e Sina University, Mirpurkhas (ISUM) is a newly formed University, which is the first university of Mirpurkhas Division. It follows a vertically integrated modular system. There are 37 modules divided in 5 years of MBBS Curriculum and 16 modules in four years of BDS program. Each year has an average of 36 to 40 weeks of studies. Weekly plan is organized as a “theme”.

Regular classes, practicals, clinics, and hospital duties are amply supported by 5 pillars that contribute to the high standards of this first-ever university of Mirpurkhas division. These pillars include:

1. **“Survive”** a three-pronged system of weekly tests, assignments and post-test discussions.
2. **“RLSE”** or “Running Lives by Sharing Experiences”, a weekly mentoring program.
3. **“MCS”** or daily “Mobile Clinics by Students”.
4. **“LBAS”,** or “Learner Based Annual Symposia”.
5. **“GSAT”** Annual “Gastroenterology session with Students as Teachers”. Conducted by Prof. Dr. Syed Zafar Abbas.

Some people like to fondly remember these pillars by “Syed Razi Muhammad’s Learning Group” (SRMLG).

After doing my fellowships and training in Surgery, I have spent the last 3 decades reading, studying and attending seminars, workshops and courses in medical education. This involves completing my courses of certificate, diploma, and master's in medical education from the University of Dundee. Currently, I am engaged in doing PhD in Medical Education from the University of Cyberjaya, Malaysia.

While we continue to learn and benefit from the research and innovation of others (no need to reinvent the wheel or rediscover the laws of motion), we must remember our own situations, culture, and values and not neglect our strengths and weaknesses while developing our systems. This is exactly what we have done in developing our vision, mission and goals. If you go through them, you will appreciate that the above pillars are the powerful tools to achieve them. In a day and society, where copy & paste practices, plagiarism, and recently letting the artificial intelligence replace the original and critical thinking, ISUM can take some pride in SRMLG. I am proud of my team to understand, participate and take forward this unique system which has raised the standard of learning, improved the results (Muhammad Medical College received the first prize in Sindh this year in innovation, by the Pakistan Association of private Medical & Dental Institutions or PAMI and empowered the learners of ISUM.

1. “SURVIVE”, A THREE-PRONGED SYSTEM OF WEEKLY TESTS, ASSIGNMENTS AND POST-TEST DISCUSSIONS

The University of Dundee uses Moodle which is a learning management system (LMS). At Dundee, all communications, announcements, submission of assignments and dissertations, their assessments and grading and academic chats between teachers and students take place within Moodle. While using this model, in ISUM, Moodle is used for all 3 strategies (weekly tests, assignments and post-test discussions).

Survive is a weekly test (assessment) framework) and is a time-tested tool that has been implementing in MBBS & BDS Program since March 2020. In different times, it has used the components of F2F, Hybrid and Online methods. It started at the time of COVID and has continued since then in various forms. Each year is divided into 40 weeks, and hence it has seen 215 weeks at the time of writing.

Like any new thing, this idea of turning to massive online learning through “Survive” was also looked at with suspicion. There was resistance from some of the faculty members and students. They thought that online learning was probably some inferior sort of learning.

آئین نو سے ڈرنا، طرزِ کہن پہ اڑنا
منزل یہی کٹھن ہے، قوموں کی زندگی میں

I had to assert that the reality was quite the opposite. I presented the following studies to prove my point of view.

a. **Brandon-Hall Study**- This study showed that online learning saves 40-60% of learner's time than learning the same material in a F2F setting. The quality of learning is also improved by online learning.
b. **The *Research Institute of America*-** Online learning enhances the rate of **retention by 25% to 60%** while retention rates of F2F learning is only 8% to 10%. It may be due to the fact that an online learner can refer back to the learning material again and again at his/her convenience.
c. IBM has recently discovered that online learners learned almost **five times more content during the same time as F2F learners**.
d. Britain's Open University's study has discovered online courses consume 90% less energy and releases 85% less CO2 emissions per student than F2F learning. (Knowledge Direct Web).

At the beginning, during the COVID Pandemic, we had no time to formally train our faculty or students. However, our WhatsApp groups and Facebook pages came in handy and we (Me and Mr. Zubair) started writing posts and interacting with the faculty and students on a daily basis (actually hourly basis), answering their queries, writing guidelines and recording short videos to illustrate our points and train our students and faculty.

In the initial days, I had to check assignments and make MCQs for many subjects. Slowly and gradually students started joining in. This was a very busy time. I trained two of my junior doctors (Dr. Saba and Dr. Hyder) and they proved a wonderful support. Still, I had to submit assignments of individual students (who emailed or Whatsapped them to me), guided them how to reduce the size of assignments and adopted techniques to avoid plagiarism. The dates of submission had to be extended many times. Few frustrated students got aggressive and had to be controlled with a carrot and stick approach. Some students wanted to avoid assignments as it consumed lots of time. However, I made it clear that:

- Assignments will continue in the current mode and will have to be submitted by everyone.
- We will discuss the problems and difficulties, but we will remain positive and boost each other's morale like a true family does. Students can share their frustration and depression by personally messaging me or a teacher. But on the general forum, only positive and morale-boosting posts should be shared.

  The schedule of assignments and tests on the portal will be strictly followed in spirit and order. No teacher, senior or junior, will change anything (in fact, only the Principal and the head of IT department have comprehensive administrative rights to edit anything on the portal). If some change is necessary, the teacher will discuss with the principal and that too much before the assignment is due, and then the Principal will make the necessary amendment.
- Only standard textbooks will be followed. Students should not follow the substandard books which largely discourage the concepts and promote rote learning. This goes much beyond destroying the understanding of a subject. It adversely affects one's mindset, thinking, character and personality too.
- Plagiarism will not be accepted. Copy and paste culture will be discouraged. Hence students must make assignments in their own handwriting and then make a pdf of the entire assignment and submit it in one piece. The size of the file may have to be reduced by using the proper software.

- Students & faculty have been strongly advised to get a good internet connection. They have been encouraged to discuss within the family and peers to improve their IT skills. No professional, including doctors, can progress in today's world without good IT skills.

Unfortunately, our educational system does not promote higher levels of cognition and affective domains. It merely promotes passive learning and rote memorization. As a result, most of the teachers and students rely on passive lectures and on substandard books which merely stress on remembering and recalling the facts until the examinations are over. Imagine how useless the information that the student memorizes with endless effort is, that:

1. Is easily accessible on google
2. Students are going to forget it soon anyway.
3. Is of no use in data interpretation and problem solving.

Our system is riddled with the old and outdated ideas. This can produce the followers and not the leaders. These results in producing the graduates who remember the long lists and facts but cannot think, inquire, create or lead. Examination system also favors people who are good in rote memorization. This has flooded the shops with substandard books from the poorly qualified people who have not mastered the subject but worked to find tricks to rote memorize the facts, so these facts can be spilled on the examination papers. Teachers enjoy the role of the sage who cannot be questioned and is the epitome of the entire system.

The world of education has gone through a paradigm shift with Benjamin Bloom (1956) publishing his work 64 years ago suggesting three domains of learning, i.e.: The cognitive domain (6 sub domain), the affective domain (5 sub domain) and the psychomotor domain (7 sub domain).

1. **The cognitive domain (knowledge-based)**

   b. Knowledge (Remember)
   c. Comprehension (Understand)
   d. Application (Apply)
   e. Analysis (Analyze)
   f. Synthesis (Create)
   g. Evaluation (Evaluate)

2. **The affective domain (emotion-based)**

   a. Receiving
   b. Responding
   c. Valuing
   d. Organizing
   e. Characterizing (Internalizing)

3. **The psychomotor domain (action-based)**

   a. Perception
   b. Set
   c. Guided response
   d. Mechanism
   e. Complex overt response
   f. Adaptation
   g. Origination

Our educational system still favors only knowledge and sometimes comprehension subdomains. Higher levels of cognition and affective domains are largely ignored and resisted.

Internationally, the passive learning is seen as a waste of time, and the center of learning has shifted from the teacher (facilitator) to the student (active learner). Alison King (1993) has given it a name in her work **"From Sage on the Stage to Guide on the Side".** She writes:

"In most college classrooms, the professor lectures and the students listen and take notes. The professor is the central figure, the "sage on the stage," the one who has the knowledge and transmits

that knowledge to the students, who simply memorize the information and later reproduce it on an exam-often without even thinking about it---assuming that the student's brain is like an empty container into which the professor pours knowledge. Students are passive learners rather than the active ones. Such a view is outdated and will not be effective in the twenty-first century, when individuals will need to think for themselves, pose and solve complex problems, and generally produce knowledge rather than reproduce it."

She further writes:

"Active learning simply means getting involved with the information presented- really thinking about it (analyzing, synthesizing, evaluating) rather than just passively receiving it and memorizing it. Active learning usually results in the generation of something new, such as a cause-effect relationship between two ideas, an inference, or an elaboration, and it always leads to deeper understanding."

Daniel H Pink (2005) has endorsed King's point by saying that the world has now moved from the "Information Age" or the "Industrial Age", and we now live in "The Conceptual Age". Erica McWilliam's (2009) has produced her famous work "The 21st Century Teacher: From Sage- to Guide- to Meddler." While she accepts that learning should be active and learner (student) based, she remains very critical of the idea of a teacher withdrawing from learning process to allow the students to be more active. She writes:

"*Many of the teachers who see themselves as Guide are as unlikely to be "fascinating" as they are to be "challenging". In reality, we have seen the high ground of "guiding" too easily collapse into passive child- minding and worksheet distribution. When this occurs, Guide-on-the-Side becomes a high moral-ethical excuse for the teacher to "step out" of the main game of teaching and to sit at the margins of the physical, mental and emotional activity that is so vital to learning".*

She suggests a third meta-category *"geared up for creative capacity building—that of Meddler-in-the-Middle. This meta-category is descriptive of active interventionist pedagogy in which teachers are mutually involved with students in assembling and/or dis-assembling knowledge and cultural products. Meddling is a re-positioning of teacher and student as co- directors and co-editors of their social world. As a learning partnership, meddling has powerful implications for what "content" is considered worthy of engagement, how the value of the learning product is to be assessed, and who the rightful assessor is to be".*

Unfortunately, many teachers are still stuck on old and discarded "Sage on the Stage role". The forced lockdown will force them to unlearn and become first "Guide on the Side" allowing the student to take the active role and later become a "Meddler-in-the middle" where he co-creates with the student. This is why I have stressed that the interactive discussion on the challenging concepts is far more important than the traditional lectures. Frequent critical discussions are far more important than long traditional lectures that the students and teachers are so used to. Jess Gifkins (2020), a Research Fellow at the Asia-Pacific Centre for the Responsibility to Protect, compares active discussion on important conceptual issues with lectures (passive learning):

"Active learning promotes recall and deeper understanding of material, as students are engaging with the content rather than simply listening to it. The education literature commonly quotes studies showing that when. Students are passively listening their concentration limit is between 10 and 20 minutes, a small fraction of a lecture. Passively listening is not as good at promoting higher-level skills like 'apply', 'analyze' and 'evaluate'."

One thing that this pandemic has made very clear is that everyone shows his/her true colors in crisis. Whereas those who truly love their institution have come out with courage and hard work, and have joined hand to support the institution. Some have shown their negative color and tried to make small groups and promote despair, discontent and chaos. Some others have seen it as a long holiday where they can turn their back to their institution and their students/teachers. I see this as an opportunity to find people's true colors and carefully choose and strengthen the team with sincere and honest people. Alhamdolillah some of the staff and students have come forward who have further strengthened our team and countered the trouble makers. There are many other problems that we have faced. The accounts department comes and warned that the balance of expenses and income is getting out of hand, with the salary expenses pending and the income being halted (since the fees are

unlikely to come until the college reopens). One of the colleagues says that many colleges are deferring the salary of the staff, who are not working during lockdown. But I have taken the option of taking loans from the banks, and Alhamdolillah, every employee's salary is being paid on time.

In this world of marketing and propaganda, we have seen people who run a few online lectures and claim to have promoted online learning. Most of the students of MMDC can see through them. However, few immature students, especially those who get carried away easily with negative comments, fall to the trap and make suggestions which if accepted, would promote passive learning. "Survive" is a phenomenon which is hard to match in any developing country. Started without any trained staff, establishing the entire system of daily assignments with the support material and textbooks, within 48 hours of the beginning of lockdown has been a real achievement. The continuous active discussion on the topic with the dedicated faculty and fellow students, the checking of each and every assignment with grading and comments (a total of half a million assignments during first two phases and will reach one million by the end of July), the weekly tests to challenge and grade the 550 students and a unique post-test self-assessment by each student, ensuring that whatever deficiency has resulted in wrong answer, gets corrected and the student never repeats the same mistake. With as many recorded lectures on WhatsApp and online lectures on zoom as possible, "Survive" will be remembered by the generations to come.

IBN-E-SINA UNIVERSITY, Mirpurkhas - 2024

Online Moodle Test Schedule for 2024

S. No	Days	Time	Year/Class
1	Monday	01:00pm to 02:00pm	Third Year BDS
2		02:30pm to 03:30pm	Final Year MBBS
3	Tuesday	10:00am to 11:00am	Third Year DPT
4		01:00am to 02:00PM	Fourth Year MBBS
5		02:30pm to 03:30pm	Final Year BDS
6	Wednesday	02:30pm to 03:30pm	Third Year MBBS
7	Thursday	10:00am to 11:00am	Second Year BDS
8		11:00am to 12:00pm	CHPE Morning Program
9		12:00am to 01:00am	Second Year DPT
10		02:30pm to 03:30pm	Second Year MBBS
11	Friday	11:30am to 12:30pm	First Year DPT
12		12:30pm to 01:30pm	First Year BDS
13		02:30pm to 03:30pm	First Year MBBS

IT DEPARTMENT

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2. "RLSE" or "Running Lives by Sharing Experiences", a weekly Mentoring Program.

Significance of Mentoring in ISUM:

Mentoring in higher education or medical education plays a vital role. It helps students or young professionals develop skills, gain insights, and build confidence. A good mentor provides guidance, support, and valuable feedback, which can lead to better academic or professional outcomes. In medical education, mentoring is particularly crucial as it helps shape future healthcare professionals. Some benefits include:

- Personalized guidance and support
- Improved critical thinking and problem-solving skills
- Enhanced professional development and networking
- Increased confidence and self-awareness
- Strengthening the teacher and student relationship.
- Better academic or professional performance

In ISUM, like weekly "Survive" and other tests, assignments include posttest Discussion (PTD) and attendance. One contact hour is reserved for students' character building and development during regular mentoring activities.

Time: Meeting time will be reserved for one hour per week (Wednesday 1-2 pm between mentees & mentors, schedule is mentioned in the timetables of all respective years and programs.

Chief Mentoring meeting time: Thursday, 1-2 pm with mentors and chief mentor.

Mentoring process:

1. Mentee
2. Mentor (5-10 mentees). Will submit a weekly report. If he fails to fill out the B & C forms or report about the shortcomings of a mentee, he will be held responsible.
3. Class Coordinator (For a whole class). Will closely liaise with the mentors of his/her class and report to the Chief Mentor on a regular basis. If a mentor is not performing his mentoring duties or not filling the form, and the Class Coordinator fails to report to the Chief Mentor, he will be held responsible.
4. Chief Mentor
5. Program Supervisor. Prof. Syed Razi Muhammad, assisted by Dr. Kiran Fatima and Mr. Mehmood-ul-Hassan will liaise with the mentors, class coordinators and the chief mentors and prepare reports.

Mentors will have weekly meetings with 5-10 students every week at the mentoring hour (Wednesday 1-2pm). In a class of 100 about 12 and in a class of 50 about 8 mentors have assigned the role of mentor. Hence number of mentors will be about:

- 48 in class 1-4 of MBBS
- 12 in final year MBBS.
- 30-32 in BDS
- 15 in DPT.

Senior students may be involved as mentors after the recommendation of senior teachers if the Chief Mentor considers it appropriate. Paper form will be brought by the mentees and online form will be filled by the mentors.

The Chief mentors will check and review the online forms regularly. They will have a meeting with the mentors every month and see their performance with the mentees. If a mentor is found lacking in performing his duty like holding the meetings regularly or filling the form, or if he cannot bring any positive change in mentee, the chief mentor can replace him and report to the Chancellor.

A mentor will be observed for

1. Filling the form on paper and online regularly
2. Improvement in his mentees' performance.
3. Mentor of the month and Mentor of the year award will be given at the end of each month and year in each college.

What a Mentor DOES	What a Mentor DOES NOT do
Regularly holds meetings, fill the forms and report to chief mentor and involve parents where appropriate.	Skips meetings, fails to fill forms or report to chief mentor and involve parents where needed.
Listen: function as a sounding board for problems and ideas	**Protect from experience:** do not assume the role of spoon feeder for the mentees
Criticize constructively: point out areas that need improvement, always focusing on the mentee's behavior, never his/her character.	**Take over:** do not do what the mentees should be doing themselves
Support and facilitate provide networking experience; share knowledge of the system; offer assistance where needed	**Force:** do not attempt to force a mentee in one direction
Teach by example: serve as a model for adhering to	**Use undue influence:** do not use a sense of

the highest values in every area of life	obligation to influence the mentee's professional decisions
Encourage and motivate help mentees to consistently move beyond their comfort zone	**Lose critical oversight:** do not allow friendship to shade over into favouritism
Promote independence: give their mentees every opportunity to learn by experience	**Condemn:** do not convey to the mentees that honest mistakes are career-altering disasters
Take pride in the success of their mentees	Indulges in anger issues or getting into conflicts.
recognize that students may rise to greater levels than those who trained them	

3. MOBILE CLINICS BY THE STUDENTS (MCS)

"MCS" or daily "Mobile Clinics by Students" is a part of the unique 5-pillars system, which supports the vertically integrated modular system of Ibne Sina University, Mirpurkhas (ISUM). This was started in 2018 in collaboration with APPNA, when the President of APPNA supplied 4 mobile health systems to MMC/ ISUM to run this unique system.

While we continue to learn and benefit from the research and innovation of others (no need to reinvent the wheel or rediscover the laws of motion), we must remember our own situations, culture and values and not neglect our strengths and weaknesses while developing our systems. This is exactly what we have done in developing our vision, mission, and goals. If you go through them, you will appreciate that the above pillars are the powerful tools to achieve them. In a day and society, where copy & paste practices, plagiarism, and recently letting the artificial intelligence replace the original and critical thinking, ISUM can take some pride in SRMLG. I am proud of my team to understand, participate and take forward this unique system, which has raised the standard of learning, improved the results (Muhammad Medical College received the first prize in Sindh this year in innovation- by the Pakistan Association of private Medical & Dental Institutions or PAMI) and empowered the learners of ISUM.

As on 22ND February 2018, President APPNA_US, Dr. Zafar Iqbal, along with his Team, visited Muhammad Medical College (MMC) and Ibne Sina University, Mirpurkhas (ISUM) and provided 02 Mobile Clinics that resulted in creation of 02 Health Units.

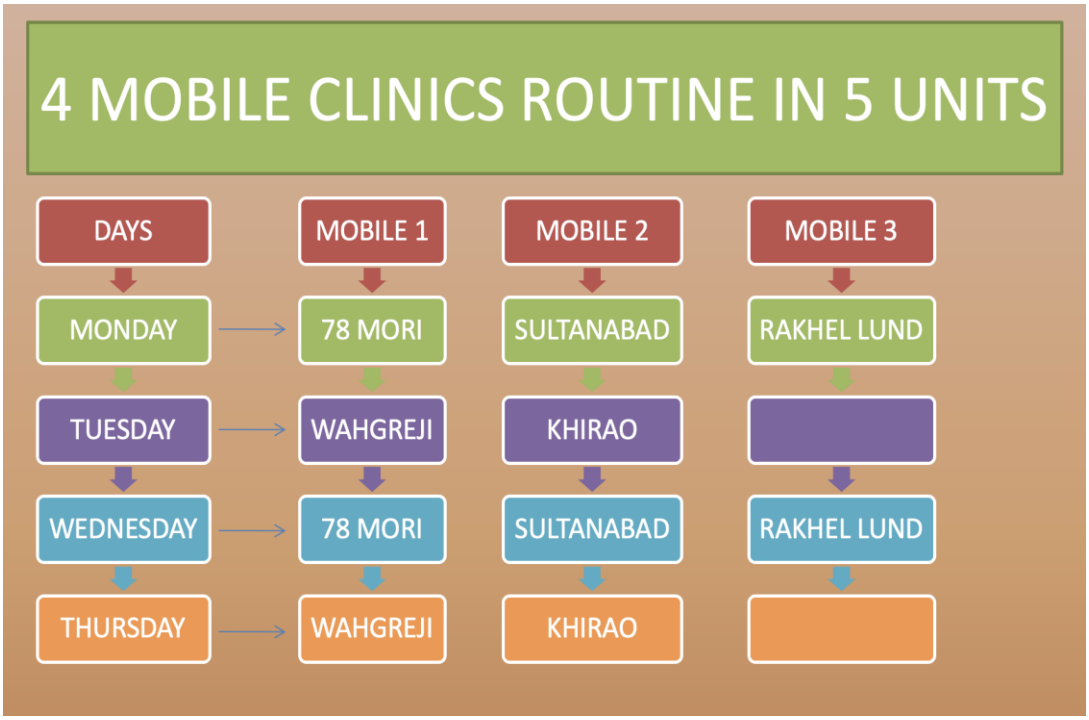
In 1st Health Unit 78 Mori village 680 patients have seen & in 2nd health Unit Wahgreji Village where 617 patients have seen on Inauguration Day that were being covered by Health Staff (Doctors, Nursing Staff & Helping Staff).

Later on, at 8TH March 2018 another 3rd Health Unit was created in Village Khirao where 1039 patients have seen on Inauguration Camp.

On 9TH March 2018 4th Health Unit in Village Sultanabad was created where 1282 patients have seen on Inauguration camp and on very next day all the Operational Activities were started. These 02 Mobile Clinics alongwith all the concerned Staff & Medicines kept working in all 04 Health Units on a well planned cycle (Monday – Thursday) that included Free Camps (Check Ups) & Medicines and not only this but if any of the patient found in need, he/she used to be referred to MMCH for free Care & Cure.

Afterward, In November 2018 APPNA_US provided one another mobile clinic that resulted in creation of 5th Health Unit on 15 November 2018 in Village Rakhel Lund where 450 patients have seen on Inauguration day and very next all 5 Health Units being covered by 3 Mobile Clinics.

Unit wise schedule of mobile clinics



Now, apart from the students of MBBS, students of BDS and DPT have also joined the mobile clinics by the students (MCS).Following is the report of each year of MCS.

MMCH MOBILE HEALTH CLINICS
SUMMARY YEARS

2018 TO 2024

YEARS	MEDICINE	PATIENTS	STUDENTS	PETROL	SALARIES	FURNITURE	STAATIONARY & OFFICE ITEM	SURGICAL ITEMS	MEDICAL & OTHER EQUIPMENTS
2018	752802	17128	1420	188000	1023000	30300	21294	35051	7960
2019	COVID-19	COVID-19	COVID-19	COVID-19	COVID-19	COVID-19	COVID-19	COVID-19	COVID-19
2020	COVID-19	COVID-19	COVID-19	COVID-19	COVID-19	COVID-19	COVID-19	COVID-19	COVID-19
2021	8076862	20239	1425	325094	2160000	193500	34600	94025	64200
2022	6524986	23329	1440	708657	2592000	193500	34600	74085	61500
2023	3842136	21662	1431	1153639	2592000	28500	26750	97945	85000
2024	3842136	19894	1400	1268633	2592000	28500	26200	88795	73300
TOTAL	**23038922**	**102252**	**7116**	**3644023**	**10959000**	**474300**	**143444**	**389901**	**291960**

4. LEARNER BASED ANNUAL SYMPOSIUM (LBAS) 26TH SYMPOSIUM:

LBAS has been conducted every year from previous 26 years along with the exceptional team of academicians, students, and staff for 26 consecutive years. In 2024, Rigorous reverberation on scientific symposium started from October 1 to 11, 2024, encompassing pre-symposium workshops, research papers from faculty, students and invited speakers from Karachi, Hyderabad, Nawabshah, Sukkur, Gambat & other cities of interior Sindh. Muhammad Medical College, Mirpurkhas, Sindh, successfully organized pre-symposium workshops, a symposium, and a conference on the theme as

Role of Universities In Promoting Higher Education in Underprivileged Areas of Pakistan

The events aimed at providing a platform for medical professionals, researchers, and students to share knowledge, exchange ideas, and discuss cutting-edge advancements in the field.

5. "GSAT" ANNUAL "GASTROENTEROLOGY SESSION WITH STUDENTS AS TEACHERS".

Muhammad Medical & Dental College (MMC), a constituent college of Ibn-e-Sina University, Mirpurkhas (ISUM), has become an icon in the field of medical education and healthcare services in Pakistan. Not only it provides quality formal medical education, but as part of its innovative activities, it keeps holding several nontraditional activities to stimulate and provoke scientific curiosity among its students and teachers throughout the year. It therefor came as no surprise that under the leadership of its Chancellor Professor Syed Razi Muhammad, ISU received the prestigious National Healthcare Excellence Award 2025 recently at Lahore from Federal Minister of Health in early April this year.

As part of these activities, for which ISUM is now well known throughout its history on National level and in particular throughout the existence of MMC since its inception in 1998, it held its 15th Annual Mirpurkhas Seminar in Medical Sciences on 30th April 2025. It is its mission to provide excellent medical educational activities to the medical students and doctors belonging to it in particular but to all doctors in the city of Mirpurkhas via open invitation, completely free of cost. The seminar was attended by Final year students along with junior and senior doctors of all clinical departments. ISU strongly believes that participating in such seminars plays an essential role in the intellectual growth of future doctors, seeing high quality advanced talks coming from experts in a variety of medical specialties.

The programme started with a recitation of verses from the Holy Quran. A Final year student Mr Talha had the honour of doing the recitation. A relatively recent addition to the Department of Diabetes and Endocrinology, Assistant Professon **Dr Sarwat Anjum** then took charge and invited Visiting **Professor Dr Syed Zafar Abbas** to give an introduction of the programme ahead. Professor Zafar Abbas gave a brief history of these seminars which started 15 years ago, and have been working its way through GI Medical Seminar, General Medical Seminar, and have now evolved into Seminar on broader Medical Sciences, involving experts from all specialities. Dr Sarwat Anjum then invited **Professor Dr Qamar Habib**, Head of the Department of Gynaecology and Obstetrics to the stage. Dr Qamar Habib gave an overview and update on "Management of New Onset Hypertension in Pregnancy". Her talk included the pathophysiology of this condition, the difference between Hypertension in general and when it happens in pregnancy, and how the management guidelines are different in these two scenarios with their rationale. She answered the questions from the audience after her talk. Head of Department of Medicine, **Professor Dr Abdul Qadir Khan** delivered a talk on "Current Management Guidelines on MASLD/MASH". With the help of various studies and figures, he explained the relatively new and updated nomenclature of this condition, and the new advances including those in its treatment. He also indicated that there was an important clinical difference in the interpretation of Body Mass Index (BMI) and waist circumference measurements of Asians and Caucasians. Head of Surgical Department and Pro Vice Chancellor of ISU **Professor Dr Aijaz Memon** gave a talk on "Enhanced Recovery after Surgery" (ERAF). He discussed various pre operative, operative and post operative measures to mitigate the chances of complications and tips on promotion of rapid and improved recovery following various surgical procedures. He also discussed the difficulties faced by surgeons in Pakistan to fully implement such changes due to lack of required resources, but more importantly because of long established surgical culture. However, he was quick to point out the practical advances at MMC Hospital (MMCH) in this respect. Head of the Department of Paediatrics, **Professor Dr Hasan Memon,** then gave an interesting update and comparison of present and past medical practice on the management of Meningitis with title of his presentation "Septic Meningitis in Children: Management in mid 70s and now". He described various treatment improvements and prevention with the help of various vaccinations. Students and doctors at MMCH are lucky to have not only the newly qualified consultants as their teachers, but also very experienced clinicians who have the advantage of their own time in the field of medicine to be able to see and in fact participate in the practice improvements spanned over decades.

STANDARD 5.1: POLICY FOR ELECTIVES

a. Electives are not mandatory nor are they a part of the curriculum. Electives are considered add on extra-curricular activities with benefits for selection for jobs or postgraduate training after MBBS.

b. The Electives Rotation will be of four weeks' duration.

c. It will be planned at least six months in advance during the 4rd or 5th Year.

d. The Elective will be planned during the **SUMMER HOLIDAYS,** preferably.

e. The institution or department will be of the student's choice.

f. During the elective, the student will not get credit for attending lectures at MDC.

g. It is the student's responsibility to ensure that his/her overall attendance record is not affected adversely by the elective.

h. The student will not proceed on an elective without informing the Vice Principal or the Concerned HOD designated for this purpose, who will take permission from the Principal.

i. The student will sign a waiver to the effect that any shortfall in attendance is his /her own responsibility and will be dealt with as per the rules of Liaquat University of Medical & Health Sciences (LUMHS).

j. The adequacy of education during the elective is the student's own responsibility.

k. Permission to attend an elective is given by the Associate Dean designated for this purpose. This simply implies that the college authorities are aware that the student is away for this period so that admission is not cancelled.

l. The student will ensure that the Elective Supervisor completes an evaluation report at the end of the elective.

m. MDC will not provide any financial assistance for the elective.

STANDARD 5.2: INSTRUCTIONAL STRATEGIES FOR INTEGRATED CURRICULUM

The educational strategies in this curriculum are various and aligned with the domain of learning and according to the desired outcome, and known as The Mode of Instructional Transfer (MITs). Following the MITs are integrated into learning.

1. Large Group Interactive Session (LGIS)
2. Team-Based Learning (TBL)
3. Case-Based Learning (CBL)
4. SURVIVE
5. Post-test Discussion
6. Tutorials
7. Assignments
8. Case Presentation
9. Bedside Teaching/Ward-Based Teaching
10. Simulations
11. Skills Laboratories
12. Case-based Conference
13. Lab Practical
14. Demonstrations
15. Ward Rounds
16. Flipped Classroom
17. Community-Based Teaching

The university involves its students in research-developing work in these designated communities. Students are encouraged to participate in the preventive and curative care and management of patients and their families in Primary Health Care field settings from the very first year of the BDS program.
“MCS” or daily “Mobile Clinics by Students” is a part of the unique 5-pillars system, which supports the vertically integrated modular system of Ibne Sina University, Mirpurkhas (ISUM). This was started in 2018 in collaboration with APPNA, when the President of APPNA supplied 4 mobile health systems to MMC/ ISUM to run this unique system. Through this MCS, students of BDS and MBBS will be involved in community-based learning with senior faculty members once a week Tuesday or any other day as decided by the administration ISUM. This is an excellent platform to involve students in community-based research projects.

Teaching in an integrated curriculum is based on themes that unite different disciplines by blurring their boundaries. These themes allow teachers of different disciplines to meaningfully link the content of their respective disciplines to enable students to see the big picture and appreciate the relevance of their learning to their future practical life. The selection of tools for information transfer should ensure simultaneous input of different disciplines to enhance understanding and implementation of knowledge being taught. Different disciplines may need to have joint teaching sessions to help students develop links between information coming from different subjects. While tools and methods mentioned in the traditional curricula above may continue to be used, the following tools are commonly used for module or theme-based teachi

COGNITION:	PSYCHOMOTOR TRAINING	ATTITUDE OR BEHAVIOR
• Joint or paired lectures by different disciplines • Problem-based learning sessions • Case-based learning sessions • Group work by students • Seminars • Tutorials • Videos • Clinical-pathological conferences • Symposiums • Webinars • Self-learning • Assignments • Community work (Mobile Clinics by Students)	• Workshops • Skill labs • Cadaveric dissection • Models • Laboratory work • Bedside teaching • Emergency or casualty department • Operating theatres • Ward rounds • Community work (Mobile Clinics by Students)	• Training • Videos • Role plays • Role modeling • Workshops • Group assignments • Community work (Mobile Clinics by Students)

OPERATIONAL DEFINITION OF DIFFERENT TEACHING STRATEGIES	
Delivery of a curriculum also needs a diversity of educational Vernacular for the different learning styles. The following are a few of the recommended Instructional Strategies. It is advised that at least three different methods of instruction should be adopted in institutional Planning. This will enable the diversity of Learning patterns to be facilitated.	
Interactive Session (Large Group 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 outperform 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. ➢ 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. Use of resources Presentation skills Leadership Respect for Colleagues' view.
Case-Based Learning (CBL)	➢ It is an inquiry structured learning experience utilizing live or simulated patient cases to solve, or examine a clinical problem, with the guidance of a teacher and stated learning objectives. **Significance of Its Usage** • Induce a deeper level of learning by inculcating critical thinking skills. • Flexibility on the use of the case • Helps students acquire insightful information. • Stay abreast with novel advancements in healthcare
	• Tutorial is a class or short series of classes, in which one or more instructors provides intensive instruction on a subject to a small group. Its purpose is to explore student point of view for discussion.

Tutorials	• It 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
Case Presentations	➢ It is a teaching method which provides descriptive information about a clinical patientscenario and to share this educational experience with the general medical and scientific community. ➢ It prepares students for clinical practice, using authentic clinical cases by linking theory to practice with the help of inquiry-based learning methods. **Significance of its usage** • Cultivate the capacity for critical analysis. • Judgment and decision-making. • Facilitate creative problem solving. • Allow students to develop realistic solutions to complex problems
Bedside Teaching	➢ Teaching and learning that occurs with actual patient as the focus. ➢ It occurs in wards,emergency departments, operating rooms, and high dependency units. **Significance of its usage** • Stimulus of clinical contact. • Psychomotor skills • Communication skills • Language skills. • Interpersonal skills • Professional attitudes and empathy • Role modeling
Simulation	➢ Person, device or set of conditions, which attempts to present education and evaluation of problems authentically. ➢ The student or trainee is required to respond to the problems as s/he would under natural circumstances. **Significance of its usage** • Safety for patients Liberty to make mistakes. • Manageable/variable complexity of tasks • Opportunity to develop self-efficacy before real patient encounter. • Repeatability of tasks. • Learning at a different pace is permissible
Skills Laboratories	➢ It refers to specifically equipped practice rooms functioning as training facilities offering hands-on training for the practice of clinical skills within a non-threatening environment prior to their real-life application. ➢ This applies to both basic clinical skillsas well as complex surgical skills. **Significance of its usage** • Controlled, anxiety-free, and risk-free learning environment to students. • A platform for repeated practice for mastery in relevant clinical skills. • Increase the preparedness of student learners before transitioning to the real hospital setting. • Build strong communication skills. • Enable learners to make critical decisions.
	Clinical Case based conferences allow clinicians and medical students to present difficult case

Case Based Conference	material and include discussions of diagnostic, clinical formulation, and/or treatment issues. **Significance of its usage** • Provides detailed (rich qualitative) information. • Provides insight for further research. • Permitting investigation of otherwise impractical (or unethical) situations.
Lab Practical	Lab practical involve things like identifying a structure, a type of stain through amicroscope, a problem with a preparation, reading biochemical test results andanswering safety questions. These simulations allow students to attempt experiments in the laboratory in a risk-free way that provides the opportunity to makemistakes 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 outin 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 student's response.
Ward Rounds	It is a composite clinical practice to review inpatients management and progress, tomake decisions about further investigations, treatment options and discharge from hospital. It is an opportunity for clinicians, students, and patients to participate in education and training at bedside. • **Significance of its usage** • Patient management skills • History taking • Physical examination Time management skills Communication skills
Community-Based Learning	MMDC-ISUM is committed to providing the environment and training that would enable professionals to successfully contribute to the improvement of the health sector, particularly in less privileged communities, under the Community-Oriented Medical Education Program. Community-based Learning is provided to students with the collaboration of the Community Dentistry and Community Medicine Department.

STANDARD 5.3: PROPOSED ASSESSMENT OF METHODOLOGIES FOR INTEGRATED CURRICULUM

OVERVIEW:

"Lack of assessment and feedback, based on observation of performance in the workplace, is one of the most serious deficiencies in current medical education practice".

John Norcini and Vanessa Burch, 2007

- Assessing the learner is the most important and difficult task for the tutor as students may be able compensate for sub-optimal teaching, but misaligned/poor assessment of their abilities can have longlasting effects on their personal and professional goals.
- Assessment is important not only for students but also for tutors, course/syllabi organizers, and the accrediting body (affiliated university/PM&DC).
- Assessment data informs important decisions related to whether learning outcomes have been achieved to allow progression to the next level of the course.
- More importantly, holistic assessment determines whether the potential graduate is competent and can practice as a safe doctor.
- In curricula which are theme or module based, each module needs to be followed by assessment to determine achievement of learning outcomes defined for that module.
- Assessment can be both summative and formative, thereby using it for grading of students as well as for providing students with feedback to enhance and improve their learning respectively. Knowledge, skills and attitude learned during the modules will need separate tools for assessment.

INTEGRATED ASSESSMENT

- Integrated curriculum must be aligned with integrated assessment policies as it is an instrumental and integral part of curricular development.

ASSESSMENT PROCESS

- Integrated assessment requires an in-depth analysis and understanding of the process. A good starting point for this is seeking to answer important questions, the answers of which will help form the basis of these assessments.

1. **Why assess the students?**

The purpose of assessment has to be clear and must include assessment for learning (as a learning strategy) and assessment of learning (summative assessment) for progression, remediation or promotion.

2. **Who should assess the students?**

The stakeholders should include program advisors/organizers, accrediting body, affiliated university, enrolled college, tutors, other health care professionals and students themselves, as well as standardized patients. PM&DC will oversee the assessment process to be implemented by medical universities in their affiliated colleges.

3. **What should be assessed?**

All the competencies must be assessed. The integrated curricular objectives must be

aligned with the content to be assessed according to the context in which it is taught to students. The chosen assessing material will demonstrate what is valued for example knowledge of higher order thinking, clinical skills, behavior/attitudes and professionalism among other requirements.

2. **How should the students be assessed?**

Integrative assessment fosters a wide variety of tools which can be incorporated to assess students. The methods to be used should be:

a. Reliable and consistent
b. Valid in measuring what it is to measure
c. Feasibility according to the resources available
d. Assessment must have an impact on student learning
e. Amenable to an appropriate standard-setting method

3. **When should the students be assessed?**

The enrolled colleges can devise their own strategy of number of internal assessments to be carried out within the prescribed timelines of the affiliated universities. The University may provide a template of the **"Course, Module or Rotation Objective Assessment Map"** in the assessment procedure document. E

each course will develop an examination blueprint, which will include all competencies and information on the methods, timing, and relative contribution to the final mark of all summative assessments, criteria for passing and remediation must be specified by the university. The final assessment by universities must be within timelines by the accrediting body.

4. **Where should the students be assessed?**

Internal and external assessments must conduct theory examination/practical in appropriate examination venues

ASSESSMENT TOOLS

These tools should assess higher level of cognition like understanding, application, interpretation, analysis and decision making rather than simple recall. Different disciplines will need to develop these assessments together to judge holistic comprehension and ability to practice what is learnt by student. Tools of assessment which can be used for integrated curriculum are as following.

COGNITIVE DOMAIN	PSYCHOMOTOR DOMAIN	AFFECTIVE DOMAIN
1. MCQs 2. Extended matching questions (EMQs) 3. Short Answer Questions (SAQs) 4. Short Essay questions (SEQs) 5. Oral Examination	**Formative Assessment:** a. OSPE b. Mini-Clinical Evaluation Exercise (Mini-CEX) c. Surgical DOPS (Directly Observed Procedural Skills) Case Based Discussion **Summative Exam:** (OSCE) Practical Examination Direct Observation of clinical skills, Long case Short case	The following tools can assess behaviour, communication skills, ethics and professionalism. a. Interviews b. Direct observation of communication skill and behaviour c. OSPE/OSCE d. Portfolios e. Reflections (only for formative assessment)

STANDARD 5.4: CURRICULUM MAP

STANDARD 6: ASSESSMENT

Muhammad Medical & Dental College adheres to the constructive alignment model, whereby the teaching methodologies and learning objectives are matched with the assessment. For the purpose of evaluating the formative tests for the BDS program, our institute has a clear assessment policy and an Examination Cell. However, LUMHS administers the Summative Professional Examinations.

STANDARD 6.1: ASSESSMENT POLICY

PURPOSE:

The purpose of this Assessment Policy is to outline assessment practices within the MMC MBBS & MDC for BDS program. The policy has been developed by the Department of Medical Education (DME), and it documents a clear format for all types of assessments. This document is intended to complement the LUMHS assessment policy that outlines the structure for conducting annual summative assessments and certification of the MBBS degree.

GUIDING PRINCIPLES OF ASSESSMENT POLICY IN MUHAMMAD MEDICAL AND DENTAL COLLEGE

- MMC & MDC have the responsibility to ensure that all stakeholders understand that students have achieved the identified outcomes of our MBBS & BDS programs.
- Good assessment requires a variety of methods; no single method is enough to assess learning outcomes across all domains.
- Feedback should be provided to students following all assessments to ensure that students identify gaps in their learning and faculty can review future curricular and assessment content.
- Each assessment instrument/method must be selected based on scientific evidence
- All assessment decisions must be made on rational arguments and scientific underpinnings. The faculty must be trained/ show competence in the use of various assessment strategies.
- The quality of the entire assessment process must be ensured.
- The assessment process should be clear and transparent so that students know in advance the expectations (from students) and the Consequences of the assessment.
- The Timing and Mode of each College & University Assessment must be explicitly defined in the assessment plan.
- Details of LUMHS exams are available in the Assessment Policy 2021 document

ROLES OF VARIOUS DEPARTMENTS IN ASSESSMENT:

Each department is responsible for student assessment within its domain. Students must be continuously assessed for the required knowledge, skills and attitudes through various examination procedures. Records of the conduct of these procedures should be maintained in the departments in the form of documented assessment plans.

There are two forms of Assessment:

1. Formative Assessment
2. Summative Assessment

1. FORMATIVE ASSESSMENT

Formative assessment has been defined as “activities undertaken by teachers and by their students in assessing themselves that provide information to be used as feedback to modify teaching and learning activities. Formative assessment is a systematic process to continuously gather evidence about learning. Student performance in these assessments is used to identify a student's current level of learning and to adapt lessons to help the student reach the desired

learning goal. The data are used to identify a student's current level of learning and to adapt further teaching to help the student reach the desired learning goals. These assessments which do not necessarily carry Weightage in the final examination. Formative Assessment should be carried out throughout the blocks and clinical rotations using various strategies at the discretion of departments. Formative assessments must be accompanied by feedback to the students.

Formative assessments also inform students

- About what the learning goal is,
- Where the students are in relation to that learning goal,
- What can be done to improve subsequent performance

Formative assessment has two further types

I. **Informal Formative Assessments**: Taken during or at the end of a teaching session to ensure student learning. Informal formative assessments do not need to be planned and can be taken spontaneously.

II. **Formal Formative Assessments.** These are planned in the form of planned quizzes, assignments, class tests etc. The results of formal formative assessments must be shared with students. Formal formative assessments can be used to inform internal assessments if required.

2. SUMMATIVE ASSESSMENT

Summative tests are usually given at the conclusion of instructional units and are nearly always graded. The governing body for the Muhammad Medical & Dental College MBBS & BDS program's summative examinations at the end of the session in LUMHS.

After a summative assessment, if a student performs adequately, there is usually no additional formal learning on the examined subject—unless there is a cumulative final examination.

Summative assessments serve the purpose of evaluating a student's performance or proficiency at a given moment as well as determining their eligibility for special programs (like gifted and talented education), if they should move on to the next grade, if they should receive career guidance, and if they meet the requirements for awards.

These are the assessments which are used to inform decisions about students' progress, promotion and graduation from the Muhammad Medical College MBBS program. Summative assessment decisions are made on the basis of both internal assessments scores and end of year assessment scores. Internal assessments will contribute 20%, each for theory and practical.

Internal assessments include module exams, End of the block (EOB) exams, ward tests, OSCE/ OSPE, pre annual exams. Assessment strategies used in End of the block (EOB) exams & pre annual exams and professional assessments shall remain the same. The details of examinations for each professional exam are present in the LUMHS assessment policy.

The methods for summative assessment are as follows:

A. Multiple Choice Questions

- Single best type MCQs have five options with one correct answer and four distractors are part of assessment.
- Total 100 MCQs are included which are formulated through the table of specification from learning objectives of Module interactive lectures.
- Time duration for Modules MCQs is 1 and half hour.
- MCQs are used to assess objectives covered in each module.
- Students after reading the statement / scenarios select one appropriate response from the given options.
- Correct answers carry one mark, and incorrect will be marked zero. Rule of negative marking is not applicable.
- Students attempt the MCQs exam on Computer screen on Moodle / LMS program in IT Lab.

B. Short Essay Questions (SEQs):

- Short-answer questions are a structured way of asking open-ended questions that require students to create their answers based on their knowledge.
- Commonly used in examinations to assess the depth of knowledge and understanding.
- Modular exams include 10 questions each carrying 10 marks.
- Time Duration for Essay-type Modular exam is 2 hours.
- Questions are selected from the specific learning objectives of the specific ongoing module.

C. OSPE / OSCE

- Each student is assessed on the same content and have same time to complete the task.
- Time allocated for each station is five minutes as per Examination rules of Ibn e Sina University, Mirpurkhas.
- All students are rotated through the same stations.
- OSPE / OSCE Comprises of 15 - 20 stations.
- Each station may assess a variety of diagrammatic identifications and clinical tasks. These tasks may include history taking, physical examination, skills and application of skills and knowledge
- Stations are Interactive, observed, unobserved (static) and rest stations.
  - Interactive Stations:
    - In this station, examiner ask questions related to the task within the allocated time.
  - Observed Stations:
    - In observed stations, internal or external examiner don't interact with the candidate and just observe the performance of the skills or procedures.
  - Unobserved (static) Stations:
    - It will be static stations in which there may be models, specimens, multiple identification points, X-ray, Labs reports, flowcharts, pictures, or clinical scenarios (to assess cognitive domain) with related questions for students will be used to answer on the provided answer copy.
  - Rest station
    - It is a station where there is no task given, and in this time student can organize his/her thoughts

D. WEEKLY ONLINE TESTS (SURVIVE)

The weekly tests are conducted for all classes. The tests are conducted online and are on topics displayed on the portal (Moodle). It consists of 35 MCQs. 5 MCQs will be from the previous weeks (slightly altered to change the answer or the right option). Everyone taking lectures, submits two MCQs to the Chairperson of the department who will check and pass them to the class moderator. MCQs can also be sent directly to the class moderator, who submits the MCQs to IT department for final placement on the moodle.

- The MCQs are not merely simple recall but test higher level of cognition. As far as possible, they test an important concept related to one of the topics of the week.
- It is somewhat different from the Annual or Semester Examinations in that the goal of summative assessment is to evaluate student's learning at the end of an instructional unit by comparing it against some standard or benchmark, to decide if the student can be promoted or not, whereas the goal of these weekly tests is to check the understanding of the students on the important concepts related to the topics that have been displayed on the portal for the week, the teachers have taught them and the students have made assignments on them.

E. LONG CASES

As part of a lengthy case, a kind of clinical examination, a junior professional, trainee, or undergraduate student discusses a specific case with a senior professional. Each scenario in a lengthy case typically lasts at least 20 minutes, as the name suggests, though it may last longer depending on the circumstances.

F. SHORT CASES

Every brief case starts with a stem, and you have seven minutes to complete the assessment. to establish a reliable diagnosis or aetiology for the issue the patient is presenting with.

INTERNAL ASSESSMENT

MDC will conduct periodic tests as well as end of the chapter tests in each subject on regular basis. Most of the tests will be conducted online, similar to the Muhammad Medical College. There is a policy of ongoing or formative assessment of all students and summative assessment at the end of the module. Muhammad Dental College Mirpurkhas is affiliated with Liaquat University of Medical& Health Sciences, Jamshoro.

Formative or ongoing assessment:

- Marks for CBL sessions, SURVIVE, logbooks, history writing or clerking of patients.
- End of OPD rotation examinations, CATs, quizzes and tests held in a department. The end-of-module test comprises:
    - OSCE or OSPE examination
    - Viva voce exam.
    - Written theory examination
    - The written examination has 2 parts an MCQ and a short answer or short essay type examination.

Summative Assessment:

- Annual examination will be conducted by the affiliating university as per PM&DC guidelines.
- **The end-of-module test comprises** 30**%** of the final professional examinations
    - Written Final professional theory examination based on MCQs=70%
- **Final OSPE/OSCE.OSVE:**
    - OSCE or OSPE examination, Viva voce exam=80%
    - Internal evaluation =20%

Generation of internal evaluation marks from each module.

- 20% MARKS will be calculated from each end of the module exam and will be counted in the final examinations. The Internal evaluation is communicated to the University by the administration department.
-

SCHEME OF INTERNAL ASSESSMENT/EVALUATION-20%-2025			
Overall attendance		7%	
Modular Test/Ward test/OPD Test		2% (6%)	
SURVIVE		7%	
SURVIVE 7%			
Final Year		**Remaining Years**	
Test	3%	Test	3%

Assignment	2%	Assignment	2%
Post Test Discussion	2%	PTD/Practical Book/Logbook	2%
Total	7%	Total	7%

STANDARD 6.3: DIVISION OF INTERNAL ASSESSMENT 20%

THEORY		
S. No	**Scoring Parameters**	**Marks**
1	MCQ.SAQs and OSCE/OSPE	80%
2	Internal Assessment	20%
3	Presentations	
Distributions of Examination Marks (03 Examinations in a Year)		
S. No	**Scoring Parameter**	**Marks out of 10%**
1	Exam Theory (150) and Practical (100)	250
2	MCQs	50
3	SAQs/SEQs (12 questions out of 09 will have to be attempted)	50
4	Internal Assessment Theory	25
5	Practical Exam	100
6	Internal Assessment Practical	25
Allocation of Internal Assessment marks		
Practical (OSCEs & OSPEs)		
S. No	**Scoring Parameter of THEORY**	**Marks out of 10%**
1	Attendance > 90%=3, 89-80%=2,79-70%=1: <70%=0	3%
2	Mid Term/Pre-Prof Exam	3%
	Research	1%
3	*Continuous Assessment (Average Score of MCQs attempted after every Learning session)	3%
S. No	**Scoring Parameter of Practical**	**Marks out of 10%**
1	Attendance > 90%=3, 89-80%=2,79-70%=1: <70%=0	3%
2	Practical Books/Logbooks	2%
3	Continous Assessment (Average Score of OSPEs/OSCEs attempted after every learning session)	2%
4	Mid Term/Pre-Prof Exam	2%
5	Elective/Selective	1%

*OSPE to be conducted at the end of each learning module and OSCE to be conducted at the end of each Clinical Rotation. The average of OSPEs and OSCEs will be considered as Continuous Assessment.

Mid Term, Final and Annual Examination (Format should be provided).

Clinical Clerkship Rotation (Assessment method and format should be provided).

Log Books with Grading.

OSCE/OSPE/Short Cases/Long Cases (Format should be provided).

Quarterly Feedback and Assessment (Format should be provided).

Assessment Blueprints for Final Years

IBN-E-SINA UNIVERSITY, MIRPURKHAS

MUHAMMAD MEDICAL COLLEGE

C E R T I F I C A T E

OF INTERNAL ASSESSMENT FINAL YEAR MBBS

Mr./Miss. _____ S/o, D/o_____

Name of Test	Max Marks	Obt Marks	Percentage	Comments
A. SURVIVE				
Survive Weekly Tests				
Assignments				
Post Test Discussion				
Attendance in class				
Total in Survive				
B. TEACHING OSCE				
Teaching OSCE 01				
Teaching OSCE 02				
Teaching OSCE 03				
Teaching OSCE 04				
Total in OSCE				
C. WARD TESTS				
Ward Test Surgery				
Ward Test Medicine				
Ward Test Gynae/Obs				
Ward Test Paeds				
D. PRESENTATION & RESEARCH				
Symposium 4th Year				
Symposium 5th Year				

* Total in survive includes attendance marks too.
* Ward tests include marks for history taking, portfolio, workshops, ward attendance, performance/assistance too.
* Attendance in class and wards (morning & evening) are marked using biometrics.

Prof. Syed Razi Muhammad
Chancellor

STANDARD 6.4: EXAMINATION POLICIES

STATUES

- Muhammad Medical & Dental College, Mirpurkhas, is affiliated with Liaquat University of Medical& Health Sciences, Jamshoro.
- Annual examination will be conducted by the affiliating university as per PM&DC guidelines.
- MDC will conduct periodic tests as well as end-of-the-chapter tests in each subject on regular basis. Most of the tests will be conducted online, similar to the Muhammad Medical College formulation.
- The Internal assessment will be based on attendance, test results, assignments aswell as the logbook.
- Students are required to be punctual.
- Minimum 75% attendance is mandatory to appear in the Annual examination.

1. The First Professional BDS Examination shall be held at the end of first year BDS class
2. Every candidate shall be required to study contents of Anatomy (including Histology), Physiology, Biochemistry, Oral Anatomy and Tooth Morphology, Behavioural Sciences, Community Medicine & Public Health, Pathology, Pharmacology & Therapeutics, Islamic Studies/Ethics and Pakistan Studies, Clinical skills and Professionalism, Ethics, Research and Leadership. The teaching and assessment shall be done in three modules.
3. **Attendance** of lectures, tutorials and labs/OPD will be assessed separately and must be at least **75%** by end of session.
4. **Weekly online Test:** Online test will be conducted every week comprising MCQ's from every topic taught during previous week.**Online Class assessment test results** will also be incorporated in internalassessment
5. **Assignments**: Students will be given assignment in a group of 5 each, which will have to be submitted by **given due date**.
6. **Quiz competition** performance.
7. **Workbook/Logbook** should be completed, checked and certified.
8. **SURVIVE:** .
9. **ISLAMIC STUDIES/ETHICS AND PAKISTAN STUDIES**

The examination in Islamic Studies/Ethics and Pakistan Studies shall be as follows-

I. One written paper of 100 marks in Islamic Studies/Ethics and Pakistan Studies having two components: Islamic Studies/Ethics component having 60 marks, three (3) Long Essay Questions (LEOs) to be attempted out of five (5) Long Essay Questions (LEOs), having 20 marks each.

II. Pakistan Studies component having 40 marks, two (2) Long Essay Questions (LEOS) to be attempted out of four (4) Long Essay Questions (LEQS), having 20 marks each.

Note: Islamic Studies for Muslims, and Ethics for Non-Muslims candidates.

Examinations are conducted at three point of time in entire academic year:

EVALUATION PLAN			
	Exams	**Pattern**	**Assessment**
1	Each Module	Written test (MCQ and	Formative

		SEQ)	
1	After 9/11 weeks of Clinical Rotation, Ward test/OPD Test will be conducted	Ward test (OSCE and short case)	Formative
2	At the end of 36 weeks	Pre-Prof Exam (MCQ and SEQ) Viva voce as per LUMHS Policy	Formative
3	Annual	University Professional Exam	Summative

1. **Formative or Ongoing Assessment:**

a. The written examination has 2 parts an MCQ and a short answer or short essay type examination.
b. OSPE examination
c. Viva voce exam.
d. Practical journals, marks for TBLs/PBLs sessions
e. Quizzes and tests, Continuous assessment tests (CATS

MCQ's and SEQ's: Multiple choice questions and short essay questions test will be used at the end of part of curriculum to assess the learning of knowledge. These all assessment exercises will be formative. The written tests like Multiple-Choice Questions (MCQs) and Short-Essay Questions (SEQs) test formats are used for the assessment of cognitive domain. The MCQs are more objective and essentially select type of item response format. MCQs have a cueing effect, which promotes guessing and leads to higher scores. In addition, writing MCQs of higher cognitive level of problem solving is challenging. On the contrary, the SEQs are more subjective and have a supply or construct type item response format, which does not have any cueing effect and can effectively assess problem solving skills.

OSCE AND SHORT CASE: Short case and OSCE will be used to evaluate clinical skills and procedural skills at the ward end of placement. The OSCE is a method of clinical skill assessment, and it has been reported to be appropriate for assessing learning achievement levels in the psychomotor and emotional domains, which are difficult to evaluate with written examinations.

CLINICAL LOG BOOK: Clinical log book is meant for self-directed learning (SDL) and assessment of students. The clinical logbook includes reflection which helps the students to set educational goals.

MINI-CEX: Mini-CEX is used to assess the clinical skills and problem solving skills of medical students. This is the tool used by clinical teachers. This can assess all three domains, Psychomotor, cognitive and affective. This also used as formative assessment.

INTERNAL ASSESSMENT:

i. The weightage of internal assessment shall be 20% of total marks.
ii. Continuous internal assessment shall consist of evaluation at the end of each assignment, e.g. stages/sub-stage, class tests etc., and attitudinal assessment from educational supervisors.
iii. Assessment of knowledge, Skills, and Attitude shall contribute toward internal assessment. Methods used to assess these domains shall include Multiple Choice Questions of one-best type, Short essay questions, Oral/Viva, and Practical/Clinical examinations.
iv. The score of internal assessment shall contribute to the score in the final examination, Final university examination of each subject shall contribute 90 to total score, and the candidate shall pass in aggregate. v. Proper record of continuous internal assessment shall be maintained.

2. **Internal Examinations/Pre-Prof Examinations/Formative Assessment shall be compulsory for students of all classes.** Students who do not appear or fail in the examination will be regarded as students whose courses of instructions are incomplete and unsatisfactory and will not be allowed to

appear in the university professional examination for promotion to the next higher class and may also loose the scholarship, if any, granted to them. Pass percentage for Pre-PROF examinations is 50%.

3. **University Examinations**

University Examinations are strictly governed by the statutes and regulations of the Liaquat University of Medical and Health Sciences (LUMHS).

a. First Professional BDS Examination will be held at the end of first academic year.
b. Second Professional BDS Examination held at the end of second academic year.
c. Third Professional BDS Examination will be held at the end of third academic year.
d. Fourth Professional BDS Examination will be held at the end of fourth academic year.

NOTE: Any student who fails to clear first professional BDS examination in four consecutive chances (availed or un-availed on becoming eligible for examination) shall not be eligible for continuation of Dental studies of the BDS Program.

STANDARD 7: ROTATIONAL PLAN FOR ONE-YEAR HOUSE JOB

Department	Rotation
Orthodontics	02 Months
Prosthodontics	02 Months
Operative Dentistry	02 Months
Oral Surgery	02 Months
Diagnosis	01 Months
Periodontology	02 Months
Paediatric Dentistry	01 Months
Total	12 Months

If the sufficient numbers of patients are not available then the procedures should be performed on models or typodonts and a presentation prepared, delivered and submitted.

Note:

- Posting end assessments will be performed at the end of each posting. Clearance is mandatory and subject to passing the assessment.
- At least one research group participation is recommended by the end of the year.
- Archiving and record maintenance is mandatory in all departments.
- Records are to be maintained and saved for further investigations and shared with other dental institutions as required.
- The above rotation will be flexible depending on the facilities available. However, rotation in the first four departments listed in the table above is mandatory.

RULES & REGULATIONS FOR HOUSE JOB:

- 75% Attendance in OPD
- Submission of Logbook on Time
- Complete Departmental Tasks and Objectives as per schedule and requirement

CONTINUOUS DENTAL EDUCATION:

- Department of Periodontology will arrange Case-Presentations and Journal discussions for students to stay updated in Evidence-based Clinical Periodontology.
- Department of Medical education in compliance with Department of Periodontology will arrange workshops for students to improve learning.

PROGRAM EVALUATION & MONITORING: Quality Enhancement Cell with collaboration of Department of Medical/Dental Education is responsible to evaluate the graduate program of BDS which include;

- Faculty feedback
- Student Feedback on Curriculum
- Teachers Feedback on Curriculum
- Student Feedback of Facilitators.
- Analysis of Examination results
- Quality Enhancement Cell

STANDARD-8: CURRICULAR MANAGEMENT/EVALUATION

ISUM has an active Curriculum Evaluation Committee, comprising medical educationists responsible for evaluating the curriculum throughout the year to determine whether it has successfully produced professionals with the desired attributes, with the support of the Institutional Quality Assurance Cell.

QAC will take regular feedback from all stakeholders, including students, teachers, and administration, regarding learning activities, difficulties being faced and suggestions for improvement. adopted by the University/ Institution in accordance with the HEC guidelines. Program must be evaluated by institutional quality assurance cell in coordination with University QEC who should be entrusted with responsibility to evaluate curriculum throughout the year to determine whether curriculum has succeeded in producing professionals with desired attributes.

- They will arrange focus group discussions with teachers and students periodically to discuss issues being faced during learning.

All this information will be used to modify and improve the curriculum to enhance and encourage the process of learning. To ensure the optimum delivery of curriculum, robust quality assurance mechanism is in place.

The Program Monitoring and Review Policy is an integral component of the Ibn-e-Sina University for Undergraduate and Postgraduate Studies system of Institutional Effectiveness and Quality Assurance (IEQA). It provides a systemic approach that allows programs to maintain their academic standards, assure the quality of their academic provision, ensure alignment with the institute's mission and strategic goals, and guide their own development continuously. It is a mechanism of continuous improvement that provides programs with the opportunity to evaluate their current status and achieved progress, and set direction for the future, including the needs and priorities for those programs.

All graduate programs at Ibn-e-Sina University are subject to this policy and are required to conduct ongoing monitoring, annual assessments, and periodic reviews. Heads of Programs are responsible for the implementation of this policy within their program in collaboration with their program members and in coordination with relevant units such as the Office of Institutional Effectiveness and Quality Assurance (IQAE). This is the responsibility of the deans to oversee the implementation of this Policy.

a. The subsequent stage of designing and developing curricula involved identifying themes, organizing syllabi elements into corresponding modular patterns based on the themes, specifying the subjects to be taught for each learning objective, and allocating hours for various components. This was carried out as an ongoing, hands-on development and design workshop. Medical educators and subject matter specialists conducted it. Most of the subject advisory panels were represented by the subject specialists. All the subject matter specialists, however, had notable educational backgrounds for their subjects and were leaders in their own fields.
b. To finish the modules, a working committee consisting of Lead Medical Educationists and the Department of Medical Education determined on the modules' structure, themes, hourly allotment, syllabi material, and suggested clinical relevance.
c. The completed modules, evaluation guidelines, and structure have undergone the required procedures of the Academic Council and Board of Studies.
d. Since the curriculum is a work in progress, any suggestions for changes, additions, or deletions made during the statutory approval process were included in the curriculum guidelines.

e. Additionally, it has been ensured that a routine for feedback and curriculum assessments is integrated throughout the entire implementation process, allowing for periodic additions and revamps. This last action is required to ensure that any educational component is included and that there is no duplication in the delivery content.
f. The entire approach includes stakeholders, disciplinary perspectives, medical educationists, monitoring and leadership involvement for curriculum development.

1. INTRODUCTION

The Quality Enhancement Cell (QEC) of Muhammad Medical College was officially established in 2019. Improving the quality of instruction across all Muhammad Medical and Dental College programs is the primary objective of QEC. In order to ensure the caliber of academic programs and support teachers and administration in establishing high standards for education, self-evaluation is a crucial tool. In order to maintain and improve the standard of higher education, QEC needs to ensure that procedures for quality assurance are established and implemented. Gaining insights from comments and applying information from program assessments is an ongoing activity that improves student learning.
In order to improve student learning, assessment is a methodical process for gathering, evaluating, and applying important quantitative and qualitative data and information regarding educational programs from a wide range of sources. This is to assess and track whether learning and academic standards are being reached or whether more work needs to be done to meet them. When evaluation data are applied to enhance student learning, the process comes to a close. The following elements must be present for the program assessment to be successful:

2. OBJECTIVES

- Facilitating the adoption of Quality Assurance methods and policies is the responsibility of QEC.
- Ensuring that educational programs meet national and international standards in terms of quality, relevance, and alignment.
- Working together with the faculty to examine, modernize, and adapt the curriculum to the ever-evolving needs of the healthcare industry.
- Developing reliable evaluation techniques to precisely gauge program results and student accomplishment.
- Working together with the faculty to review, modernize, and adapt the curriculum to the ever-evolving needs of the healthcare industry.
- MMC & MDC are implementing quality-focused methods such as SRMLG to raise stakeholder satisfaction and institutional performance.
- QEC is in charge of getting input from staff members, instructors, recent graduates, and students.
- Gathering and evaluating input from students in order to pinpoint areas that require development and enhance the fit between learning opportunities and student requirements.
- Ensuring adherence to rules, policies, and directives concerning healthcare and medical education.

3. CURRICULAR EVALUATION PROCESS

The following steps are involved in the curriculum evaluation process that a medical college's Quality Enhancement Cell (QEC) oversees:

A. PLANNING AND PREPARATION: This stage entails establishing the evaluation's goals and scope, creating a thorough plan that outlines the procedure, schedule, and responsible parties, and gathering pertinent documents such learning outcomes, curriculum materials, and assessments.

B. DATA COLLECTION: Utilizing a variety of techniques, such as document analysis, interviews, and surveys, is the second phase. To evaluate how well learning objectives, instructional strategies, and assessments line up, information is collected from a variety of sources, including employers, educators, alumni, and students.

C. ANALYSIS AND ASSESSMENT: In the third step, the data is analyzed to determine the curriculum's strengths, weaknesses, and areas for improvement. Teaching methods, assessment techniques, and curriculum content are assessed, and the curriculum's applicability in addressing current healthcare requirements and industry trends is determined. The curriculum violates best practices for medical education as well as national and international standards.

D. RECOMMENDATIONS AND ACTION PLANS: Creating well-founded recommendations based on evaluation findings is what this stage entails. To create a thorough action plan that outlines how to handle problems that have been identified for improvement based on analysis, evaluations, and suggestions.

E. IMPLEMENTATION AND MONITORING: All of the processes are valuable when they are put into practice. This step entails implementing suggested curriculum modifications, regularly assessing the implementation's progress, and making any necessary improvements.

According to PMC; the Curriculum Management is the sixth Standard of National Accreditation Framework for Medical and Dental Schools in Pakistan-2019.
The Muhammad Dental College (MDC) has functional curriculum committee which is duly represented on the Institutional organogram. The TORS of the Dental Curriculum management are as follows:

TERMS OF REFERENCE OF CURRICULUM COMMITTEE (CC)

Office of Accountability	Dean Muhammad Dental College (MDC)
Office of Administrative Responsibility	BDS Program
Approver	College Academic Council
Scope	Compliance with the National Accreditation Framework for Medical and Dental Schools in Pakistan-2019

Date of Formation: September-2019

Mandate of DCC: The Curriculum Committee receives its mandate from Academic Council. The Chairman is at least Professor elected by curriculum committee. It has an executive function, making and enacting policies relevant to the design and delivery of the BDS program. It ensures that the program is aligned with the institute's vision and mission statements and that it complies with relevant accreditation standards of PMDC, LUMHS and HEC. It has responsibility for the design, management, integration, implementation, evaluation, and continuous improvement of the dental curriculum.

Reporting:

- The BDS Curriculum Committee reports regularly, via the Chair of the Committee, its decisions and recommendations to the College Academic Council. It provides an annual report to the principal MDC.
- It participates in the accreditation interim review process in monitoring compliance with accreditation standards and in preparing for survey visits.

Decision-Making: The decisions will be taken by consensus, failing which it will be referred to the Dean. Decisions will be taken in the meetings of CC, following which it would be moved to DBOS, then FBOS and after approval will be submitted to CAC for final approval.

Frequency of meetings: As required or at least quarterly

Mode of Communication:

- Meetings
- Emails

- Workshops

Committee Designations:

- Chairman of the DCC: Please Refer the Organogram
- Members:
- Representation of Medical Education
- Representation of Basic Dental Sciences (Anatomy, Physiology, Biochemistry, Pathology, Pharmacology, General Medicine, General Surgery, Dental Material, Oral Biology & Tooth Morphology).
- Representation of Dental Clinical Sciences (Oral Maxillofacial Surgery, Prosthodontics, Orthodontics, Periodontology, Oral Medicine, Oral Radiology, Oral Pathology, Operative Dentistry, Paediatric dentistry,).
- Representation of Community & Preventive Dentistry
- Representation of Behavioural Sciences
- Representatives of Students, Alumni and House Officers

Invited Members:

Medical Educationist both nationally and internationally will be invited from time to time to offer their expert advice.

While the BDS -CC has the primary authority for all of the above, it can delegate responsibility of certain elements of the accreditation standards to sub-committees.

Its standing subcommittees are:

- Student Awards/Promotions Committee
- Student Assessment Committee/Examination Cell.
- Program Evaluation and Curricular Outcomes Committee (Quality Assurance Committee).
- Student Elective Committee (House Job, Rotation to others Institute)

Number of Members:

Criteria for Selection of Members: Chairman/Incharge / Subject specialist

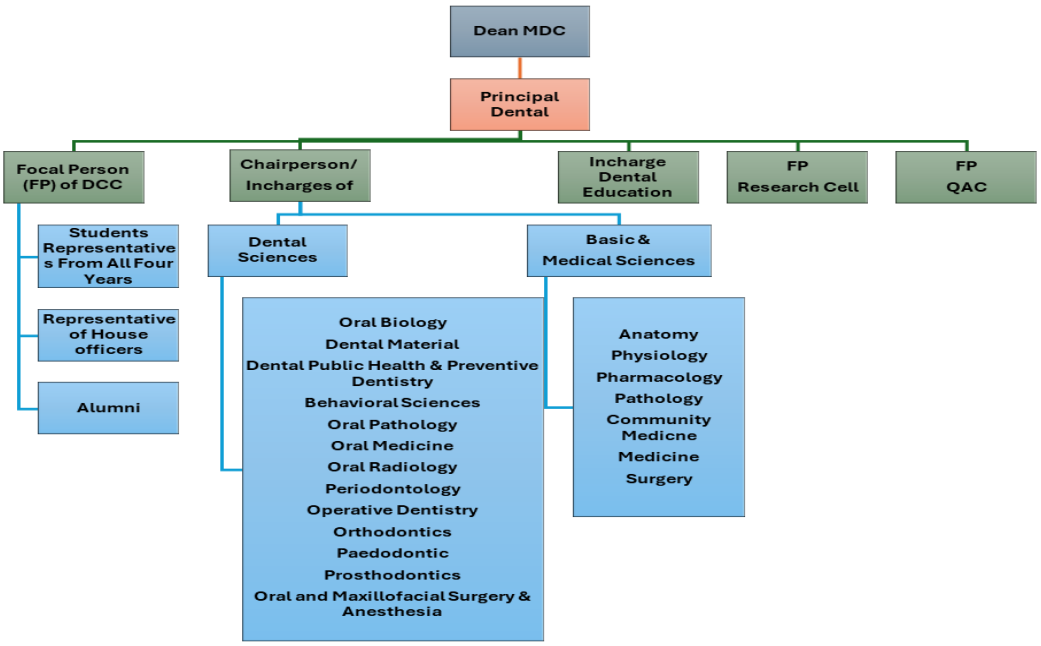
Review of Terms of Reference and Membership: Annually or when required.

Major Responsibilities: The major responsibilities of CDC Committee are:

- To revise and development of study guides of the BDS extended Program, mode of Information Transfer at all levels and incorporate the changes according to the PMDC/HEC/LUMHS guidelines.
- To oversee the Revision and Development of Learning objectives of the BDS extended Program, mode of Information Transfer at all levels.
- The selection and sequencing of educational content; the program length, the curriculum structure, outcome and desired assessment tools.
- To oversee the delivery of the curriculum in hospital area (MDC and Dental OPD), MITs, formulate the academic schedule, induction and designated the trained faculty. (Clinical Supervision).
- To ensure that planning, implementation and evaluation of the curriculum is in order to ensure that educational outcomes are achieved. (53).
- To ensure that planning, implementation and evaluation of the innovations in the curriculum. (54).
- To participate in the student Award/promotion policies, set the standard setting procedure of achievement/assessment and select the appropriate tools for assessment based on the learning objectives such as; (knowledge, attribute and skills).
- To participate in the students' academic progress and make the final decisions for the promotion and graduation. (Student Achievement).
- To formulate the document describing the Content, extent and sequencing of courses and other components of the Curriculum Map-(Standard-5).

- To participate in program evaluation by ensuring the Student Feedback on Learning activities and Learning climate.
- To ensure that the mission statement should reflect the vision statement of the Institute which demonstrate the clear Institutional Commitment to Social accountability. (Standard-1).
- To ensure the Student learning Outcomes which are in congruence with the mission of the Institute and are contextually appropriate for health care delivery in Pakistan. (Standard-2).
- To ensure that the Outcomes of the Program differentiates the Institution from Other Similar Institute. (Standard-2).
- To ensure that the curriculum is aligned with the University Vision, Institutional Mission and Local and National needs for contextual relevance. (Standard-4).
- To ensure that the develop curriculum is implemented and meets the Standards of PMDC. (Standard-4).
- To participate and implement the Curriculum which is Outcome Based, Patient Centered. (Standard-4).
- To ensure that the educational Content and Its delivery are aligned with the Competencies and or/outcomes agreed upon by the Institution. (Standard-5).
- To ensure that adequate supervision of learning experiences is provided throughout required laboratory work, skills lab, chair side teaching, clinical rotations and field visits. (Standard-6).
- To ensure the appropriate selection and sequencing of educational content; the program length, the curriculum structure, outcome and desired assessment tools. (Standard-7).
- To monitor the quality of learning and assessment activities across clinical sites to ensure that there is a comparability of experiences (Comparability of Education and Assessment). (Standard-7).
- To ensure student representation and appropriate participation in educational committees. (Standard-8).
- To ensure processes and schedules for review and update of all academic activities through an established mechanism of Program Evaluation. (Standard-10).
- To review the results of program evaluation on a regular basis and student assessments to ensure that the gaps are adequately addressed in the curriculum in consultation with the Curriculum Committee. (Standard-10).
- To revise the Evaluation Findings and incorporate the Changes in the educational Content by addressing the unintended gaps and eliminating the unnecessary redundancies) and to revise the teaching and assessment methods. (Standard-10).
- To consider the new development is science and healthcare delivery to review the learning objectives and curriculum content.(Standard-10).
- To consider new developments in medical education (Theory and Practices; review proposals for innovations and approves pilot projects and modification to the Curriculum. (Standard-10).
- To certifies the adequacy of educational resources (such as study space, digital learning materials, access to the internet and those that are unique to clinical teaching contexts (e.g. on-call rooms, remedies in situations of exposures to occupational hazards and immunization protocols.(Standard-11).
- To provide opportunities for multi-disciplinary and applied research. (Standard-12).
- Revise the horizontal and vertical integration of curriculum in all four years of Dental undergraduate program as per the accreditation requirement.
- To incorporate the Professionalism/Ethics, Research, Leadership, Patient Safety and Communication Skills.
- Execution of Self Academic Audit-Annually along with the members of Quality Assurance Committee.

ORGANOGRAM OF THE DENTAL CURRICULUM COMMITTEE



STANDARD-9: QUALITY ASSURANCE/CURRICULUM GOVERNANCE

The committee of quality assurance is supervising and implementing the pre-, per- and post- exam quality assurance procedures in assessment.

In MMC & MDC, examinations are conducted by LUMHS. Hence, the LUMHS Examination Quality Assurance Steps are followed.

a. Pre Exam QA

- **Blue printing:** of the assessment will be carried out to ensure the utility of each assessment tool (validity, reliability, feasibility, acceptability, and educational impact).
- **Item review:** All exam items and their key will be reviewed by the subject experts as well as by DME for alignment, clarity, and spelling and grammatical errors.
- **Faculty Development:** for training and calibration of the examiners in item writing.
- **Orientation:** Students and Examiners will be given an appropriate orientation of the exam format.
- **Complete exam secrecy** will be ensured by keeping strict security checks.(software)

b. Intra Exam QA:

- **Assessment Administration:** Assessment will be conducted in the central assessment hall in a conducive and standardized environment under full monitoring to prevent any misconduct and cheating.
- **Instructions:** Written and practical exam student instructions and vignettes will be checked by subject experts and DME for clarity.

c. Post Exam

- **Item analysis:** Difficulty, discrimination and reliability analysis will be conducted.
- **Item Banking:** Continuous review and development of item bank based on post-hoc analysis
- **Feedback:**
    - Feedback will be obtained from the examiners and the students regarding the examinations (format, difficulty, environment etc.)

- Post exam analysis report and feedback will be sent to the respective department and examiners.

- **Result:** include detailed component analysis with mean, average and standard deviation divided in components, as well as qualitative information like strengths and weakness , Use result for program evaluation
- **Result Announcement Policy:** Examination decision of Pass/Fail will be put up on student's notice board and the detailed analysis can be collected from the Examination Department of the Instiyute.
- **Failure Students:** In the final exam, if a candidate fails in any one or more components, he/ she will have to sit for the supplementary exam.
- **Appeal:** Students have the right to appeal if they don't agree to the results. The appeals will be handled according to the LUMHS policy.

STANDARD -10: PROGRAM EVALUATION AND CONTINUOUS RENEWAL

Evaluation is integral to the implementation and development of educational activities, whether national program, an individual school's curriculum or a piece of work undertaken by a teacher with his/her students.

The evaluation of the BDS program is carried out at two different times; one is a formative evaluation in which teachers can evaluate the applied teaching strategy after the interactive session in the form of quiz or a class test. Evaluation is performed with the help of descriptive studies, pre- and post-tests to compare the learning approaches. The outcome of this formative evaluation is then incorporated to revise the teaching plan.The summative evaluation is performed for QAC for the teachers by the students and from the teachers regarding the curriculum at the end of the year or as per the defined policy.

The internal evaluation is conducted with the help of the CIPP evaluation model.

The Curriculum Feedback for curriculum governance is carried out by the department of Quality Assurance of ISUM.

CURRICULUM AND FACULTY GOVERNANCE

This CIPP model emphasizes "learning-by-doing," in which the corrections are incorporated to solve the problematic features of the program. The CIPP model can provide the program effectiveness and reforms for continuous improvement and can guide in programs need assessment, planning, monitor the process of implementation and feedback.

Context, Input, Process, and Product (CIPP) Evaluation Model for Quality Practice	
Quality Standards	**CIPP Framework**
Processes and schedules for review and update of all academic activities through an established mechanism of program evaluation.	Context evaluation: Identify learning goals. Input evaluation: Design and implement instructional strategies according to the learning goals. Process evaluation: log books, assessment outcome. Product evaluation: Students result.
Regularly review results of evaluation and student assessment to ensure that the gaps are adequately addressed in the curriculum in consultation with the curricular Committee.	

Allocate resources to address deficiencies and the continuous renewal of program.	
Have program Evaluation in compliance with PMDC/HEC accreditation standards.	
Ensure that the students, faculty, and administration are involved in program evaluation.	
Have a mechanism for curriculum monitoring and Progressive improvements.	
Ensure that the amendments based on results of program evaluation findings are implemented and documented.	

The program will be evaluated internally using the participation-based (CIPP) model after the first cycle to make decisions regarding improvements or maintenance of the program. After three cycles, external evaluators will be invited. During paper moderation for the summative exam, the external evaluator checks the questions and gives feedback regarding the question's reliability, acceptability, and its educational impact.

EDUCATIONAL ROADMAP
CURRICULUM SEQUENCE OF MODULAR FOUR-YEARS BDS PROGRAM

The BDS Curriculum in MDC is spiral in which students will learn the same topics throughout their education program, with each encounter increasing in complexity and reinforcing previous learning.

Vacations: Students will avail vacations in accordance with the schedule decided by the College Academic Council. Hospital teaching continues during summer vacation. Students performing hospital duty will be divided in batches.

Timetables for various batches will be prepared by the timetable Committee after receiving the timetable grid from LUMHS. If needed, classes may also be continued during the summer vacation. Timetable of lectures, SGDs, practical classes, and hospital training will be notified by the head of the institution before the commencement of the academic session and during the session if a change is required. Classes, teaching, training, syllabus, courses, end-of-module examinations & final professional examinations are carried out according to the rules and regulations of the LUMHS.

- The Liaquat University of Medical & Health Sciences (LUMHS) has designed a four-year modular framework for Integrated Curriculum based on Specific Themes, Clinical Clerkships, Quran and Professionalism, Ethics, research & Leadership.
- The time calculation for completion of the module is based on 35 hours per week.
- Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are 1200.

Year	Module	Modular Configuration	Weeks
First Year BDS	**1**	Block I	**12 Weeks**
	2	Block II	**12 Weeks**
	3	Block III	**12 Weeks**
	General Education	General education (including Islamic studies, Pakistan studies, English, Arts & humanities, behavioral sciences, and research)	**Parallel Subject**
		Pre-Clinical Rotation in (Operative), Science of Dental Materials, Prosthodontics, Clinical Care, Dental Anatomy)	**8*4=36 Weeks**
Second Year BDS		Disease, Infections & Therapeutics I	**17 Weeks**
		Disease, Infections & Therapeutics II	
		Neoplasia, Hemodynamics & Genetics	**10 Weeks**
		Parallel Subject: Science of Dental Materials	**36 Weeks**
		Pre-Clinical Rotation in (Pre-Clinical Dental Sciences (Dental material, Operative & Prosthodontics) & Clinical care & Professionalism)	**9*3=36 Weeks**
	General Education	General education, including behavior science, ICT, and research	**Parallel Subjects**
Third Year BDS	1	Removal Prosthesis+ Research	**9 Weeks**
	2	Oral Medicine, Exodontia, Pain Control & Oral radiology (OMFS+ Oral Medicine	**9 Weeks**

		& Diagnosis)	
	3	Cariology (Operative Dentistry)	**9 Weeks**
	4	Periodontics (Gingiva & Periodontal Disease) + Behavioral Sciences	**9 Weeks**
	5	Community Dentistry & Public Health Services & Oral Radiology	**36 Weeks**
		General Medicine & General Surgery	**36 Weeks**
	General Education	**PERLs 3** (Professionalism, Ethics, Research & Leadership), Behavioral Sciences, Medical Education & ICT.	**Parallel Subjects**
Final Year BDS	1	**Oral Maxillofacial Surgery**	**8 Weeks**
	2	**Operative Dentistry & Endodontic**	**8 Weeks**
	3	**Orthodontics**	**8 Weeks**
	4	**Prosthodontics**	**8 Weeks**
	5	**Paediatric Dentistry**	**8 Weeks**
	General Education	**PERLs 4** (Professionalism, Ethics, Research & Leadership), Behavioral Sciences, Medical Education & ICT.	**Parallel Subjects**

6. Contact Hours Distribution First Year BDS:

Teaching & Learning weeks: 36 weeks	
Subjects	**Contact Hours**
Anatomy	**300**
Physiology	**300**
Biochemistry	**180**
Oral Biology & Tooth Morphology	**300**
Science of Dental Materials	**72**
TOTAL HOURS	**1152**
Preclinical Pre-Clinical (Rotation in Operative, Prosthodontics, Clinical Care (Communication, Leadership, Teamwork, Ethics, Research) Dental Anatomy rotation-wise	**36 hours per rotation of 8 weeks in Pre-Clinical Operative, Prosthodontics, Dental Anatomy) =36*3=108) 36 Hours of Professionalism & Clinical Care**
Research	25
Islamiat, & Pakistan Studies	7+7=14
English	Weekly assignment =32
Arts & Humanities=Bazm, Adab, 14 August, Youme-E-Hussain, Eid Millad un Nabi=	13
TOTAL HOURS	**120**
GRAND TOTAL	**1272**

PROGRAM INTENDED LEARNING OUTCOMES OF FIRST YEAR BDS

LEARNING OBJECTIVES OF PHYSIOLOGY 1ST YEAR BLOCK -1 (1A) Homeostasis, Cell & its transport, Electrophysiology (Action Potential)	
Terminal Objective	• Demonstrate appropriate basics knowledge of medical and dental sciences • Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. • Recognize patient with special care and perform dental emergencies having good communication skills.
Rationale	Teaching Physiology in the first year of BDS is crucial because it helps students understand the normal functions of the human body, forming the basis for recognizing disease and planning appropriate dental care. Knowledge of systems such as the cardiovascular, nervous, and endocrine systems enables students to relate general body functions to oral health. It builds scientific reasoning, supports safe clinical decision-making, and prepares students to manage patients with systemic conditions. Physiology also links foundational sciences with future clinical training, ensuring that students develop a comprehensive understanding of how the body responds to stress, medications, and dental procedures.
TOPIC	**Learning objectives**
Phy-01: Introduction to Physiology: branches of	• Define Physiology and explain its significance in understanding biological functions.

physiology	• Describe the relationship between physiology and other biological sciences. • List and explain the major branches of physiology.
Phy-02: Functional Arrangement-Levels of organization	• Describe the concept of biological organization and its role in maintaining physiological functions. • Explain the hierarchical levels of organization in the human body, including, Chemical Level, the Cellular Level, • Tissue Level, Organ Level, System Level, Organism Level. • **Understand the interdependence** of body systems in physiological functions.
Phy-03 Sterilization & Hand Washing (Practical)	• Define sterilization and its importance in infection control. • Explain different methods of sterilization, including Physical methods • Chemical methods • Differentiate between sterilization, disinfection, and antisepsis in clinical settings**.**
Phy-04: Body Fluid Compartments (ECF&ICF)	• Define body fluid compartments and their significance in maintaining homeostasis. • Differentiate between the two main fluid compartments: ICF &ECF • Explain the composition of ICF & ECF, including key electrolytes • Explain fluid exchange mechanisms between compartments (osmosis, diffusion, active transport). • Understand the concept of osmolality and tonicity and their effects on cell volume. • Discuss clinical significance, including dehydration, edema, and fluid therapy in medical practice.
(1 B) BLOOD	
Phy-05: Homeostasis	• Define homeostasis and explain its significance in maintaining a stable internal environment. • Describe the key components of a homeostatic control system: Receptor (Sensor), Control Center (Integrator) , Effector. • Explain Negative and Positive Feedback Loops – Differentiate between negative and positive feedback mechanisms with relevant physiological examples
Phy-06&07: Study of Microscope (Practical)	• Define a Microscope – Explain what a microscope is and its importance in dental and medical sciences. • Describe the Types of Microscopes – Differentiate between light microscopes and electron microscopes, including their uses in dentistry. • Understand the Parts of a Light Microscope – Identify and describe the optical, mechanical, and illumination components of a microscope.
Phy-08: Cell Organelles-I Nucleus, mitochondria & endoplasmic reticulum	• Define cell organelles and classify them into membrane-bound and non-membrane-bound organelles. • Explain the role of organelles in maintaining cell structure, function, and metabolism • Explain how mitochondrial dysfunction can lead to oral pathologies and muscle fatigue. • Understand the role of the nucleus in oral cancer, genetic mutations, and cell repair. • Discuss the impact of endoplasmic reticulum stress on periodontal

	diseases and bone metabolism.
Phy-09&10: Intro to Power Lab. (Practical)	Define Power Lab – Understand what Power Lab is and its importance in biomedical and dental education. • Describe the Components of Power Lab – Identify the hardware (amplifiers, transducers, sensors) and software (Lab Chart) used for recording and analyzing data. • Explain the Working Principle – Learn how Power Lab converts physiological signals into digital data for analysis. • Demonstrate Proper Setup and Calibration – Understand the steps to correctly set up Power Lab for accurate recordings. • Record Basic Physiological Signals – Use Power Lab to measure parameters such as ECG (electrocardiogram), EMG (electromyography), respiratory rate, and nerve conduction velocity. • Analyze and Interpret Data – Learn how to use Lab Chart software to visualize and analyze recorded physiological signals. • Apply Power Lab in Dental Research – Understand its applications in measuring bite force, muscle fatigue, pain perception, and nerve function.
Phy-11: Cell organelles-II Golgi apparatus, lysosome & peroxisome	• Describe the structure and organization of the Golgi apparatus. • Explain the role of the Golgi apparatus in protein modification, sorting, and packaging. • Understand its function in the formation of lysosomes and secretion of cellular products. • Define lysosomes and describe their structure. Explain their role in intracellular digestion and waste disposal. • Describe the structure and function of peroxisomes. Explain their role in detoxification and metabolism of fatty acids.
Phy-12: Cell membrane structure and functions	• Describe the fluid mosaic model of the cell membrane. • Identify the major components: phospholipids, proteins, carbohydrates, and cholesterol. • Explain the role of the phospholipid bilayer in maintaining membrane integrity. • Differentiate between integral and peripheral proteins and their functions. • Explain the role of the membrane in **selective permeability** and transport. • Explain how the membrane helps maintain homeostasis.
Phy-13: Transport-I (passive transport)	• Define Passive Transport. Explain the concept of passive transport as the movement of molecules across the cell membrane without energy input. Types of Passive Transport: Simple Diffusion, Facilitated Diffusion, Osmosis. • Describe how temperature, concentration gradient, membrane permeability, and molecule size influence passive transport.
Phy-14: Transport -2 (active transport)	• Define Active Transport. • Explain that active transport moves molecules across the cell membrane against the concentration gradient (low to high concentration) using energy (ATP). Types of Active Transport: Primary Active Transport, Secondary Active Transport (Cotransport). Examples of Active Transport Mechanisms. Sodium-Potassium Pump (Na^+/K^+ Pump. Endocytosis and Exocytosis

Phy-15: Resting Membrane /graded potential	• Discuss RMP, graded potential, and Nernst Potential. Regulation of RMP. • Explain how the sodium-potassium pump (Na^+/K^+ ATPase) maintains RMP by actively transporting 3 Na^+ out and 2 K^+ in. • Describe the role of leak channels (K^+ and Na^+) in maintaining the resting potential. • Understand that RMP is typically around -70mV in neurons and why the inside of the cell is more negative than the outside. • Phases of action potential • Explain how stimulus strength affects graded potentials (stronger stimulus = larger potential change). • Understand that graded potentials occur in dendrites and cell bodies and can trigger an action potential if strong enough. • Describe how graded potentials summate (add together) to reach the threshold for action potential initiation. • Define Nernst Potential
Phy-16: Action potential (Saltatory conduction)	• Discuss the action potential, its propagation in myelinated and non-myelinated nerve fibers. • Describe the graph of the action potential.
Phy -17 and 18 Homeostasis and oral health Physiology tutorial	• Relate Homeostasis to Oral Health – • Understand how homeostatic imbalances, such as dehydration or diabetes, affect oral health (e.g., dry mouth, periodontal disease, delayed healing
Phy-19 Composition & Functions of Blood	• Describe blood as a connective tissue with plasma and formed elements. • Explain the components of plasma, including water, proteins (albumin, globulins, fibrinogen), electrolytes, nutrients, hormones, and waste products. • Identify the three main formed elements of blood • •Describe Functions of Blood.
Phy-20: RBC +	• Describe Red Blood Cells (RBCs) – Structure and Function. • Explain the functions of RBCs:\ • Transport of oxygen from lungs to tissues and CO_2 • from tissues to lungs. • Role in acid-base balance (acting as a buffer). Contribution to blood viscosity and osmotic balance. • Understand the normal RBC count. • Define erythropoiesis. • Explain the stages of erythropoiesis. • Regulation of Erythropoiesis. • Role of **erythropoietin**
Phy-21&22: How to collect a blood sample (Practical)	• To understand the proper method of collecting a blood sample for diagnostic purposes while maintaining sterility and patient safety**.**
Phy-23: Hemoglobin-1 Structure & synthesis +Types functions	• Define hemoglobin (Hb) and explain its role in oxygen transport. Describe the structure of hemoglobin: Explain the Types of Hemoglobin. • Explain the **primary functions** of hemoglobin. • Describe the **transport of oxygen (O_2) and carbon dioxide (CO_2)** by hemoglobin. • Understand the **fate of hemoglobin** after RBC destruction.
Phy-24&25: Blood Film (peripheral blood film) (Practical)	• To prepare and examine a **peripheral blood film (PBF)** for the study of red blood cells (RBCs), white blood cells (WBCs), and platelets under a microscope

Phy-26: Hemoglobin-disorders	• To understand different types of hemoglobin dysfunctions, i.e., thalassemia and sickle cell disease
Phy-27&28: Hemoglobin Estimation (Practical)	• To estimate the hemoglobin (Hb) concentration in blood using standard methods and understand its clinical significance
Phy-29: Anemia + polycythemia	• Define anemia and explain its effect on oxygen transport. • Classify anemia based on: Morphology (microcytic, macrocytic, normocytic). • Etiology (nutritional deficiency, blood loss, hemolysis). • Describe the causes of anemia
Phy-30: Monocyte + macrophage system	• Define **monocytes and macrophages** and explain their role in the immune system. • Describe the **origin** of monocytes from hematopoietic stem cells in the bone marrow. • Explain how monocytes **circulate in the blood** and differentiate into **macrophages** in tissues.
Phy-31&32: To perform DLC (Practical)	• To perform and analyze a **Differential Leukocyte Count (DLC) using a** stained peripheral blood smear and understand its clinical significance.
Phy-33: Overview of the immune system and classification, and Innate immunity	• Define the **immune system** and its role **in protection against pathogens (bacteria, viruses, fungi, parasites).** Explain the **basic functions** of the immune system • Differentiate between: Innate Immunity (Non-Specific, First Line Defense). Adaptive Immunity (Specific, Long-Term Memory Response).
Phy-34: Acquired immunity (humeral and cell mediated)	• Define **acquired (adaptive) immunity** and how it differs from **innate immunity.** Explain the key features of acquired immunity • Self vs. Non-Self Recognition. Differentiate **humoral immunity** from **cell-mediated immunity**
Phy-35&36: to measure ESR (Practical)	• To measure the **Erythrocyte Sedimentation Rate (ESR)** and understand its clinical significance in diagnosing inflammatory and infectious diseases
Phy-37: Complement system	• Define the **complement system** and its role in **innate and adaptive immunity**. • Understand the complement system's primary functions: • Opsonization • Cell lysis • Inflammation
Phy-38: Blood group-1 ABO blood group system	• Define **blood grouping** and its significance in **transfusions and organ transplants.** Explain how **blood groups** are determined by **antigens on RBCs** and **antibodies in plasma.** Importance of Agglutination in Blood Typing
Phy-39: Rh system and blood transfusion	• Define the **Rh blood group system** and its role in blood transfusion. Explain the **Rh antigen (D antigen)** as the key determinant of Rh status. Differentiate between **Rh-positive (Rh^+) and Rh-negative (Rh^-) individuals**. Clinical Significance of Rh Factor
Phy-40&41: Blood Group (Practical)	• To determine an individual's **ABO and Rh blood group** using the **agglutination method** and understand its clinical significance.
Phy-42: Hemostasis & its natural mechanism 1	• **Define Hemostasis. Primary and secondary hemostasis. platelets and their role in hemostasis (blood clotting).**
Phy-43 and 44: Clotting pathways 2 (Physiology Tutorial)	• Understand the **two main clotting pathways** (Intrinsic & Extrinsic) and how they converge into the **Common Pathway**. • Explain the **sequential activation of clotting factors** leading to fibrin clot formation. • Understand the **role of thrombin and fibrin** in clot stabilization. • Recognize **clinical disorders** related to clotting pathway defects
Phy-45&46: clotting time Measurement (Practical)	• To determine the **clotting time** of blood using the **capillary tube method**

	and understand its clinical significance.
Phy-47: Anti-clotting + bleeding disorder 3	• Understand the **natural anti-clotting mechanisms** that prevent excessive clotting. • Describe **anticoagulant drugs** and their clinical use. Bleeding Disorders. Hemophilia A/B (Factor VIII/IX deficiency) → defective clot formation. • Thrombocytopenia (low platelet count) • Recognize **common bleeding disorders**, their causes, and clinical presentations. • Explain the **diagnostic tests** for bleeding disorders.
Phy-48&49: to measure Bleeding Time (Practical)	• To measure the **bleeding time (BT)** and understand its clinical significance in assessing **platelet function and primary hemostasis**.
(1B) Blood	
Topic	**Learning objectives**
Phy-19 Composition & Functions of Blood	• Describe blood as a connective tissue with plasma and formed elements. • Explain the components of plasma, including water, proteins (albumin, globulins, fibrinogen), electrolytes, nutrients, hormones, and waste products. • Identify the three main formed elements of blood • Describe the Functions of Blood.
(1 C) Respiration	
Topic	**Learning objective**
RESP-1C-PHY-1 **Introduction of the respiratory tract and its functions**	Explain the **functions of each part of the respiratory system**.
RESP-1C-PHY-2 **The mechanics of breathing**	• Explain the process of inspiration (inhalation) and expiration (exhalation). • Describe the role of the diaphragm, intercostal muscles, and pressure changes in breathing • Understand the concept of lung compliance and airway resistance. • Discuss the clinical significance of breathing disorders.
RESP-1C-PHYS-3 and 4 ***Practi*** **To record the effect of sitting and standing on respiration on Power lab**	• **Explain how posture influences respiratory rate and depth.** • Operate the Power Lab system to record breathing rate, tidal volume, and other respiratory parameters • Compare respiratory data during sitting and standing
RESP-1C-PHYS-5 **Compliance of lungs and surfactant** **Physiology tutorial)**	• Define **lung compliance** and explain its significance. • Describe the factors affecting **lung compliance** • **Role of surfactant**
RESP-1C-PHYS-6 and 7 ***Practical*** **1.To record the effect of exercise on respiration on Power lab**	• Explain how exercise influences respiratory rate and depth. • Operate the Power Lab system to record breathing rate, tidal volume, and other respiratory parameters • Compare respiratory data before, during, and after exercise.
RESP-1C-PHYS-8 **Lung volumes & capacities & their importance**	• Define **lung volumes** and **lung capacities.** • Explain the **significance of each lung volume and capacity.** • Understand how these measurements are used in **clinical diagnosis**. • Discuss the **clinical importance of altered lung volumes in respiratory diseases.**
RESP-1C-PHYS-9 **Pulmonary Circulation, zones of lungs**	• Explain the **pulmonary circulation and its role in gas exchange**. • Describe the **pressure differences between pulmonary and systemic circulation** • Define and explain the **three zones of lung perfusion (West's zones)**. • Discuss the **clinical significance of pulmonary circulation and lung zones**
RESP-1C-PHYS-10	• Describe the **process of gas exchange** in the lungs and tissues.

Exchange of Gasses and Respiratory Membrane	• Explain the **structure and function of the respiratory membrane.** • Identify the **factors affecting gas diffusion and transport**. • Understand the **clinical significance of impaired gas exchange.**
RESP-1C-PHYS-11 **Transport of CO2**	• Explain the **three main methods of CO_2 transport in blood**. • Describe the **role of carbonic anhydrase in CO_2 transport**. • Understand the **Haldane effect and its clinical significance.** • Explain how CO_2 transport is linked to acid-base balance (buffer system).
RESP-1C-PHYS-12 **Transport of O2 oxygen**	• Explain the **two main methods of O_2 transport in blood**. • Describe the **role of hemoglobin in oxygen transport.** • Understand the **Oxygen-Hemoglobin Dissociation Curve & its shifts.** • Identify the **factors affecting O_2 transport.** • Explain the **clinical significance of impaired O_2 transport**.
RESP1C-PHYS-13 and 14 **Exchange of gases** **Physiology tutorial**	
RESP-1C-PHYS-15 **Helden and Bohar Effect** **Oxygen-Hb dissociation curve**	• Define the Oxygen-Hemoglobin (O_2-Hb) Dissociation Curve and explain its significance in oxygen transport. • Describe the Bohr Effect and explain how changes in pH and CO_2 levels shift the O_2-Hb dissociation curve. • Explain the Haldane Effect and its role in CO_2 transport in the blood. • Compare the Bohr and Haldane Effects in terms of their physiological significance. • Interpret shifts in the O_2-Hb dissociation curve and predict how factors like pH, CO_2, temperature, and 2,3-BPG affect oxygen binding and release. • Correlate the clinical importance of these effects in conditions like respiratory disorders, acidosis, and exercise physiology.
RESP-1C-PHYS-16 **Respiratory centers and Nervous Regulation of respiration**	• Identify the main respiratory centers in the brainstem and their locations (Medullary and Pontine centers). • Describe the role of the Medullary Respiratory Center (Dorsal and Ventral Respiratory Groups) in generating the basic rhythm of respiration. • Explain the function of the Pontine Respiratory Centers (Pneumotach and Apneustic Centers) in modifying respiration. • Illustrate the role of the higher brain centers (cerebral cortex, limbic system, hypothalamus) in voluntary and emotional control of breathing. • Discuss the role of chemoreceptors (central and peripheral) in detecting changes in CO_2, O_2, and pH to regulate breathing.
RESP-1C-PHYS-17 **Chemical Regulation of Respiration**	• Define chemical regulation of respiration and its importance in maintaining homeostasis. • Describe the role of chemoreceptors in detecting changes in blood gases (O_2, CO_2) and pH. • Differentiate between central chemoreceptors (located in the medulla) and peripheral chemoreceptors (carotid and aortic bodies) in respiratory control.
RESP-1C-PHYS-18 and 19 **Physiology tutorial** **(regulation of respiration)**	• Explain how central chemoreceptors respond primarily to CO_2 and H^+ levels to regulate breathing rate and depth. • Discuss how peripheral chemoreceptors respond to low O_2 (hypoxia), high CO_2 (hypercapnia), and acidosis to influence respiration.

RESP-1C-PHYS-21 and 22 Effect of coughing on respiration on the Power Lab	• To see the effect of coughing on in graphical form on Power Lab.
CARDIOVASCULAR SYSTEM (CVS-I)	
CVS-1D-PHY-1 Overview of CVS	• Describe the Functions of CVS. • Describe the Components of CVS • Explain how CVS plays a crucial role in maintaining homeostasis.
CVS-1D-PHY-2 Properties of cardiac muscle	• Describe the Structure of Cardiac Muscle • Explain the unique characteristics of cardiac muscle, including striations, intercalated discs, and gap junctions. • Understand Excitability • Define excitability and explain how cardiac muscle responds to electrical stimuli. • Explain Automaticity • Describe how the cardiac muscle generates its own action potential without external stimulation. • Understand Conductivity – Explain how electrical impulses travel through the heart and ensure coordinated contraction. • Describe Contractility • Discuss the role of calcium ions (Ca^{2+}) in cardiac muscle contraction and the Frank-Starling mechanism. • Explain Rhythmicity • Understand how the cardiac muscle maintains a regular and continuous heartbeat.
CVS-1D-PHY-3 Excitatory and Conducting system of the heart	• Describe the Components of the Conducting System • Explain the Generation of Action Potentials • Describe the Role of the SA Node • Recognize Disorders of the Conducting System
CVS-1D-PHY-4 Electrocardiogram (ECG)	• Understand the Basic Principles of ECG • Describe the significance of the P wave, QRS complex, and T wave in cardiac activity. • Correlate ECG waves with atrial and ventricular depolarization and repolarization. • Identify common ECG abnormalities such as bradycardia, tachycardia, heart blocks, and arrhythmias. • Explain how ECG is used for diagnosing myocardial infarction, ischemia, and conduction disorders • To interpret the ECG with the electrical events of the hea
CVS-1D-PHY-5 and 6 Electrical events in the heart and ECG interpretation (Tutorial)	• Define the Cardiac Cycle • Describe the Phases of the Cardiac Cycle • Understand Pressure and Volume Changes. • Explain the Role of Heart Valves in the cardiac cycle • Correlate Mechanical and Electrical Events • Relate **ECG waves (P wave, QRS complex, and T wave)** to mechanical events of the cardiac cycle.
CVS-1D-PHY-7 Cardiac cycle and its	• Understand the Concept of Stroke Volume and Cardiac Output – Define and calculate stroke volume (SV), cardiac output (CO), and ejection

mechanical events-I	fraction (EF). • Explain the Frank-Starling Law – Understand how ventricular filling affects the force of contraction and cardiac output. • Discuss the Effects of Heart Rate on the Cardiac Cycle – Explain how heart rate changes influence cycle duration and cardiac efficiency.
CVS-1D-PHY-8 **Cardiac cycle and its mechanical events-II**	• **Describe the Structure and Function of Heart Valves** • Explain the Mechanism of Valve Opening and Closing – Understand how pressure changes in the heart chambers control valve function. • Understand the Physiological Basis of Heart Sounds – Explain how the first heart sound (S1) and second heart sound (S2) are produced by valve closure.
CVS-1D-PHY-9 **Heart valves, heart sounds, and murmurs**	• Differentiate Between Normal and Abnormal Heart Sounds • Define and Classify Heart Murmurs • To understand the parts of a stethoscope and the concept of auscultation
CVS-1D-PHY-10 &11 **Heart valves and heart sounds (Practical)**	• To listen to heart sounds with a stethoscope
Practical-PHY-12&13 **To record Pulse on the Power Lab and see the effect of exercise on pulse**	• Understand the Physiological Basis of Pulse – Explain how the pulse wave is generated and its relationship with cardiac activity. • Learn the Use of Power Lab for Pulse Recording – Understand the setup and operation of the Power Lab system for measuring pulse • Explain how an electrocardiogram (ECG) records the electrical activity of the heart. Learn the correct placement of electrodes • **Identify the Standard ECG Leads** – Describe the **bipolar limb leads (I, II, III), augmented leads (aVR, aVL, aVF), and precordial chest leads (V1-V6)**.
Practical-PHY-14: **To record the ECG manually**	• Explain how an electrocardiogram (ECG) records the electrical activity of the heart Learn the correct placement of electrodes • **Identify the Standard ECG Leads** – Describe the **bipolar limb leads (I, II, III), augmented leads (aVR, aVL, aVF), and precordial chest leads (V1-V6)**.

ANATOMY BLOCK-I	
Terminal Objective	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. ▪ Recognize patients with special care and perform dental emergencies by having good communication skills.
Rationale	Teaching Anatomy in the first year of BDS is essential because it provides the foundational knowledge required for all dental sciences. Understanding the structure of the human body, especially the head, neck, and oral region, enables students to appreciate the relationships between tissues, nerves, vessels, and organs relevant to dental practice. It supports safe clinical procedures, accurate diagnosis, and effective treatment planning. Early exposure to Anatomy fosters critical thinking, spatial understanding, and a scientific approach to patient care. This grounding prepares students for advanced subjects such as physiology, pathology, and clinical dentistry, ensuring competent and confident future dental professionals.

	At the end of the module, students should be able to:		
S. No	**Learning Objectives**	**Teaching Strategies**	**Assessment Tool**
1.	Describe the basic structure of cell	IL	BCQs
2.	Describe the different types of organelles and inclusion bodies	IL	BCQs
3.	Describe the surface modification of cell	IL	BCQs
4.	Define the different types of cell junctional complex	IL / SGIS	BCQs
5.	Explain the cell cycle	IL	BCQs
6.	Differentiate between mitosis and meiosis	IL	BCQs
7.	Identify the different stages of mitosis and meiosis	SGIS	OSPE
8.	Discuss anatomical terms	IL /SGIS	BCQs & OSPE
9.	Identify planes and sections with the anatomical position of the human body	SGIS	BCQs & OSPE
10.	Classify bones, joints, cartilages, and muscles	IL /SGIS	BCQs & OSPE
11.	Introduction to the nervous system	IL	BCQ
12.	Identify different parts of a compound microscope	PW	OSPE
13.	Discuss the processes of tissue processing	PW	BCQs
14.	Describe the microscopic features of epithelial tissues (squamous, cuboidal, columnar, and transitional)	IL	BCQs & OSPE
15.	Identify the epithelial tissues on a given slide (squamous, cuboidal, columnar and transitional)	PW	OSPE
16.	Describe the microscopic features of connective tissues	IL	BCQs & OSPE
17.	Identify the various types of connective tissue on a given slide	PW	OSPE
18.	Describe the microscopic features of skeletal, cardiac and smooth muscles	IL	SEQS ,BCQs
19.	Identify skeletal, cardiac and smooth muscles on a given slide	PW	OSPE
20.	Describe the microscopic features of different types of cartilage	IL	BCQs & OSPE
21.	Identify the microscopic features of hyaline, elastic and fibrocartilage on a given slide	PW	OSPE
22.	Describe the microscopic features of compact and spongy bone	IL	BCQs & OSPE
23.	Identify the microscopic features of compact and spongy bone on a given slide	PW	OSPE
24.	Differentiate between gross and microscopic features of artery, vein and capillaries	IL	SEQS ,BCQs
25.	Identify the microscopic features of artery and vein	PW	OSPE
26.	Identify male and female genital organs	SGS	OSPE
27.	Describe oogenesis and spermatogenesis	IL	BCQs & OSPE
28.	Discuss the uterine and ovarian cycle	IL	BCQs
29.	Describe the phases of fertilization	IL	BCQs & OSPE

30.	Identify different stages of zygote on a given model	SGIS	OSPE
31.	Discuss the events of second week of development	IL/ SGIS	BCQs & OSPE
32.	Describe the events of 3rd week of development	IL/ SGIS	BCQs & OSPE
33.	Identify different stages of 3rd week of development on a given model	SGIS	OSPE
34.	Discuss the fate of primitive streak and the related abnormalities	IL	BCQs & OSPE
35.	Describe the 4th week of development	IL	BCQs & OSPE
36.	Describe the development of placenta	IL/ SGIS	BCQs & OSPE
37.	Enlist events from 5th – 8th week of development	IL	BCQs
38.	Enlist the events of the Fetal period	IL	BCQs
39.	Describe the process and types of Twin pregnancy	IL/SGIS	BCQS, OSPE
40.	Name sites of Ectopic pregnancy	IL	BCQS
41.	Discuss the factors causing Teratogenesis	IL	BCQS
BIOCHEMISTRY BLOCK-I			
	Terminal Objective	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. ▪ Recognize patients with special care and perform dental emergencies, having good communication skills.	
	Rationale	Teaching Biochemistry in the first year of BDS is essential because it explains the molecular basis of life processes that influence oral and systemic health. It helps students understand the biochemical composition of teeth, saliva, and oral tissues, as well as the mechanisms underlying diseases such as caries and periodontal disorders. Biochemistry builds a foundation for comprehending metabolism, nutrition, enzymatic functions, and the effects of drugs used in dentistry. It also promotes scientific reasoning and supports future learning in pathology, pharmacology, and clinical subjects. By establishing this core knowledge early, students become better prepared for evidence-based dental practice.	
42.	Discuss the biochemical aspects of cell Biochemical composition of cell membrane	IL, SGS	BCQs & OSPE
43.	Introduction to instruments	PW	OSPE
44.	Identify the laboratory Hazards and their importance	PW	OSPE
45.	Discuss the cell organelles	IL,SGS	BCQs & OSPE
46.	Discuss the various modes of membrane transport	IL,SGS	BCQs & OSPE
47.	Perform the preparation of Solutions	PW	OSPE
48.	Elaborate the concept of pH and explain different types of Buffers with their mechanism of action	IL, SGS	BCQs & OSPE
49.	Discuss the buffering capacity & H.H equation	IL, SGS	BCQs & OSPE
50.	Identify pH of different solutions	PW	OSPE
51.	Discuss the chemistry of nucleotide and nucleoside	IL, SGS	BCQs & OSPE,

52.	Perform DNA Extraction on onion cells	PW	OSPE
53.	Discuss the chemistry of nucleic acids	IL, SGS	BCQs & OSPE
54.	Detection of Carbohydrates in a given solution	PW	OSPE
55.	Define and classify carbohydrates with its biomedical importance	IL, SGS	BCQs & OSPE, CP
56.	Discuss the properties & Biomedical importance of carbohydrates	IL, SGS	BCQs & OSPE
57.	Discuss the chemistry of monosaccharides and their biomedical importance	IL, SGS	BCQs & OSPE
58.	Discuss the chemistry of disaccharides and their biomedical importance	IL, SGS	BCQs & OSPE
59.	Discuss the chemistry of oligosaccharides and their biomedical importance	IL, SGS	BCQs & OSPE
60.	Discuss the chemistry of polysaccharides and their biomedical importance	IL, SGS	BCQs & OSPE

Commencement of 1ST BLOCK		Weekly Schedule of BLOCK-I ANATOMY		
Activity	**Week**	**Lecture 1 (LO)**	**Lecture 2 (LO)**	**Lecture 3 (LO)**
Academic Session – BDS First Professional	Week- 1	Introduction to human body, discuss the anatomical terms (LO=8)	Identify planes and sections (9)	Describe the basic structure of cell (1)
	Week- 2	Describe the different types of organelles and inclusion bodies(2)	Describe surface modification of cell, define different types of cell junctional complex (3, 4)	Describe the microscopic features of epithelial tissues (simple) (I) (14)
	Week- 3	Explain cell cycle, Differentiate between mitosis and meiosis (5, 6,7)	Describe the microscopic features of epithelial tissues(stratify d) (II) (14)	Classification of bone (10)
	Week- 4	Discuss the uterine and ovarian cycle (28)	Describe the microscopic features of connective tissues (I) (16)	Describe the microscopic features of connective tissues(II)(16)
	Week- 5	Describe oogenesis and spermatogenesis I (27)	Classification of muscle(10)	Describe the microscopic features of skeletal, cardiac and smooth muscles (18)
	Week- 6	Describe oogenesis and spermatogenesis II (27)	Describe the classification & microscopic features of different types of cartilage (10, 20)	Introduction to nervous system (11)
	Week- 7	Describe the phases of fertilization (29)	Describe the microscopic features of compact and spongy bone (22)	Discuss the events of second week of development (31)
	Week- 8	Describe the events of 3rd week of development (32)	Discuss the fate of primitive streak and related abnormalities (34)	Differentiate between gross and microscopic features of artery, vein
	Week- 9	Describe the 4th week of development (35)	Classification of joints (10)	Describe the development of placenta
	Week10	Enlist events from 5th – 8th week of development (37)	Describe the development of placenta II (36)	Enlist events of fetal period (38)
	Week 11	Describe the process and types of Twin pregnancy and sites of ectopic pregnancy (39, 40)	Discuss the factors causing Teratogenesis (41)	Revision
		THEORY AND VIVA EXAMINATION		

ORAL BIOLOGY-BLOCK -I		
	Terminal Objective	• Demonstrate appropriate basic knowledge of medical and dental sciences. • Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. • Recognize patients with special care and perform dental emergencies, having good communication skills

	Rationale	Teaching Oral Biology in the first year of BDS is vital because it provides students with a detailed understanding of the development, structure, and function of oral tissues. It introduces foundational concepts related to teeth, saliva, oral mucosa, and supporting structures, helping students appreciate their normal biology before learning about diseases. Oral Biology also builds scientific thinking and links basic sciences with clinical dentistry. This knowledge prepares students to understand oral pathology, periodontology, and operative procedures in later years. By establishing a strong biological framework early, students develop the skills needed for accurate diagnosis, preventive care, and effective patient management.		
S#	**Topic**	**Learning outcomes**	**Mode of teaching**	**Mode of assessment**
1	**Structure of the Oral Tissues**	**Knowledge** • Discuss parts of the tooth • Enlist the functions of each part • Outline the supporting structures of the • tooth • Clinical relevance of the structure of the tooth • Outline the mechanism of hard tissue • formation • Discuss the mechanism of mineralization • and degradation	**Interactive Lectures**	**SBQs, VIVA**
		Skill • Illustrate the components of the tooth & its supporting tissues	**Practical**	**OSPE**
		• Radiographic Study: Structure of the tooth and its clinical significance	**Tutorial**	**OSPE**
2	**General Embryology**	**Knowledge** Integration with Anatomy • Discuss the germ cell formation & fertilization • Enlist the phases of prenatal development • Review the process of formation of the layered embryo and fate of germ layers. • Highlight the process of formation of the three-layered embryo and fate of germ layers. • Summarize the formation of the neural tube • Enlist the derivatives of neural crest cells	**Interactive Lectures**	**SBQs, VIVA**
		Skill Illustrate the process of neurulation	**Practical**	**OSPE**
3	**Cytoskeleton & Intercellular Junctions**	**Knowledge** • Categorize structural elements of cytoskeleton • Classify intercellular junctions with their functions • Highlight the characteristic features of fibroblasts • Secretary of the fibroblast	**Interactive Lectures**	**SBQs, VIVA**
		Skill • Demonstrate the types of the fibroblast • Demonstrate the structure of basal lamina	**Practical**	**OSPE**

4.	**Development of the Tooth & Supporting Structures**	**Knowledge** • Outline the initiation of tooth development. • Enlist different stages of the tooth development • Highlight the salient features of bud, cap, early and late bell stages of tooth development • Express the process of root formation of single & multi-rooted tooth Formation of the Permanent Dentition	**Interactive Lecture**	**SBQs, VIVA**
		Skill • Demonstrate the initial stages of tooth development • Draw the developmental stages of tooth • Label the structures in the developmental stages of tooth • Illustrate the development of single & multirooted teeth	**Practical**	**OSPE**
		• **Case base learning** Developmental anomalies of tooth	**Tutorial**	**OSPE**
5.	**Physiologic Tooth Movements: Eruption & Shedding**	**Knowledge** • Classify types of tooth movements • Enlist the histological features of tooth movements • Illustrate the mechanisms involved in tooth movements • Analyze the process & pattern of shedding of teeth • Highlight the abnormal & orthodontic tooth movement	**Interactive lectures**	**SBQs, VIVA**
		Skill • Draw the histology of eruptive tooth movement • Illustrate the pattern of the shedding	**Practical**	**OSPE**
		• **Case-based learning** • Determine the age of the given models/ Casts	**Tutorial**	**OSPE**

PHYSIOLOGY SYLLABUS BLOCK II CARDIOVASCULAR SYSTEM (CVS-II)	
Terminal Objective	▪ Demonstrate appropriate basics knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision making by critical thinking. ▪ Recognize patients with special care and perform dental emergencies having good communication skills.
Rationale	Teaching Physiology in the first year of BDS is crucial because it helps students understand the normal functions of the human body, forming the basis for recognizing disease and planning appropriate dental care. Knowledge of systems such as the cardiovascular, nervous, and endocrine systems enables students to relate general body functions to oral health. It builds scientific reasoning, supports safe clinical decision-making, and prepares students to manage patients with systemic conditions. Physiology also links foundational sciences with future clinical training, ensuring that students develop a comprehensive understanding of how the body responds to stress, medications, and dental procedures.
Topic	**Learning Objectives**
CVS-ll -PHYS-1 Interrelationship among blood flow, pressure and resistance	• Define Ohm's law of circulation • Describe main factors that determine vascular resistance • Define total peripheral vascular resistance and total pulmonary vascular resistance • Mention Poiseuille's law
CVS-ll -PHYS-2 Control of local blood flow	• Mention the specific needs of the tissues for blood flow • Define local blood flow • Describe acute/short-term control of local blood flow • Describe long-term control of local blood flow • Explain the autoregulation of blood flow
CVS-ll -PHYS-3 Capillary fluid exchange	• Describe the structure of microcirculation and the capillary wall • Explain the flow of blood in capillaries • Define vasomotion • Define Starling forces and give their approximate values • Describe the role of Starling forces in fluid exchange across the capillary wall
CVS-ll -PHYS-4 Nervous regulation of circulation	• Describe the vasomotor center's important areas and functions • Define vasomotor tone • Describe the role of the sympathetic nervous system in the regulation of circulation • Describe the role of the parasympathetic nervous system in the regulation of circulation.
CVS-ll -PHYS-5 Blood pressure and its Regulation-I (Baroreceptor reflex mechanism	• Define systolic blood pressure, diastolic blood pressure, pulse pressure and mean arterial pressure • Mention important factors on which blood pressure depends • List various mechanisms that regulate/control blood pressure • Describe role of the baroreceptor reflex in the regulation of blood pressure
CVS-ll -PHYS-6 Blood pressure and its regulation-II (Role of kidneys in long-term control of blood pressure)	• Explain the renal-body fluid system and its role in arterial pressure control • Describe the Renin-Angiotensin system and its role in arterial pressure control

CVS-ll -PHYS-7 Cardiac output and venous return	• Define cardiac output and mention its relationship to stroke volume & heart rate • Describe factors that regulate cardiac output • Describe the Frank-Starling mechanism of the heart
CVS-ll -PHYS-8 **Cardiac output and venous return**	• Define venous return and mention factors that affect/regulate venous return • Describe central venous pressure
CVS-ll -PHYS-9&10 TUTORIAL) **Cardiac output and venous return**	BCQ PRACTICE and DISCUSSION
CVS-ll -PHYS-11 **Circulatory shock**	• Define circulatory shock • Describe causes and major types of shock • Mention stages of shock • Describe pathophysiology of non-progressive and progressive hemorrhagic shock • Mention compensatory mechanisms that attempt to return cardiac output and arterial pressure back to normal in a hemorrhagic shock (hypovolemic shock) • Mention factors that lead to progression of shock (i.e. factors worsening the shock)
CVS-ll -PHYS-12 &13 **PRACTICAL Record of blood pressure by palpatory and auscultatory methods**	• To Identify different parts of the stethoscope • &sphygmomanometer • Differentiate the auscultatory and palpatory methods of blood pressure measurement. • Demonstrate the correct technique for auscultatory and palpatory methods of blood pressure measurement, To Hear the Korotkoff's sound during auscultation.
CVS-ll -PHYS-14 &15 **PRACTICAL** **Heart rate during standing, sitting and during exercise on Power lab**	• To record the heart rate during sitting & standing & effect of exercise on power lab.
CVS-ll -PHYS-16&17 (TUTORIAL) **Circulatory shock**	• Mention compensatory mechanisms that attempt to return cardiac output and arterial pressure back to normal in a • hemorrhagic shock (hypovolemic shock) • Mention factors that lead to progression of shock (i.e. factors worsening the shock) • BCQ PRACTICE AND KEY POINT DISCUSSION

2B NEUROSCIENCES **(CNS SENSORY & MOTOR)** **AUTONOMIC NERVOUS SYSTEM**	
Terminal Objective	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. ▪ Recognize patients with special care and perform dental emergencies, having good communication skills.

Rationale	Teaching Physiology in the first year of BDS is crucial because it helps students understand the normal functions of the human body, forming the basis for recognizing disease and planning appropriate dental care. Knowledge of systems such as the cardiovascular, nervous, and endocrine systems enables students to relate general body functions to oral health. It builds scientific reasoning, supports safe clinical decision-making, and prepares students to manage patients with systemic conditions. Physiology also links foundational sciences with future clinical training, ensuring that students develop a comprehensive understanding of how the body responds to stress, medications, and dental procedures.
TOPIC	**OBJECTIVES**
NS-PHYS-1: Nervous system – overview	• Definition & Organization of the nervous system • Know about Physiological division of nervous system • Determine different Levels of nervous system
NS-PHYS- 2: Neuron & Neuroglia	• Discuss electrical properties of neuron • Discuss generation of action potential, • List functions of neuroglia cells • Define Myelin sheath • Define Saltatory conduction, Regeneration of nerve fiber and the Blood-brain barrier
NS-PHYS-3: Synapse & its mechanism	• Define synapse and its types. • List the properties of a synapse. • Discuss the Physiological role of the Synapse • Discuss transmission of electrical signals between neurons
NS-PHYS-4: Sensory receptors	• Describe the general characteristics of receptors. • Classify receptors according to location and stimulus type. • Discuss the following: Receptor potential. Neurotransmitters Transduction of sensory stimuli into nerve impulses.
NS-PHYS-5: Somatic sensory pathway (DCML)	• List the different types of sensory pathways. • Discuss the transmission of sensory information into the CNS (DCML).
NS-PHYS-6 Somatic sensory pathway (anterior lateral)	• Discuss the transmission of sensory information into the CNS (Anterolateral system).
NS-PHYS -7&8 PRACTICAL Examination of the sensory system	• To examine the sensory system
NS-PHYS-9 Descending pathways - (Pyramida	• Define the Pyramidal tracts features & their pathway, • Define Extra pyramidal tracts features & their Pathway • Define brown-Sequard syndrome & its pathophysiology.

l & extra pyramidal tracts	
NS-PHYS -10 &11 PRACTICAL Examination of the motor system	• To examine the motor system
NS-PHYS-12 Pain pathway	Discuss types of pain, their qualities and pain receptors. Discuss dual • pathways for transmission of pain signals into CNS.
NS-PHYS-13	• Discuss the analgesia system in the brain and spinal cord. • Describe the brain opioid system
NS-PHYS-14 &15 TUTORIAL: Pain and analgesia clinical application in dental health	• Discuss dual pathways for transmission of pain signals into the CNS. • Discuss the analgesia system in the brain and spinal cord ○ BCQ Practice and Discussion
NS-PHYS-16: Spinal cord & it functions (reflexes)	• Discuss the organization of the spinal cord for motor functions. Discuss spinal cord reflexes.
NS-PHYS -17 &18 PRACTICAL Superficial and deep reflexes	• To check out the superficial and deep reflexes of the body
NS-PHYS-19 UMN + LMN	• Functions of UMN and LMN in Motor Pathways • Difference between upper and lower Motor neuron lesions •
NS-PHYS-20 Cerebellum	• Discuss the structure and functions of the cerebellum. • Describe various cerebellar disorders.
NS-PHYS-21: Basal nuclei	• Discuss the functions and related disorders of the basal ganglia.
NS-PHYS-22 Hypothalamus.	• Describe the functions of the Hypothalamus
NS-PHYS -23 Autonomic. nervous system	• Discuss the general organization and activation of the ANS. • Discuss the structure and functions of sympathetic, • Nervous parasympathetic nervous system
NS-PHYS -24 Areas of cerebral cortex	• Functions of Specific Cortical Areas • Motor & sensory areas • Cortical Control of Motor Function
NS-PHYS -25&26 Formative	• BCQ Test • Areas of cerebral cortex • Sympathetic and parasympathetic nervous system

Assessment (Neurophysiology)	• basal ganglia Hypothalamus Cerebellum • Pain pathways • Sensory and Motor NS • Spinal reflexes
(2C) SPECIAL SENSES (HEAD AND NECK)	
Terminal Objective	▪ Demonstrate appropriate basics knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision making by critical thinking. Recognize patients with special care and perform dental emergencies having good communication skills.
Rationale	Teaching Physiology in the first year of BDS is crucial because it helps students understand the normal functions of the human body, forming the basis for recognizing disease and planning appropriate dental care. Knowledge of systems such as the cardiovascular, nervous, and endocrine systems enables students to relate general body functions to oral health. It builds scientific reasoning, supports safe clinical decision-making, and prepares students to manage patients with systemic conditions. Physiology also links foundational sciences with future clinical training, ensuring that students develop a comprehensive understanding of how the body responds to stress, medications, and dental procedures.
TOPIC	**OBJECTIVES**
H&N-PHYS -1 Optics of vision Errors of refraction and accommodation	• Discuss refraction and structures of the eye. • Discuss: • -Errors of refraction and their corrections. • Accommodation pathway
PRACTICAL H&N-PHYS- 2&3 Examination of optic nerve	• To examine the optic nerve • Optic pathway
H&N-PHYS- 4 Function of ear (middle + external + inner)	• Discuss the functions of the External, Middle, and Internal Ear.
PRACTICAL H&N-PHYS- 5& 6 Ronnie's test and Weber's test	• To examine the sense of hearing
H&N-PHYS- 7 Physiology of taste	• Discuss types of taste sensations and their perception on T tongue. List factors affecting taste sensation. • Describe the location and activation of taste buds.
PRACTICAL H&N-PHYS-8&9 Examination of taste	• To examine the taste sensation
H&N-PHYS-10 Physiology of smell	Describe the location and activation of the olfactory receptors. Describe different types of smell. Define Anosmia, parosmia •

PRACTICAL:H&N-PHYS -11& 12 Examination of Smell	• To examine the different types of smell
2D NERVE & MUSCLE PHYSIOLOGY (SKELETAL AND SMOOTH MUSCLE	
Terminal Objective	▪ Demonstrate appropriate basics knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision making by critical thinking. • Recognize patient with special care and perform dental emergencies having good communication skills.
Rationale	• Teaching Physiology in the first year of BDS is crucial because it helps students understand the normal functions of the human body, forming the basis for recognizing disease and planning appropriate dental care. Knowledge of systems such as the cardiovascular, nervous, and endocrine systems enables students to relate general body functions to oral health. It builds scientific reasoning, supports safe clinical decision-making, and prepares students to manage patients with systemic conditions. Physiology also links foundational sciences with future clinical training, ensuring that students develop a comprehensive understanding of how the body responds to stress, medications, and dental procedures.
MSK-PHYS-1: Overview of muscle physiology	• Discuss different types of muscles, the structure of skeletal muscle, types, characteristics, and general features of skeletal muscle
MSK-PHYS-2: neuromuscular junction	• Discuss the parts of neuromuscular junctions, discuss the steps of impulse transmission through the neuromuscular junction, and neuromuscular dysfunction
MSK-PHYS-3: contraction of skeletal muscle	• Define power stroke • Discuss the mechanism of skeletal muscle contraction and skeletal muscle relaxation at the molecular level • Describe role of ATP in muscle contraction
Practical: MSK-PHYS-7 &8: simple muscle twitch (SMT)	• To record the SMT graph on the power lab
Practical:MSK-PHYS-9&10: muscle fatigue	• To observe the graph of the muscle fatigue phenomenon on the Power Lab
MSK-PHYS-11 Smooth muscle & its Contraction	• Action potentials in smooth muscles. • Contractile mechanism of smooth muscles. • Nervous and hormonal control of smooth muscle **contraction**
MSK-PHYS-12& 13 TUTORIAL Formative assessment	• BCQ test Practice • (open book exam)

ANATOMY BLOCK-II

Terminal Objective	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. ▪ Recognize patients with special care and perform dental emergencies, having good communication skills.
Rationale	Teaching Anatomy in the first year of BDS is essential because it provides the foundational knowledge required for all dental sciences. Understanding the structure of the human body, especially the head, neck, and oral region, enables students to appreciate the relationships between tissues, nerves, vessels, and organs relevant to dental practice. It supports safe clinical procedures, accurate diagnosis, and effective treatment planning. Early exposure to Anatomy fosters critical thinking, spatial understanding, and a scientific approach to patient care. This grounding prepares students for advanced subjects such as physiology, pathology, and clinical dentistry, ensuring competent and confident future dental professionals.

	At the end of the module, students should be able to		
S. No	**Learning Objectives**	**Teaching strategy**	**Assessment tool**
1.	Discuss the components of reticuloendothelial system	IL	BCQ
2.	Describe the macroscopic and microscopic features of lymphoid organs: a. Lymph node b. Tonsils c. Thymus d. Spleen	IL	BCQs & OSPE
3.	Identify the microscopic features of lymphoid organs on given slides	PW	OSPE
4.	Identify the skeleton of the upper limb	SGIS	OSPE
5.	Name the muscles of the pectoral region, arm, and forearm	SGIS	BCQ, OSPE
6.	Correlate the location and structure of cubital fossa with its clinical significance	SGIS	OSPE
7.	Relate the extent and branches of the brachial artery with its clinical significance	SGIS	BCQ
8.	Identify the skeleton of the lower limb	SGIS	OSPE
9.	Name the muscles of the gluteal region, and thigh	SGIS	OSPE
10.	Identify the bones of rib cage	SGIS	OSPE
11.	Discuss the boundaries and contents of mediastinum and thoracic cage	SGIS	BCQ
12.	Discuss the gross anatomy of the heart	IL	OSPE
13.	Discuss the development of the cardiovascular system	IL	BCQ
14.	Discuss the great vessels of head and neck	IL	BCQ
15.	Describe the gross morphology and blood supply of nose	IL	BCQs & OSPE
16.	Relate the location and structure of paranasal air sinuses with their clinical significance	IL	BCQs & OSPE
17.	Describe the gross morphology of pharynx	IL, SGIS	BCQs & OSPE

18.	Explain the macroscopic features of larynx (cartilages, joints, ligaments, membranes, cavity, muscles and neurovascular supply)	IL, SGIS	BCQs & OSPE
19.	Describe the gross morphology of trachea and bronco-pulmonary segments	IL	BCQ
20.	Identify the anatomical structures related to cardiovascular and respiratory systems on a chest X- ray	SGIS	OSPE
21.	Describe the microscopic features of upper and lower respiratory tract	IL	BCQ
22.	Identify the microscopic features of the respiratory system (trachea & lungs) on given slides	PW	OSPE
23.	Name the parts of gastrointestinal tract	SGIS	OSPE
24.	Describe the gross morphology of the oral cavity and tongue	IL	BCQ
25.	Describe the microscopic features of tongue	IL	SEQS
26.	Identify the microscopic features of tongue on a given slide	PW	OSPE
27.	Describe the gross structure of salivary glands (Parotid, submandibular and sublingual)	IL	BCQs & OSPE
28.	Describe the microscopic features of salivary glands	IL	BCQs & OSPE
29.	Identify the microscopic structures of Parotid, submandibular and sublingual glands on given slides	PW	OSPE
30.	Discuss the location and structure of the liver, pancreas and gall bladder	SGIS	OSPE
31.	Describe the microscopic features of the hepatobiliary system	IL	BCQ
32.	Identify the microscopic features of the hepatobiliary system on a given slide	PW	OSPE
33.	Name the organs of the urinary system	SGIS	OSPE
34.	Describe the osteology of exterior of skull (Norma verticalis, occipitalis, frontalis and basalis)	SGIS	OSPE
35.	Explain the osteology of the interior of skull (vault, anterior, middle and posterior cranial fossae)	SGIS	OSPE
36.	Identify the foramina of skull and the structures passing through them	SGIS	BCQs & OSPE
37.	Explain the external and internal attachments of skull	SGIS	BCQs & OSPE
38.	Describe the development of: a. Skull b. Cervical vertebrae c. Pharyngeal apparatus d. Face e. Tongue f. Palate	IL	BCQs & OSPE
39.	Correlate the features and attachments of maxilla with its clinical significance	SGIS	BCQ, OSPE
40.	Describe the gross features of hard and soft palate	SGIS	BCQs & OSPE
41.	Discuss the features of mandible and hyoid bone	SGIS	OSPE, BCQ
42.	Describe the changes that occur in the mandible in different age groups (child, young, old)	SGIS	BCQ

43.	Identify the features of cervical vertebrae	SGIS	OSPE, BCQ
44.	Describe the scalp and superficial temporal region	IL	BCQs & OSPE
45.	Relate the attachments of facial muscles with their actions	IL	BCQ, OSPE
46.	Explain the neurovascular supply of face, with course and branches of facial artery	IL	BCQs & OSPE
47.	Describe the actions and neurovascular supply of the muscles of mastication.	IL	BCQs & OSPE
48.	Correlate the structure of temporomandibular joint with its neurovascular supply and movements	IL, SGIS	BCQs & OSPE
49.	Describe the boundaries, communications and contents of pterygopalatine and infratemporal fossae	IL	BCQs & OSPE
50.	Demonstrate the surface marking of: a. Facial artery b. Common carotid artery c. External carotid artery d. Internal jugular vein e. External jugular vein f. Parotid gland and duct g. Submandibular duct	SGIS	OSPE
51.	Identify the normal anatomical structures visible on radiographs of head and neck	SGIS	OSPE
BIOCHEMISTRY BLOCK-II			
	Terminal Objective	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. ▪ Recognize patients with special care and perform dental emergencies, having good communication skills.	
	Rationale	Teaching Biochemistry in the first year of BDS is essential because it explains the molecular basis of life processes that influence oral and systemic health. It helps students understand the biochemical composition of teeth, saliva, and oral tissues, as well as the mechanisms underlying diseases such as caries and periodontal disorders. Biochemistry builds a foundation for comprehending metabolism, nutrition, enzymatic functions, and the effects of drugs used in dentistry. It also promotes scientific reasoning and supports future learning in pathology, pharmacology, and clinical subjects. By establishing this core knowledge early, students become better prepared for evidence-based dental practice.	
52.	Discuss the definition, classification & importance of amino acids	IL, SGS	BCQS, SEQS
53.	Discuss the definition, classification & importance of proteins	IL, SGS	BCQS, SEQS,
54.	Discuss the structure, physical & chemical properties of amino acids	IL, SGS	BCQS, SEQS
55.	Discuss the importance of amino acids and the maintenance of body pH	IL, SGS	BCQS, SEQS,
56.	Perform the separation of amino acids by paper chromatography	PW	OSPE
57.	Discuss the structure level of protein & clinical importance	IL, SGS	BCQS, SEQS,
58.	Discuss the plasma protein & immunoglobulin's clinical importance	IL, SGS	BCQS, SEQS

59.	Study the principles of Spectrophotometry	PW	OSPE
60.	Discuss the importance of protein & nutrition, kwashiorkor & marasmus	IL, SGS	BCQS, SEQS
61.	Discuss the definition & classification of lipids	IL, SGS	BCQS, SEQS
62.	Discuss the biomedical importance of lipids	IL, SGS	BCQS, SEQS
63.	Perform the detection of different lipids in given solution	PW	OSPE
64.	Discuss the definition & classification of fatty acids	IL, SGS	BCQS, SEQS
65.	Discuss the chemistry of essential fatty acids & their biomedical importance	IL, SGS	BCQS, SEQs
66.	Discuss the importance of cholesterol & lipoproteins	IL, SGS	BCQS, SEQS
67.	Discuss the chemical & physical properties of triglycerides	IL, SGS	BCQS, SEQS
68.	Discuss the Identification of fat (Saponification, iodine No.)	IL, SGS	BCQS, SEQS
69.	Discuss the rancidity its types & Biomedical importance	IL, SGS	BCQS, SEQS
70.	Discuss the structure, function & types of hemoglobin	IL, SGS	BCQS, SEQS
71.	Perform the estimation of HbA1c	PW	OSPE
72.	Discuss hemoglobinpathies & their Biomedical causes, Thalassemia, Hbs	IL, SGS	BCQS, SEQ
73.	Discuss the factor affecting & regulating the oxygen binding capacity hemoglobin	IL, SGS	BCQS, SEQS, CP
74.	Discuss the chemistry & biosynthesis of porphyrins& their clinical importance	IL, SGS	BCQS, SEQS,
75.	Perform the estimation of Serum Bilirubin	PW	OSPE
76.	Discuss the degradation of heme formation of bile pigment, it's types, transport & execration-	IL, SGS	BCQS, SEQS,
77.	Discuss the mechanism of development of different types of jaundice	IL, SGS	BCQS ,SEQS, CP

Commencement of 2ND Module	Weekly Schedule of BLOCK- II BIOCHEMISTRY

Commencement of 2nd Block		Weekly Schedule of Block-II ANATOMY		
Activity	**Week**	**Lecture 1 (LO)**	**Lecture 2 (LO)**	**Lecture 3 (LO)**
Academic Session – BDS First Professional	Week- 1	Discuss the components of reticuloendothelial system (1)	Microscopic features of tonsils and thymus (2)	Microscopic features of spleen (2)
	Week- 2	Describe the scalp and superficial temporal region (28)	Describe the development of skull & cervical vertebrae (38)	Describe the boundaries,communication and contents of pterygopalatine fossa (49)
	Week- 3	Describe the development of pharyngeal apparatus I (38)	Describe the boundaries,communications and contents of the infratemporal fossa (49)	Describe gross morphology of nose & blood supply of nose (15)
	Week- 4	Describe the development of pharyngeal apparatus II (38)	Relate location and structure of Para nasal sinuses with their clinical significance (16)	Describe gross morphology of oral cavity and tongue(I) (24) Describe gross features of hard and soft palate(40)
	Week- 5	Describe the development of palate (38)	Describe gross morphology of oral cavity and tongue(II) (24)	Describe microscopic features of tongue (25)
	Week- 6	Development of tongue (38)	Gross features of salivary glands (27)	Microscopic features of salivary glands (28)
	Week- 7	Describe the facial muscles with their action (45)	Explain the neurovascular supply of face,with course and branches of facial artery (49)	Describe great vessels of head and neck (14)
	Week- 8	Describe the development of face (38)	Describe the development of palate (38)	Describe gross morphology of pharynx (17)
	Week- 9	Describe the morphology of larynx I (18)	Describe the morphology of larynx II (18)	Describe the gross morphology of trachea and bronchopulmonary segments (19)
	Week 10	Describe the microscopic features of upper and lower respiratory tract (21)	Describe microscopic features of hepatobiliary tract and pancreas ((31)	Describe the gross anatomy of heart- (12)
	Week-11	Describe the development of heart (13)	Correlate the structure of the temporomandibular joint with its neurovascular supply and movements (48)	Revision
	Week 13 & 14	**THEORY AND VIVA EXAMINATION**		

Activity	Week No	Lecture-1 (LO)	Lecture-2 (LO)
Academic session – BDS First Professional	Week-1	Definition, classification & importance of amino acids (90)	Definition classification & importance of proteins (91)
	Week-2	Structure physical & chemical properties of amino acids (92)	Importance of amino acids and maintenance of body pH (93)
	Week-3	Structure level of protein & clinical importance (95)	Plasma protein & clinical importance (96)
	Week-4	Immunoglobulin's & clinical importance (96)	Importance of protein & nutrition, kwashiorkor & marasmus (98)
	Week-5	Define & classify lipids (99)	Biomedical importance of lipids (100)
	Week-6	Definition & classification of fatty acids (102)	Essential fatty acids & their biomedical importance (103)
	Week-7	Importance of cholesterol & lipoproteins (104)	Chemical & physical Properties of triglycerides (105)
	Week-8	Identification of fat (Saponification), iodine No. (106)	Rancidity its types & Biomedical importance (107)
	Week-9	Structure, function & types of hemoglobin (108)	Hemoglobinopathies& their Biomedical causes, Thalassemia, Hbs (110)
	Week-10	Factor affecting & regulating the oxygen binding capacity hemoglobin (111)	Chemistry & Biosynthesis of porphyrins& their clinical importance (112)
	Week-11	Degradation of heme formation of bile pigment, it's types, transport & execration-1 (114)	Degradation of heme formation of bile pigment, it's types, transport & execration-2 (114)
	Week-12	Mechanism of development of different types of jaundice (115)	Revision
		THEORY AND VIVA EXAMINATION	

ORAL BIOLOGY-BLOCK -II				
	Terminal Objective	• Demonstrate appropriate basic knowledge of medical and dental sciences. • Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. • Recognize patients with special care and perform dental emergencies, having good communication skills		
	Rationale	Teaching Oral Biology in the first year of BDS is vital because it provides students with a detailed understanding of the development, structure, and function of oral tissues. It introduces foundational concepts related to teeth, saliva, oral mucosa, and supporting structures, helping students appreciate their normal biology before learning about diseases. Oral Biology also builds scientific thinking and links basic sciences with clinical dentistry. This knowledge prepares students to understand oral pathology, periodontology, and operative procedures in later years. By establishing a strong biological framework early, students develop the skills needed for accurate diagnosis, preventive care, and effective patient management.		
S#	**Topic**	**Learning outcomes**	**Mode of teaching**	**Mode of assessment**
1.	**Introduction to Bone**	**Knowledge** • Interpret the composition of bone. • Describe the gross histology of bone • Enlist the bone cells (osteoblasts & osteoclasts) • Reproduce the two mechanisms of bone formation e.g. endochondral, intramembranous • Discuss the remodeling of bone • Discuss the clinical considerations of bone		
		Skill • Sketch the gross structure of bone • Illustrate the steps of bone formation and remodeling		

2.	**Temporomandibular joint**	Knowledge • Define the TMJ • The prenatal development of the TMJ & the postnatal development of the TMJ • Classify joints • Enlist the articular surfaces, ligaments, nerve supply & clinical aspects. • Review the bones and cartilages associated with TMJ • Demonstrate the capsule and disk of the joint. • Express the histology of synovial membrane • Discuss the innervations of the joint • Highlight the development of TMJ • Enlist the clinical correlations of TMJ Integration **Integration with Anatomy** • Arrange the Muscles of mastication according to their & insertion and functions	Interactive Lectures	SBQS
		Skill • Draw and label the gross anatomy of the TMJ • Discuss the biomechanics of TMJ with the help of a diagram		
		Case-based Learning □ Correlate the development of jaws with Facial Profiles	**Tutorial**	**OSPE**
3.	**Dento-osseous structures**	**Knowledge** • The prenatal development of the mandible • The postnatal development of the mandible • The prenatal development of the maxillae **Integration with Anatomy** • Describe the anatomical features of the bones that comprise the jaws (mandible and maxillae)	**Interactive Lectures**	**SBQS**
		Skill • Discuss the role of primary & secondary cartilages involved in the development of the mandible	Practical	OSPE
4.	**Vasculature & innervation of the mouth**	**Knowledge** • Describe the sources and distribution of blood vessels supplying the mouth and associated structures (i.e., the teeth and their supporting structures, the salivary glands, the tongue, palate, floor of mouth, lips, and cheeks). • Describe the sources and distribution of nerves supplying the mouth and associated structures (i.e., the teeth and their supporting structures, the salivary glands, the tongue, palate, floor of mouth, lips, and cheeks) **Integration with Anatomy** • Describe the courses and distribution of	Interactive Lectures	SBQS

		the maxillary and mandibular divisions of the trigeminal nerve		
		Skill • Relate the inferior alveolar nerve block to its anatomy	Practical	OSPE
5.	**Periodontium**	**Knowledge** • Enlist the tissues included in the periodontium • Outline the biochemical composition of cementum. • Classify cementum • Discuss the process of initiation of cementum formation & theories (Development) • Classify the cementoenamel junction • Enlist the PDL and gingival ligament fibers along with their functions • Enlist the cells present in the periodontal ligaments • Highlight the innervation of PDL • Discuss the alveolar process and the histology of alveolar bone • Enlist the age changes associated with periodontium	Interactive lecture	SBQS
		Skill • Illustrate the development of periodontium • Illustrate the fibers of the periodontal ligament • Draw & label the gingival ligament fibers • Sketch the structure of the alveolar bone, showing its components	Practical	OSPE

LEARNING OBJECTIVES OF PHYSIOLOGY 1ST YEAR **BLOCK -III** **(3A) GASTROINTESTINAL SYSTEM(GIT)**	
Terminal Objective	• Demonstrate appropriate basic knowledge of medical and dental sciences. • Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. • ecognize patients with special care and perform dental emergencies, having good communication skills.
Rationale	Teaching Physiology in the first year of BDS is crucial because it helps students understand the normal functions of the human body, forming the basis for recognizing disease and planning appropriate dental care. Knowledge of systems such as the cardiovascular, nervous, and endocrine systems enables students to relate general body functions to oral health. It builds scientific reasoning, supports safe clinical decision-making, and prepares students to manage patients with systemic conditions. Physiology also links foundational sciences with future clinical training, ensuring that students develop a comprehensive understanding of how the

	body responds to stress, medications, and dental procedures.
TOPIC	**Learning objectives**
GIT-3A -PHY-1 **Overview of GIT physiology**	• Discuss the physiological anatomy and functions of Gastro Intestinal tract. • Describe the electrical activity of gastrointestinal smooth muscle
GIT-3A-PHY-2 **Neural control of GIT function**	• Describe enteric nervous system. • Mention the role of enteric nervous system in control of GIT function • Mention the role of autonomic nervous system in control of GIT function • Define three types of gastrointestinal reflexes that are essential to gastrointestinal control
PRACTICAL **GIT-3A -PHY-3& 4** **Introduction of Nasogastric (NG) tube**	• Its uses, indications, and contraindications
GIT- 3A-PHY-5 **Saliva; its composition, function, and regulation**	• Mention the major salivary glands • Describe the composition and function of saliva • Describe the role of saliva in oral hygiene • Explain the regulation/control of salivary secretion
GIT- 3A-PHY-6&7 **TUTORIAL**	BCQ Practice and discussion of gastrointestinal reflexes, Enteric NS, Saliva, • Spike potential, slow waves
GIT-3A-PHY-8 Mastication and Deglutition	• Define mastication/chewing and mention its importance. • Define swallowing/deglutition and name its stages. • Describe the mechanism of each stage • Mention the function of the lower esophageal sphincter. • Discuss the mechanisms that prevent food from entering the nasal cavity and larynx during swallowing
PRACTICAL **GIT-3A -PHY-9 &10** **Effect of deglutition on respiration**	• To see the effect of deglutition on respiration
GIT-3A -PHY-11 **Gastric juice; its composition, function and regulation**	• Describe the physiological anatomy of gastric glands • Describe the composition of gastric juice • Mention the functions of important constituents of gastric juice • Describe the regulation/control of gastric juice secretion
GIT-3A –PHY-12 **Mechanism of gastric acid (HCl) secretion and its control**	• Describe the mechanism of HCl secretion by • Parietal cells of oxyntic/gastric glands • Mention the function of gastric HCl • Describe the regulation of gastric acid secretion
GIT-3A -PHY-13 **Motor functions of stomach**	• Describe the motor functions of the stomach • Explain how the gastric emptying is regulated
GIT- 3A-PHY-14&15 **TUTORIAL**	• BCQ Practice and discussion stomach
GIT-3A -PHY-16 **Pancreatic juice; its composition, function**	• Mention the physiological anatomy of the exocrine part of the pancreas. • Describe the composition of pancreatic juice. • Mention the functions of pancreatic juice. Mention the importance of the

and regulation	trypsin inhibitor. • Describe basic stimuli that cause pancreatic secretion. • Mention the phases of pancreatic secretion
GIT-3A -PHY-17	• Describe the main functions of the liver • Describe the composition of bile juice • Mention the difference between hepatic bile and gallbladder bile • Discuss the composition, formation, conduction and functions of Bile and Bile salts.
GIT-3A -PHY-18 &19	• BCQ Practice and discussion • Pancreas and liver •
GIT-3A -PHY-20 & 21	• BCQ TEST
(3B) ENDOCRINE SYSTEM	
Terminal Objective	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. • Recognize patients with special care and perform dental emergencies having good communication skills.
Rationale	• Teaching Physiology in the first year of BDS is crucial because it helps students understand the normal functions of the human body, forming the basis for recognizing disease and planning appropriate dental care. Knowledge of systems such as the cardiovascular, nervous, and endocrine systems enables students to relate general body functions to oral health. It builds scientific reasoning, supports safe clinical decision-making, and prepares students to manage patients with systemic conditions. Physiology also links foundational sciences with future clinical training, ensuring that students develop a comprehensive understanding of how the body responds to stress, medications, and dental procedures.
TOPIC	• **Learning objectives**
Endo-3B- PHY- 1 Overview Of Endocrine Physiology	• Classify hormones. Discuss endocrine hormones. Differentiate between endocrine and exocrine glands. • List the major endocrine glands and their locations
Endo-3B- PHY- 2: Mechanism of action of hormone	• Discuss the secretion, transport, clearance, and mechanism of action of different hormones. • Describe the hormone receptors and their activation
Endo-3B- PHY- 3 : Overview of Anterior pituitary	• Discuss the classification, secretions, and effects of anterior pituitary hormones
Endo-3B- PHY- 4: Growth hormone	• Describe the functions and pathophysiology of growth • hormones
Endo-3B- PHY- 5 Posterior pituitary	• Discuss the classification, secretions, and effects of posterior pituitary hormones. • Mechanisms and Functions of ADH
Endo-3B- PHY- 6:	• Describe the Mechanism of action, functions of oxytocin, and the milk let-

Posterior pituitary oxytocin	down effect
Endo – 3B-PHY-7&8: TUTORIAL	• Posterior pituitary • BCQ Practice and discussion
Endo-3B- PHY- 9: Thyroid function + features + hypo & hyper **Endo-3B- PHY- 10&11 TUTORIAL Thyroid function** **Endo-3B- PHY-12: Calcium homeostasis (PTH)**	• Describe the synthesis, secretion, function, and regulation of thyroid hormones. Discuss disorders of thyroid hormones • Discuss disorders of thyroid hormones • List the hormones that regulate calcium and phosphate homeostasis. • Discuss the functions of parathyroid hormone, vitamin D, and calcitonin
Endo-3B- PHY- 15: Pancreas gland (insulin + glucagon)	• Describe the functions of insulin, glucagon • Discuss the mode of action of insulin and glucagon release and their disorders
Endo-3B- PHY- 16 & 17: TUTORIAL	• BCQ PRACTICE • Discuss the functions of Glucagon
Endo- 3B -PHY- 18: Overview of Adrenal Gland. **Endo- 3B -PHY- 19: Adrenal gland-I mineral corticoids** **Endo- 3B -PHY- 20: Adrenal gland-II Glucocorticoids** **Endo- 3B -PHY- 21: Adrenal medulla** **Endo- 3B -PHY- 22&23: tutorial** **Endo- 3B -PHY-24: tutorial**	• Describe the functional anatomy of the adrenal gland and its clinical importance. • Describe the hormones of the adrenal cortex and adrenal medulla • Describe the site of formation, function, and control of secretion of the following: • mineral corticoids. • Describe the site of formation, function, and control of secretion of the following: glucocorticoids. • Describe the site of formation, function, and control of secretion of adrenal medulla hormones • BCQS practice and discussion (adrenal gland and cortex) • BCQS practice and discussion
3C) KIDNEY **(RENAL PHYSIOLOGY)**	
Terminal Objective	• Demonstrate appropriate basic knowledge of medical and dental sciences. • Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. • Recognize patients with special care and perform dental emergencies,

	having good communication skills.
Rationale	• Teaching Physiology in the first year of BDS is crucial because it helps students understand the normal functions of the human body, forming the basis for recognizing disease and planning appropriate dental care. Knowledge of systems such as the cardiovascular, nervous, and endocrine systems enables students to relate general body functions to oral health. It builds scientific reasoning, supports safe clinical decision-making, and prepares students to manage patients with systemic conditions. Physiology also links foundational sciences with future clinical training, ensuring that students develop a comprehensive understanding of how the body responds to stress, medications, and dental procedures.
RENAL-3C-PHY-1: Overview of urinary system (functions of the Kidney)	• Discuss the functional anatomy of the kidney.
RENAL-3C-PHY-2: Nephron parts & types, steps of urine formation	• Discuss the Homeostatic functions of the kidney, Renal blood supply • Define nephrons and their types • Describe parts of nephrons • Discuss the steps of urine formation
RENAL-3C-PHY-3 GFR & structure of the glomerular filtration membrane	• Define GFR. • State the normal range of GFR. • Describe the glomerular filtration membrane and its function.
RENAL-3C-PHY-4 GFR & its determinants	• Discuss the forces that promote and oppose glomerular filtration. • Describe the regulation of glomerular filtration by hormones and the nervous system
RENAL-3C-PHY-5: Autoregulation of GFR and renal blood flow	• Define Autoregulation, explain the myogenic mechanism, and how vascular smooth muscle responds to changes in blood pressure.
RENAL-3C-PHY-6&7: Tutorial glomerular filtration and regulation	• Describe the tubuloglomerular feedback (TGF) mechanism, including the role of the macula densa in detecting sodium chloride concentration and adjusting afferent arteriole tone • BCQ Practice and discussion
RENAL-3C-PHY-8: Tubular reabsorption	• Discuss passive and active mechanism of transport for tubular reabsorption • Discuss reabsorption of fluid by peritubular capillaries. • Discuss tubular reabsorption along different parts of the nephron and its regulation. • Define tubular load and Tubular transport maximum (Tm).
RENAL-3C-PHY-9: Tubular secretion	• Discuss the tubular secretion processes. • Describe the secretion in different parts of nephron
RENAL-3C-PHY-10&11: Tutorial	• BCQ Practice and discussion • Tubular reabsorption + secretion
RENAL-3C-PHY-12:	• Factors that increase and decrease renal calcium excretion
RENAL-3C-PHY-13:	• Discuss the role of the bladder in accommodating the wide range of urine volumes
RENAL-3C-PHY-14:	• Describe the neural reflex pathway that regulates an empty bladder

RENAL-3C-PHY-15&16: tutorial	• BCQS discussion: hormones acting on the kidney

BLOCK III **ANATOMY**				
	Terminal Objective	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. • Recognize patients with special care and perform dental emergencies, having good communication skills.		
	Rationale	Teaching Anatomy in the first year of BDS is essential because it provides the foundational knowledge required for all dental sciences. Understanding the structure of the human body, especially the head, neck, and oral region, enables students to appreciate the relationships between tissues, nerves, vessels, and organs relevant to dental practice. It supports safe clinical procedures, accurate diagnosis, and effective treatment planning. Early exposure to Anatomy fosters critical thinking, spatial understanding, and a scientific approach to patient care. This grounding prepares students for advanced subjects such as physiology, pathology, and clinical dentistry, ensuring competent and confident future dental professionals.		
	At the end of the module, students should be able to			
S. No	**Objectives**		**Teaching strategy**	**Assessment tool**
1.	Explain the general layout of the nervous system and its classification.		IL	BCQ
2.	Discuss the gross anatomy & cross sections of spinal cord with blood supply.		IL	BCQ,SEQ
3.	Discuss the ascending tracts of spinal cord with their functions and clinical correlates.		IL	BCQ, SEQ
4.	Discuss the descending tracts of the spinal cord with their functions and clinical correlates.		IL	BCQ, SEQ
5.	Explain the gross structure of brain stem (medulla, pons and midbrain).		SGIS	BCQ, SEQS & OSPE
6.	Discuss the cross sections of brain stem (medulla, pons and midbrain) at different levels with clinical correlates.		IL	BCQ, SEQ & OSPE
7.	Discuss in detail cranial nerves I – XII.		IL	BCQ, SEQ & OSPE
8.	Discuss the gross structure of cerebellum and fibers associated with it.		IL	BCQ, SEQ & OSPE
9.	Explain the cranial meninges with their neurovascular supply and clinical correlates.		SGIS	BCQ, OSPE
10.	Explain the Dural infoldings/ reflections (falx cerebri, tentorium cerebelli, falx cerebelli and sellar diaphragm).		SGIS	BCQ, OSPE
11.	Relate the location and communications of Dural venous sinuses with their clinical significance.		SGIS	BCQ, SEQ & OSPE
12.	Demonstrate the sulci and gyri of cerebrum on the given model.		SGIS	BCQ, OSPE
13.	Explain the functions of different cortical areas of cerebrum with their lesions.		SGIS	BCQ, SEQ

14.	Describe the white matter (commissural, projection and association fibers) of brain.	IL	BCQ
15.	Relate the parts of basal nuclei of the brain with clinical disorders.	IL	BCQ
16.	Describe the microscopic features of: a. spinal cord b. cerebellum c. cerebral cortex	IL	BCQ, SEQ
17.	Identify the microscopic features of spinal cord, cerebellum and cerebral cortex.	PW	OSPE
18.	Explain the ventricular system of brain with clinical correlates.	SGIS	BCQ, SEQ, OSPE
19.	Describe the blood supply of the brain.	SGIS	BCQ, SEQ, OSPE
20.	Describe the vertebral system of veins.	SGIS	BCQ
21.	Explain the gross anatomical features of eye with its neurovascular supply.	SGIS	BCQ, OSPE
22.	Describe the microscopic features of eye.	IL, PW	OSPE
23.	Describe the extra-ocular muscles with their nerve supply and actions.	SGIS	BCQ, SEQ, OSPE
24.	Identify the extra-ocular and facial muscles on a given model.	SGIS	OSPE
25.	Explain the gross features of ear (external, middle and internal) with its neurovascular supply and clinical correlates.	SGIS	BCQ, SEQ, OSPE
26.	Describe the development of brain and spinal cord with its anomalies.	IL	BCQ, SEQ
27.	Discuss cervical fascia.	IL	BCQ
28.	Explain the anterior and posterior triangles of the neck.	SGIS	BCQ, SEQ, OSPE
29.	Describe the lymphatic drainage of head and neck.	IL	BCQ
30.	Discuss the ganglia and plexus present in the neck.	IL	BCQ
31.	Identify the muscles and joints in the pre-vertebral region of the neck.	SGIS	OSPE
32.	Describe the location, structure and blood supply of pituitary gland.	IL	BCQ, SEQ
33.	Explain the location and structure of thyroid and parathyroid gland.	IL	BCQ, SEQ
34.	Discuss the location and structure of endocrine pancreas.	IL	BCQ
35.	Explain the location and structure of suprarenal glands.	IL	BCQ
36.	Describe the developmental anatomy of the endocrine glands.	IL	BCQ, SEQ
37.	Describe the microscopic features of endocrine glands.	IL	BCQ, SEQ
38.	Identify the microscopic features of endocrine glands on the given slide.	PW	OSPE
39.	Describe the microscopic features of the skin.	IL	BCQ
40.	Identify the microscopic features of the skin.	PW	OSPE
41.	Demonstrate the examination of cranial nerves	SGS	OSPE
BIOCHEMISTRY			

	Terminal Objective	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. ▪ Recognize patients with special care and perform dental emergencies, having good communication skills.	
	Rationale	Teaching Biochemistry in the first year of BDS is essential because it explains the molecular basis of life processes that influence oral and systemic health. It helps students understand the biochemical composition of teeth, saliva, and oral tissues, as well as the mechanisms underlying diseases such as caries and periodontal disorders. Biochemistry builds a foundation for comprehending metabolism, nutrition, enzymatic functions, and the effects of drugs used in dentistry. It also promotes scientific reasoning and supports future learning in pathology, pharmacology, and clinical subjects. By establishing this core knowledge early, students become better prepared for evidence-based dental practice.	
42.	Discuss the definition of enzyme with classification	IL, SGS	BCQS, SEQS
43.	Study the activity of different factors on Enzyme action	PW	OSPE
44.	Discuss the properties of enzymes	IL, SGS	BCQS ,SEQS
45.	Discuss the mode of action & regulation of enzyme	IL, SGS	BCQS, SEQS
46.	Discuss the factors affecting enzymes activity	IL, SGS	BCQS, SEQS
47.	Discuss the mechanism of action of different inhibitors of enzyme	IL, SGS	BCQS, SEQS
48.	Discuss the isoenzyme clinical importance, application clinical & therapeutic uses of enzymes	IL, SGS	BCQS, SEQS, CP
49.	Perform the analysis of normal and abnormal urine	PW	OSPE
50.	Discuss the sources, Absorption, regulation, biomedical importance, clinical aspect of Na & K	IL, SGS	BCQS, SEQS
51.	Discuss the sources, Absorption, regulation, biomedical importance, clinical aspect of Cl,PO_4 &Ca	IL, SGS	BCQS, SEQS
52.	Discuss the sources, Absorption, regulation, biomedical importance, clinical aspect of iron & Zinc	IL, SGS	BCQS, SEQS
53.	Discuss the sources, Absorption, regulation, biomedical importance, clinical aspect of Mg., selenium, iodine	IL, SGS	BCQS, SEQS
54.	Perform milk analysis by separating different components	PW	OSPE
55.	Discuss the sources, Absorption, regulation, biomedical importance, clinical aspect of copper, chromium, cadmium, manganese	IL, SGS	BCQS, SEQS, CP
56.	Discuss the sources, Absorption, regulation, biomedical role, clinical aspect deficiency of vitamin A & E	IL, SGS	BCQS, SEQS,
57.	Discuss the sources, Absorption, regulation, biomedical role, clinical aspects/ deficiency of vitamin D,K	IL, SGS	BCQS, SEQS,
58.	Discuss the sources, Absorption, regulation, biomedical role, clinical aspect deficiency of vitamin C	IL, SGS	BCQS, SEQS
59.	Discuss the sources, Absorption, regulation, biomedical role, clinical aspect deficiency of vitamin B1 & folic acid	IL, SGS	BCQS, SEQS
60.	Discuss the sources, Absorption, regulation, biomedical role, clinical aspect deficiency of Pyridoxine, riboflavin	IL, SGS	BCQS, SEQS
61.	Discuss the sources, Absorption, regulation, biomedical role, clinical aspect deficiency of nicotinic acid & biotin	IL, SGS	BCQS, SEQS

62.	Discuss the sources, Absorption, regulation, biomedical role, clinical aspect deficiency of vitamin B12	IL, SGS	BCQS, SEQS
63.	Perform CSF analysis	PW	OSPE
64.	Discuss the gastric, pancreatic, bile juice/ digestion & absorption carbohydrates	IL, SGS	BCQS, SEQS
65.	Discuss the digestion & absorption of protein and nucleic acid with clinical importance	IL, SGS	BCQS, SEQS
66.	Discuss the digestion & absorption of lipids with clinical importance	IL, SGS	BCQS, SEQS,
67.	Discuss the gastric, pancreatic, intestinal and bile juices with their composition and clinical significance	IL, SGS	BCQS, SEQS

Commencement of 3rd Block		Weekly Schedule of BLOCK-III ANATOMY		
Activity	**Week**	**Lecture 1 (LO)**	**Lecture2 (LO)**	**Lecture 3 (LO)**
Academic Session – BDS First Professional	Week- 1	Explain the general layout of the nervous system and its classification (1)	Discuss the gross anatomy of spinal cord and its blood	Describe the microscopic features of spinal cord (16)
	Week- 2	Discuss the ascending tracts of spinal cord with their functions & clinical correlates	Discuss the ascending tracts of spinal cord with their functions &	Discuss the descending tracts of the spinal cord with their functions and clinical correlates
	Week- 3	Discuss the cross section of spinal cord (2)	Discuss the cross section of medulla oblongata (6)	Discuss the gross & microscopic structure of cerebellum and fibers associated with it (8, 17)
	Week- 4	Discuss the cross section of Pons (6)	Discuss the cross section of Midbrain	Describe white matter (commissural, projection &
	Week- 5	Describe the development of spinal cord (26)	Relate parts of basal nuclei of brain with clinical disorders (15)	Describe the microscopic features of cerebrum (16)
	Week- 6	Introduction to cranial nerves, discuss CN I (7)	Cranial nerve II (7)	Describe the microscopic features of eye (22)
	Week- 7	Cranial nerve III, IV and VI (7)	Cranial nerve V (7)	Cranial nerve VII (7)
	Week- 8	Describe the development of brain (26)	Cranial nerve VIII (7)	Cranial nerve IX (7)
	Week- 9	Describe the microscopic features of the skin (39)	Cranial nerve X (7)	Cranial nerve XI & XII (7)
	Week10	Discuss cervical fascia (27)	Describe the lymphatic drainage of	Discuss the ganglia and plexus present in the neck (30)
	Week-11	Describe the location, structure & blood supply of pituitary gland (32)	Describe development & microscopic features of pituitary	Explain the location and structure of thyroid and parathyroid gland (33)
	Week -12	Describe development and microscopic features of thyroid and parathyroid gland (36, 37)	Discuss the location, structure, development & microscopic features	Describe the location, structure, development and microscopic features of endocrine pancreas (34, 36, 37)
		THEORY AND VIVA EXAMINATION		

Commencement of 3rd Block		Weekly Schedule of BLOCK- III Biochemistry	
Activity	**Week No**	**Lecture-1 (LO)**	**Lecture-2 (LO)**
Academic Session – BDS First Professional	Week-1	Definition of enzyme with classification (69)	Properties of enzymes (71)
	Week-2	Mode of action & regulation of enzyme (72)	Factors affecting enzymes activity (73)
	Week-3	Mechanism of action of different inhibitors of enzyme (74)	Isoenzyme clinical importance, application clinical& therapeutic uses of enzymes (75)
	Week-4	Sources, Absorption, regulation, biomedical importance, clinical aspect of Na & K (77)	Sources, Absorption, regulation, biomedical importance, clinical aspect of Cl,PO_4 &Ca
	Week-5	Sources, Absorption, regulation, biomedical importance, clinical aspect of iron & Zinc (79)	Sources, Absorption, regulation, biomedical importance, clinical aspect of Mg., selenium, iodine (80)
	Week-6	Sources, Absorption, regulation, biomedical importance, clinical aspect of copper, chromium, cadmium, manganese (82)	Sources, Absorption, regulation, biomedical role, clinical aspect deficiency of vitamin A & E (83)
	Week-7	Sources, Absorption, regulation, biomedical role, clinical aspects/ deficiency of vitamin D,K (84)	Sources, Absorption, regulation, biomedical role, clinical aspect deficiency of vitamin C (85)
	Week-8	Sources, Absorption, regulation, biomedical role, clinical aspect deficiency of vitamin B1 & folic acid (86)	Sources, Absorption, regulation, biomedical role, clinical aspect deficiency of Pyridoxine, riboflavin (87)
	Week-9	Sources, Absorption, regulation, biomedical role, clinical aspect deficiency of nicotinic acid & biotin (88)	Sources, Absorption, regulation, biomedical role, clinical aspect deficiency of vitamin B12 (89)
	Week-10	Discuss digestion & absorption carbohydrates with their clinical disorder (91)	Digestion & absorption of protein and nucleic acid with clinical importance and their clinical disorder (92)
	Week-11-12	Digestion & absorption of lipids with clinical importance and their clinical disorder (93)	Discuss the gastric, pancreatic, intestinal & bile juices with their composition and clinical significance (94)
		THEORY AND VIVA EXAMINATION	

	ORAL BIOLOGY-BLOCK -III			
	Terminal Objective	• Demonstrate appropriate basic knowledge of medical and dental sciences. • Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. • Recognize patients with special care and perform dental emergencies, having good communication skills		
	Rationale	Teaching Oral Biology in the first year of BDS is vital because it provides students with a detailed understanding of the development, structure, and function of oral tissues. It introduces foundational concepts related to teeth, saliva, oral mucosa, and supporting structures, helping students appreciate their normal biology before learning about diseases. Oral Biology also builds scientific thinking and links basic sciences with clinical dentistry. This knowledge prepares students to understand oral pathology, periodontology, and operative procedures in later years. By establishing a strong biological framework early, students develop the skills needed for accurate diagnosis, preventive care, and effective patient management.		
S#	**Topic**	**Learning outcomes**	**Mode of teaching**	**Mode of assessment**
1	**Enamel: Composition, Formation & Structure**	**Knowledge** • Enlist the physical & chemical characteristics of enamel • Discuss the fundamental organization of enamel • Outline the life cycle ameloblast • Demonstrate the light & electron microscopy of amelogenesis • Enlist the enamel proteins • Give the location, features & functions of enamel proteins • Identify Enamel surface characteristics • Discuss stria of Retzius, cross striations, Gnarled Enamel, Tufts & Lamella • Categorize the defects of amelogenesis • Explain the changes that take place in enamel with age	Interactive Lectures	SBQS
		Skill • Sketch the life cycle of ameloblast • Demonstrate the microscopic structures present in enamel • Illustrate enamel tufts, lamellae & spindles	Practical	OSPE

2.	**Dentin Pulp Complex**	**Knowledge** • Define dentin-pulp complex. • Highlight the basic structure of dentin & its composition. • Classify dentin • Describe odontoblast differentiation, formation of primary, secondary & tertiary dentin • Distinguish the dentinal tubules, peri & intertubular dentin, sclerotic dentin, interglobular dentin, incremental lines & granular layer of Tomes Define pulp. • Enlist the cells present in the pulp • Enlist the functions of pulp • Enlist Zones of the pulp • Compare different theories of dentin sensitivity • Summarize their clinical relevance • Classify pulp stones • Enlist the changes that take place in dentin pulp complex with age with clinical correlation	Interactive Lectures	SBQS
		Skill • Demonstrate the microscopic picture of the histological structures of dentin • Illustrate histological structures present • in Dentin • Illustrate different theories of dentin sensitivity • Draw & label the histological zones of pulp	Practical	OSPE
3.	**Salivary Glands**	**Knowledge** • Highlight the major & minor salivary Glands • Discuss the cells of the Salivary Glands • Discuss the mechanism of formation of saliva • Highlight the ductal modification of saliva • Identify the changes that takes place with age in salivary glands • Categorize the diseases associated with it • Integration with Biochemistry • List down the biochemical composition • of saliva • Enlist the functions of saliva	Interactive Lecture	SBQS

		Skill • Illustrate the structural organization of salivary glands • Draw the histology of the major Salivary glands • Annotate the ductal system of salivary glands		
4.	**Oral Mucosa**	**Knowledge** • Define oral mucosa • Outline the boundaries of Oral Cavity & tissues in Oral Cavity • Enlist the functions of Oral Mucosa • Enlist layers of oral epithelium • Enlist the non-keratinocytes in oral epithelium • Arrange the ultrastructural features & functions of non-keratinocytes • Highlight the junction of the epithelium & lamina propria • Illustrate the structural variations of the masticatory & lining mucosa • Differentiate lingual papillae according to their location, structure, histology, and specification to the type of taste • Express the mucocutaneous, mucogingival & dentogingival junctions • Summarize the development of the oral mucosa • Correlate the changes that take place in the oral mucosa with age **Integration with Anatomy** • Differentiate papillae of the tongue according to their location, structure, histology, and specification to type of taste	Interactive Lectures	SBQS
		Skill • Illustrate the histological components of the oral mucosa • Draw and label the histology of Ortho keratinized, parakeratinized & non keratinized epithelium • Illustrate the dentogingival junction and junctional epithelium	Practical	OSPE
5.	**Repair & Regeneration of Oral Tissues**	**Knowledge** • Relate the phases of healing with repair • Brief healing of enamel & dentin-pulp complex • Highlight Repair following tooth extraction	Interactive Lectures	SBQS

		• Highlight the mechanism of repair of the Periodontium		

LEARNING OBJECTIVES OF DENTAL MATERIAL-					
	Terminal Objective	▪ Demonstrate appropriate basics knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision making by critical thinking. • Recognize patients with special care and perform dental emergencies having good communication skills.			
	Rationale	Teaching Dental Materials in the first year of BDS is essential because it introduces students to the properties, composition, and behavior of materials used in clinical dentistry. Early understanding helps students appreciate how materials interact with oral tissues, withstand functional forces, and contribute to long-term treatment success. The subject develops critical skills in material selection, manipulation, and evaluation, which are fundamental for all operative and restorative procedures. It also promotes scientific reasoning by linking material science with oral environment challenges. By learning Dental Materials early, students build a strong foundation for preclinical training and safe, effective clinical practice in later years.			
SR#	**TOPIC**	**LEARNING OBJECTIVES**	**TEACHING STRATEGIES**	**ASSESSMENT**	**HOURS**
1	**Introduction To Dental Materials**	To choose the appropriate dental materials for specific dental applications	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hrs Lecture
2	**Properties Of Dental Materials**	To understand the materials' biocompatibility, strength and durability, aesthetic, thermal conductivity, corrosion resistance, adhesion flexibility radiopacity, wear resistance, ease of use	Lectures	**Written Examination/OSPE**	8 hrs Lecture
3	**Cements**	To understand the material retention, support, sealing, insulation strength and durability	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8hours lec+16 hr practical
4	**Dental Amalgam**	To understand the primary goal to replace and restore tooth structure, durability, biocompatibility, ease of placement and esthetic consideration	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hr lec + 16 hr practical
5	**Composite Resin**	To restore tooth function, preserve tooth structure, achieve aesthetic results,	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hr lec+ 16 hr practical

		bond securely, and minimize sensitivity.			
6	**Impression Materials**	To create an accurate and reliable mould of oral cavity, ensuring the successful fabrication of prosthetic and restoration while prioritizing patient comfort and safety	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hr lec + 16 hr practical
7	**Gypsum**	To make casts and model, diagnostic and treatment planning, prosthodontic fabrication	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hr lec + 16 hr practical
8	**Dental waxes**	To understand diagnostic waxups, impression modeling, articulation pattern waxing, investment casting, and temporization	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hr lec+16 hr practical
9	**Dental investment and casting**	To understand the properties of Mould formation, refractory properties, dimensional accuracy, surface Finish, strength and stability, material replication, material integrity, material bonding, biocompatibility	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hr lec + 16 hr practical
10	**Denture base polymer**	To provide stability and support to dentures, a natural-looking aesthetic, biocompatibility, and durability	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hr lec+ 16 hr practical
11	**Abrasion and polishing materials**	To understand the significance of polishing material i.e, to remove surface irregularities, enhance esthetics, prevent plaque accumulation, improve biocompatibility, optimize occlusal function and increase patient comfort	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hrs Lecture
12	**Tissue conditioner**	To know soft tissue support, tissue handling, improve denture fit enhance patient comfort, temporary solutions	Lecture	**Written Examination/OSPE**	8 hrs Lecture
13	**Metal And Alloys**	To understand strength and durability, conductivity, corrosion resistance,	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hrs Lecture

		temperature resistance and appearance.			
14	**Cermets**	To know hardness and wear resistance, high temperature resistance, chemical inertness, biocompatibility, and thermal conductivity	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hrs Lecture
15	**Direct Filling** Gold	To know the properties of gold, such as durability and longevity, biocompatibility, minimal tooth preparation, corrosion, malleability and adaptability, and patient comfort	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hrs Lecture
16	**Adhesion**	To create a strong bond between dental restorative material (amalgam and composite) and natural tooth structures, minimize microleakage, prevent infiltration, prevent tooth integrity	Lectures	**Written Examination/OSPE**	8 hrs Lecture
17	**Dental Ceramic**	To provide durability and aesthetically pleasing restoration for tooth, natural appearance, biocompatibility, aim to offer long lasting solutions for crown, veneers and other restorative applications	Lectures	**Written Examination/OSPE**	8 hrs Lecture
18	**Endodontic Materials**	Discuss the introduction of endodontic instruments and materials, to know about the composition, manipulation an uses of endodontic materials(irrigants,intracanal medication Gp and paper points, sealer)to know about root canal treatment, to know about pulp capping	Lecture/Practical /Lab Work	**Written Examination/OSPE**	8 hrs Lecture
19	**Dental implant**	Discuss the introduction of dental implants, to know about titanium, to learn about dental implants, types, components, advantages, and	Lectures	**Written Examination/OSPE**	8 hrs Lecture

		disadvantages			
	TOTAL HOURS=72 HOURS IN 36 WEEKS IN FIRST YEAR BDS **Remaining Hours in Second Year BDS**				300 hours

PRE-CLINICAL MODULE OF DENTAL MATERIAL AND PROSTHODONTICS
REQUIREMENTS FOR PRE-CLINICALS
1. **Student's Protocol** *2.* Proper Dress Code With White Coat *3.* Gloves *4.* Mask *5.* Eye Protector *6.* **Instruments & Materials** **Dental Unit Preparation Items** • Metal Instrument Box • Instrument Tray • Typhodont Teeth In Blo0ck / Phantom Head • **Examination Instrument** • Mirrors • Probe • Tweezers • Periodontal Probe • **Instruments** • Hand Piece • Flat Ended Tapered Fissure Bur • Round Ended Tapered Fissure Bur • Round Bur • Flame Shaped Bur • Wheel Shape Bur • Interdental Bur • Finishing Bur • Spatula • Bowl • Articulator • Hard Plaster

PRE-CLINICAL MODULE OF DENTAL MATERIAL AND PROSTHODONTICS	
Terminal Objective	• Demonstrate appropriate basic knowledge of medical and dental sciences. • Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision making by critical thinking. • Recognize patient with special care and perform dental emergencies having good communication skills.

Rationale			Teaching Dental Materials and Preclinical Prosthodontics together in the first year of BDS provides students with a strong, integrated foundation for future clinical practice. Understanding the properties, composition, and handling of dental materials enables students to appreciate their role in fabricating restorations and prostheses. When combined with preclinical prosthodontics, students apply this knowledge through hands-on exercises that develop manual skills, precision, and attention to detail. This integrated approach enhances problem-solving, fosters scientific reasoning, and builds confidence before clinical exposure. Together, these subjects prepare students for constructing high-quality prostheses and performing safe, effective restorative procedures in later years.			
WEEK.DAY			**TOPIC**	**LECTURE**	**INT. LECTURE DEMO**	**PRACTICAL**
				MONDAY, TUESDAY & WEDNESDAY		
				11:30 am to 1:00 pm	**11:30 am to 1:00pm**	**11:30 am to 1:00 pm**
	Mon	1	Terminology of Prosthodontics, Objectives of partial/complete denture, types of dentures	Dr.Paras/dr.Sehar		
			Types of dentures and their objectives (Practical)			
	Tuesday	2	Kennedy's Classification and Appligate's rules for applying kennedy's classification	Dr.Hassan/Dr.Paras		
	Wednesday	3	Kennedy's Classification (Practical)			
	Monday	4	Stainless steel & wrought alloys	Dr.Nourein		
	Tuesday	5	Clasp Formation	Dr.Hassan		
			Clasp construction (Practical)			
	Wednesday	6	Impression Materilas-1	Dr.Uzma		DR.UZAM,DR.PARAS
			Impression for Removable partial denture (Practical)			
	Monday	7	Outline and Surfaces of maxillary & mandibular dentures (Lecture & Practical)	Dr.Paras	Dr.Hassan	
	Tuesday	8	Gypsum	Dr.Paras/Dr.Sehar		
			Model making (Practical)			
	Wednesday	9	Impression Materials-2 Impression for complete denture (Practical)	Dr.Paras		
	Monday	10	Gypsum	Dr.Paras/Dr.Sehar		
			Model making (Practical)			
	Tuesday	11	Beading and boxing	Dr.Hassan/Dr.Paras		

			Beading and boxing the impression (Practical)			
	Wednesday	12	Suryeing, use of surveyor (Practical)	Dr.Uzma		
	Mon	13	Acrylic material	Dr.paras	Dr.sehar	
			Construction of customised tray (Practical)			
	Tue	14	Waxes	Dr.hassan	Dr.sehar	
			Construction of wax occlusal rims (Practical)			
	Wed	15	Anterior teeth arrangement	Dr.Uzma		
			Anterior teeth arrangement (Practical)			
	Mon	16	Articulation	Dr.Paras/Dr.Sehar		
			Articulation and Articulators (Practical)			
	Tue	17	Flasking	Dr.Paras/Dr.Hassan		
			Dental flask and flasking (Practical)			
	Wed	18	Posterior teeth arrangement	Dr.uzma		
			Posterior teeth arrangement (Practical)			
	Mon	19	Separating medias	Dr.Paras/Dr.Hassan		
			Application of separating medias (Practical)			
	Tue	20	Dewaxing, Packing and Curing	Dr Sehar/Dr.Hassan		
			Denture Processing (Practical)			
	Wed	21	Finishing & Polishing materials &procedure	Dr.Paras		
			Deflasking, Finishing and Polishing (Practical)			

			TOPIC	**LECTURE**	**INT. LECTURE DEMO**	**PRACTICAL**
				MONDAY, TUESDAY & WEDNESDAY		
				11:30 am to 1:00 pm	**11:30 am to 1:00 pm**	**11:30 am to 1:00 pm**
	Mon	**22**	Denture liners	Dr.Nourein		
			Faults in Finished Denture (Practical)			
	Tue	**23**	Denture Cleansers	Dr.Uzma		
			Follow-up Instructions (Practical)			
	Wed	**24**	Completion of practical work	Dr.Uzma/Dr.Paras		
			Complete denture remaining work			

			(Practical)			
	Mon	**25**	Revision (Lecture & Practical)	Dr.Uzma	Dr.Paras/Dr.Sehar	
	Tue	**26**	Posting End Test & Psychomotor Skill Assessment Test			

PRE-CLINICAL MODULE OF TOOTH MORPHOLOGY

Terminal Objective	▪ Demonstrate appropriate basics knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision making by critical thinking.
Rationale	Teaching Tooth Morphology in the first year of BDS is essential because it provides students with detailed knowledge of the shape, structure, and characteristics of each tooth. This foundation is crucial for understanding occlusion, performing cavity preparations, and recognizing normal versus abnormal dental forms. Mastery of tooth anatomy enhances diagnostic skills and supports accurate restorative and prosthodontic work in later years. The subject also helps students develop fine motor skills through carving exercises, improving their precision and hand–eye coordination. By learning Tooth Morphology early, students build the essential groundwork needed for effective clinical practice and reliable patient care.

WEEK/ DAY		**TOPIC**	**INTERACTIVE (ILD)**	**PRACTICAL**
			Monday, Tuesday and Wednesday	
			01:00 To 2:00 PM	**02:30 To 03:30 PM**
WEEK-I	Monday	An Introduction to Dental Nomenclature	Dr. Sadia	Dr.
		Introduction to Interior and Posterior teeth	Dr. Saif	
	Tuesday	Tooth Numbering System	Dr. Saif	
		Eruption Sequance for permanent teeth	Dr. Sadia	
	Wednesday	Tooth Surfaces	Dr. Saif	
		Dental Formulae for correct eruption sequance	Dr. Saif	
WEEK-II	Monday	Tooth Numbering Systems used in	Dr. Sadia	
		Tooth surface makings	Dr. Saif	
	Tuesday	Tooth and supporting tissues	Dr. Saif	
		Structure of cells in dental tissues	Dr. Sadia	
	Wednesday	Fine structures present in cells of dental	Dr. Saif	
		Blood and nerve supply of dental tissues	Dr. Saif	
WEEK-III	Monday	Dental hard tissues and there histological variations	Dr. Sadia	
		Central incisor	Dr. Saif	

	Tuesday	Central incisor	Dr. Saif	
		Lateral incisor	Dr. Sadia	
	Wednesday	Lateral incisor	Dr. Saif	
		Canine	Dr. Saif	
WEEK-IV	Monday	Canine	Dr. Sadia	
		First pre-molar	Dr. Saif	
	Tuesday	First pre-molar	Dr. Saif	
		Second pre-molar	Dr. Sadia	
	Wednesday	Second pre-molar	Dr. Saif	
		Molar Teeth	Dr. Saif	
WEEK-V	Monday	Molar Teeth	Dr. Sadia	
		Ligaments of THJ	Dr. Saif	
	Tuesday	Bones involved in joint (TMJ)	Dr. Saif	
		Muscle movements	Dr. Sadia	
	Wednesday	Comparison of TMJ with other joints	Dr. Saif	
		Muscle influencing dental impressions	Dr. Saif	
WEEK-VI	Monday	Occlusion	Dr. Sadia	
		Intra-arch relationship	Dr. Saif	
	Tuesday	Cusp to cusp relationship	Dr. Saif	
		Balanced occlusion	Dr. Sadia	
	Wednesday	Mutually protected occlusion	Dr. Saif	
		Mandibular movements	Dr. Saif	
WEEK-VII	Monday	Differences between permanent and deciduous teeth	Dr. Sadia	
		Deciduous teeth surface makings	Dr. Saif	
	Tuesday	Identify deciduous teeth	Dr. Saif	
		Tooth numbering system	Dr. Sadia	
	Wednesday	Root canal morphology	Dr. Saif	
		Sequence of deciduous tooth eruption	Dr. Saif	
WEEK-VIII	Monday	Class Quiz		
	Tuesday	BCQ's, SEQ's		
	Wednesday	Psychomotor Assessment		

PRE-CLINICAL MODULE OF CLINICAL CARE AND PROFESSIONALISM, ETHICS

Terminal Objective	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making through critical thinking. ▪ Recognize patients with special care and perform dental emergencies having good communication skills. ▪ Elicit professional skills while providing patient-centered care by a relevant and comprehensive physical and dental examination. ▪ To exhibit ethical patient-centered care based on integrity, humility, social accountability, and high ethical values of this sacred profession
Rationale	Clinical Care and Professionalism, including Ethics, is essential for first-year BDS students as it establishes the foundation for safe, responsible dental practice. Early exposure helps students understand patient rights, informed consent, confidentiality, and professional accountability. It develops empathy, effective communication, and respect for diverse patient needs. Teaching these principles from the beginning nurtures integrity, ethical decision-making, and a commitment to high standards of care. It also prepares students to handle clinical situations with confidence and compassion as they progress in their training. Overall, this module ensures students grow into competent, trustworthy, and ethically grounded dental professionals.

WEEK/ DAY		**TOPIC**	**INTERACTIVE (ILD)**	**PRACTICAL**
			Monday, Tuesday, and Wednesday	
			11:30 am to 1:00 pm	
WEEK-I	Monday	Orientation, Course Overview, Class Code Of	Dr.Nimra Kaka	
		Conduct		
	Tuesday	Introduction To Ethics		
	Wednesday	Fundamental Principles Of Biomedical Ethics		
WEEK-II	Monday	Dental Practice Management I: Introduction Dental Chair, Position of Dentist & Assistant	Dr. Nimra Kaka	
	Tuesday	Dental Management-II: Basic Instruments for Dental Practice		
		Dental Practice	Dr. Nimra Kaka	
	Wednesday	Cross Infection Control-I Hand Hygiene		
		Standards And PPE (Personal Protective Equipment		
WEEK-III	Monday	Cross Infection Control-II Waste Management	Dr. Nimra Kaka	
		And Needle Stick Injury		
	Tuesday	Cross Infection-III Sterilization and Disinfection	Dr.Nimra Kaka	
		Disinfection		
	Wednesday	Dental Practice Management-III Record	Dr.Nimra Kaka	
		Keeping		
WEEK-IV	Monday	Dental Practice Management -Iv Dental	Dr.Nimra Kaka	
		Material Available in Clinic		
	Tuesday	Stress Management	Dr.Nimra Kaka	
	Wednesday	Time Management	Dr.Nimra Kaka	

WEEK-V	Monday	Communication Skills-I Patient, Professionalism,	Dr.Nimra Kaka	
		Colleagues And Dental Staff		
	Tuesday	Communication Skill-II Prescription Writing	Dr.Nimra Kaka	
		Progress Note, Writing, and Referrals to Specialists		
	Wednesday	Professionalism In Dentistry		
WEEK-VI	Monday	Informed Consent in Dental Practice	Dr.Nimra Kaka	
	Tuesday	Dentist Patient Relations		
	Wednesday	Confidentiality And Privacy		
WEEK-VII	Monday	Ethical Issues in Dental Practice Malpractice	Dr.Nimra Kaka	
		Harassment		
	Tuesday	Ethical Issues in Dental Practice-II Pt:Or Denti		
		infectious disease conflict of interest		
	Wednesday	Photography in dental practice		
WEEK-VIII	Monday	Radiography in dental practice		
	Tuesday	BCQ's, SEQ's		
	Wednesday	Psychomotor Assessment		

PRE-CLINICAL MODULE OF DENTAL MATERIAL AND OPERATIVE DENTISTRY				
Terminal Objective	▪ Demonstrate appropriate basics knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision making by critical thinking.			
Rationale	Teaching Dental Materials and Operative Dentistry in the first year of BDS is essential for building a strong foundation in restorative dental care. Knowledge of dental materials, including their properties, handling, and suitability for clinical use, enables students to make informed choices for treatments. When combined with operative dentistry, students apply this understanding through preclinical exercises that develop hand skills, precision, and attention to detail. Early exposure fosters scientific reasoning, problem-solving, and clinical judgment, preparing students for safe and effective patient care. This integrated approach ensures that students are equipped with both theoretical knowledge and practical skills for future clinical training.			
WEEK/ DAY		**TOPIC**	**INTERACTIVE (ILD)**	**PRACTICAL**
			Monday, Tuesday, and Wednesday	
			11:30 am To 1:00 pm	
WEEK-I	Monday	Introduction to Operative Dentistry	Dr.Priyanka	Dr. Priyanka And Dr.Nourein
	Tuesday	Caries classification	Dr. Priyanka	
	Wednesday	Fundamental of tooth preparation	Dr. Priyanka	
WEEK-II	Monday	Dental Instruments	Dr. Priyanka	
	Tuesday	Ergonomics	Dr. Priyanka	
	Wednesday	Isolation	Dr. Priyanka	
WEEK-III	Monday	Bio-material amalgam, liners	Dr. Nourein	
	Tuesday	Bio-material cavity sealers	Dr. Nourein	

	Wednesday	Bio-material metal alloys	Dr. Nourein	
WEEK-IV	Monday	Class-I cavity	Dr. Priyanka	
	Tuesday	Class-I cavity	Dr.Priyanka	
	Wednesday	Class-I cavity	Dr. Priyanka	
WEEK-V	Monday	Class-II cavity	Dr. Priyanka	
	Tuesday	Class-II cavity	Dr. Priyanka	
	Wednesday	Class-II cavity	Dr. Priyanka	
WEEK-VI	Monday	Class-II cavity	Dr. Priyanka	
	Tuesday	Matrix band system	Dr. Priyanka	
	Wednesday	Matrix band system	Dr.Priyanka	
WEEK-VII	Monday	Complex amalgam restorations	Dr. Priyanka	
	Tuesday	Amalgam Failure & Repair	Dr. Nourein	
	Wednesday	Mercury hazard & handling	Dr. Nourein	
WEEK-VIII	Monday	Class Quiz		
	Tuesday	BCQ's, SEQ's		
	Wednesday	Psychomotor Assessment		

TABLE OF SPECIFICATION (T.O.S) FIRST YEAR

FIRST YEAR BDS-2024-2025

BLOCK-I

Theme-I: Cell Molecules & Mechanisms

Theme-II: Dentofacial Complex-I

Theme- III: Hematology (Blood)

Theme-IV: Cardiovascular System-I-CVS-I

Subject	Anatomy	Physiology	Biochemistry	Oral Biology	Total
Contact Hours	41	90	36	25	192
	21%	47%	19%	13%	100%
No. of BCQs	11	23	9	7	50
No. of OSPE Stations	2	5	2	1	10
Date of BCQs & OSPEs (50 BCQs & 10 OSPEs from each subject as per the above table)					
TBL Discussion on BCQs & OSPEs					

FIRST YEAR BDS-2024-2025

BLOCK-II

Module-1: CVS-II

Module-2&3: Neurosciences / Craniofacial Complex

Subject	Anatomy	Physiology	Biochemistry	Oral Biology	Total
Contact Hours	60	58	5	31	154
	39%	38%	3%	20%	100%
No. of BCQs	19	19	2	10	50
No. of OSPE Stations	4	4	0	2	10
Date of BCQs & OSPEs (50 BCQs & 10 OSPEs from each subject as per the above table)					
TBL Discussion on BCQs & OSPEs					

FIRST YEAR BDS-2024-2025-BLOCK-III

Module-2: Endocrine System

Module-3: Renal System

Module-4: Orofacial Complex

Subject	Anatomy	Physiology	Biochemistry	Oral Biology	Total
Contact Hours	23	26	22	32	103
	22.33%	25.24%	21.36%	31.07%	100%
No. of BCQs	11	13	10	16	50
No. of OSPE Stations	2	3	2	3	10
Date of BCQs & OSPEs (50 BCQs & 10 OSPEs from each subject as per the above table)					
TBL Discussion on BCQs & OSPEs					

LEARNING RESOURCES

The learning resources for the educational contents of BDS program are available for the students which assist learners to achieve the outcomes and by focusing on educational content. Ina addition;

the names of the books for each subject as a learning resources is available with the educational content of the same subject.

Following learning resources can be used by the undergraduates;

- Books
- Evidence based articles from journals
- Digital library to search the material for self-directed learning
- Video Tapes
- Displays
- Models
- Phantom Heads
- Printed Notes
- Case based scenarios'
- Community Visits

Recommended Books First YEAR BDS			
Anatomy	**Physiology**	**Biochemistry**	**Oral Anatomy & Tooth Morphology**
1. Snell's Clinical Anatomy, 9th Edition. 2. Langman's Medical Embryology 14th Edition By T.W. Sadler Phd. 3. Wheater's Functional Histology – 6th Edition – Elsevier. 4. Snell's Clinical Neuroanatomy, Eighth Edition.	1. Guyton and Hall Textbook of Medical Physiology – 15th Edition. 2. Ganong's Review of Medical Physiology, 27th Edition.	1. Harper's Illustrated Biochemistry, 32 edition. 2. Lippincott' Illustrated Reviews-Biochemistry 7th edition.	1. Ten Cate's Oral Histology 9th edition. 2. Wheeler's Dental Anatomy, Physiology and Occlusion, 11th edition
Recommended E- Books First YEAR BDS			
Anatomy	**Physiology**	**Biochemistry**	**Oral Anatomy & Tooth Morphology**
1. BRS Cell Biology and Histology 6th 2. BRS Gross Anatomy 5th 3. Netter atlas of Human Anatomy 4. BRS Neuroanatomy 4th 5. Difiores Atlas of Histology 11th 6. Last Anatomy Regional and applied 9th	1. Sherwood Human Physiology 3rd 2. Guyton text book of medical physiology 11th 3. Guyton Text Book of Medical Physiology 12th 4. USMLE Step 1	1. Harper the Biochemistry 26th 2. Lehniger principle of biochemistry 4th 3. USMLE Step 1 Biochemistry and Genetic (lecture notes) 4. Devlin text	2. Wheeler Dental Anatomy, Physiology and Occlusion 9th ed. 3. The development Human clinical oriented

7. Wheater Functional Histology 8. Wheaters Functional Histology 5th ed. 9. Grants Atlas of Anatomy 13th ed. 10. GraysAnatomy 39th ed. 11. Neurohistology 12. Junqueira Basic Histology 13. Netter Clinical Anatomy 14. Langmans Medical Embryology 2003 15. Clinical Oriented Anatomy KLM 16. BRS Gross Anatomy by Kyung W Chung 17. BRS Cell Biology and Histology by Leslie P.Gartner 18. BRS Neuroanatomy by DoughalsJ,Gould 19. High yield Embryology 20. BRS Embryology 21. Before we born embryology 22. The development human clinical oriented embryology 9th 23. High Yield Embryology 24. Thieme Atlas of Anatomy ,General Anatomy and Musculoskeletal System 25. Text Book of Anatomy: Head and Neck by Visharm Sing	Physiology (lecture notes) 5. Sherwood Human Physiology for cell to system 7th ed. 6. Medical Physiology 11th ed. 7. Ganong Review of Medical Physiology 8. BRS Physiology by Constanzo 9. Jaypee Essential of Medical Physiology 10. Principal Anatomy and Physiology by Totora 11. Pocket companion by Guyton 12. Medical physiology for undergraduate by Khurana 13. Medical Physiology: Principles for clinical Medicine	Book of Biochemistry 4th ed. 5. USMLE Step 1 Biochemistry and Genetic (lecture notes) 6. Lippincott biochemistry 6th ed. 7. Harper the Biochemistry 29th 8. Text Book of Medical Biochemistry by Dinesh Puri 9. Text Book of Medical Biochemistry by Chatterjee 8th 10. Clinical biochemistry. An illustrated color text. 11. BRS Biochemistry 12. Medical Biochemistry. Human Metabolism in Health and Disease 13. Lehniger principle of biochemistry 5th ed. 14. Lippincott Biochemistry review 6th ed	Anatomy 4. Oral Health Surveys Basic Method by WHO 5. Oral and Maxillofacial surgery Secrets by Omer Abubaker 6. Text Book of Dental Radiology by Pramod John R

PROGRAM INTENDED LEARNING OUTCOMES OF SECOND YEAR BDS

DISEASE INFECTION AND THERAPEUTICS-I
WEEK-1
THEME-WHITE PATCHES
PATHOLOGY

	Terminal Objectives	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking.
	Rationale	It is essential for building a foundational understanding of disease processes that affect the oral and systemic health of patients. Pathology provides insight into the causes, mechanisms, and consequences of diseases, which is critical for diagnosing and treating various dental conditions. In this course, students learn about the cellular and molecular basis of diseases, including infections, inflammation, and cancer, as well as systemic diseases with oral manifestations. Understanding these principles helps dental students recognize signs and symptoms of diseases that may impact dental treatment or indicate broader health issues. Students are equipped with the essential knowledge to identify pathological conditions and make informed decisions in clinical practice. This foundation supports comprehensive patient care, enhances diagnostic accuracy, and prepares students to manage both common and complex cases in their future dental careers.

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours	Teacher name
01	Cell injury	Define cell injury. Describe the causes and pathogenesis of cell injury.	Interactive Lecture	BCQ SAQs OSPE	01	
02	Mechanisms of cell injury	Describe the mechanism of cell injury. Distinguish between irreversible and reversible injury.	Interactive Lecture	BCQ SAQs OSPE	01	
03	Cellular adaptations	Describe cellular Adaptations. Define Hyperplasia, Metaplasia, Dysplasia, Atrophy, Hypertrophy	Practical	OSPE	02	
04	Intracellular accumulation & Pigmentation	Describe and understand pathophysiology and clinical implications of intracellular accumulations	Practical	OSPE	02	

ORAL PATHOLOGY						
	Terminal Objectives	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking.				
	Rationale	This is vital for providing students with the necessary knowledge to diagnose and manage oral diseases effectively. This subject focuses on the understanding of disease processes specific to the oral cavity, including infections, inflammatory conditions, oral cancers, and developmental disorders. Students learn to recognize and differentiate between various oral lesions and conditions that may affect the teeth, gums, mucosa, and surrounding structures. This knowledge enables them to make accurate diagnoses, plan appropriate treatments, and refer patients when necessary. Integrating *Oral Pathology* at this stage of the curriculum helps students bridge basic medical sciences with clinical dentistry. It ensures that they can identify signs of systemic diseases that manifest orally and empowers them to manage oral health conditions with confidence, ultimately leading to improved patient outcomes in their future dental practice.				
01		Intro to Oral Pathology	Lecture		1	
02	Oral Mucosa & Changes in Oral Mucosa	Describe the histology of normal oral mucosa Describe the epithelial changes in oral mucosa *Atrophy Hypertrophy Hyperplasia Dysplasia Metaplasia Orthokeratosis Parakeratosis Cellular atypia	Lecture	BCQ, SAQ, OSPE	2	
PRACTICALS						
03	Practical 1	Histopathological changes in squamous epithelium	CBL	BCQ, OSPE	2	
PHARMACOLOGY						
01	Introduction	Describe the overview of Pharmacology	Interactive Lecture	SBQs, SEQS, OSPE	01 H	

WEEK-2 THEME- WHITE PATCHES PATHOLOGY						
S#	**Topics**	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**	
01	Necrosis	Define Necrosis. Differentiate between types of necrosis with examples	Interactive Lecture	BCQ SAQs OSPE	01	

02	Apoptosis	Define Apoptosis. Discuss the pathogenesis and significance of apoptosis. Differentiate between apoptosis and necrosis.	Interactive Lecture	BCQ SAQs OSPE	01	
03	Necrosis		Practical	OSPE	02	
04	Calcification	Discuss various types of calcifications Differentiate between Dystrophic and metastatic calcification and its clinical significance	Practical	OSPE	02	
ORAL PATHOLOGY						
01	Hereditary white lesions	**Describe** etiology, pathogenesis, clinical features, histopathology and prognosis of a) Oral epithelial nevus b) Leukoedema c) Other genodermatoses	Interactive Lecture	BCQ SAQs OSPE	1	
02	Reactive white lesions	**Describe** etiology, pathogenesis, clinical features, histopathology and prognosis of a) Frictional hyperkeratosis b) Nicotine stomatitis c) Hairy leukoplakia d) Hairy tongue e) Denture-induced fibrous hyperplasia			1	
03	Practical 1	a) Leukoedema/white spongy navus b)Denture induced fibrous hyperplasia	CBL	BCQ, OSPE	2	
PHARMACOLOGY						
	Terminal Objectives	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking.				
	Rationale	It is crucial to provide students with a strong understanding of the medications commonly used in dental practice. This knowledge ensures that dental students can prescribe safely, manage drug interactions, and understand the pharmacokinetics and pharmacodynamics of various drugs relevant to dental care. In this course, students learn about local anesthetics, analgesics, antibiotics, and medications for managing systemic conditions that may affect dental treatment.				

		Understanding drug mechanisms, dosages, side effects, and contraindications is essential for effective patient care. By integrating *Pharmacology* into the curriculum at this stage, students develop the foundational knowledge needed to make informed decisions regarding patient medications, ensuring safety and optimizing treatment outcomes. This early exposure allows future dentists to handle complex clinical situations and pharmacological challenges with confidence, enhancing their clinical competence and patient safety throughout their careers				
01	Routes of drug administration	Classify routes of drug administration & describe advantages & disadvantages of enteral routes of drug administration.	Interactive Lecture	BCQ SAQs	1 Hour	
	Routes of drug administration	Classify routes of drug administration & describe advantages & disadvantages of Par-enteral routes of drug administration.	Interactive Lecture	BCQ SAQs	1 Hour	

WEEK-3

THEME- WHITE PATCHES

PATHOLOGY

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours	Teacher name
01	Cell aging	Define cell aging. Discuss events in cellular aging	Interactive lecture	BCQ, SEQ	03	
02	CBL		Practical	OSPE	03	
ORAL PATHOLOGY						
01	Hyperplastic lesions	**Describe** etiology, pathogenesis, clinical features, and histopathology of a) Epulides b) Pyogenic granuloma c) Fibroepithelial polyp	Lecture	BCQ, OSPE	01	
02	Preneoplastic & Neoplastic White Lesions	**Describe** etiology, pathogenesis, clinical features, histopathology and prognosis of A) Leukoplakia B) Lichen Planus C) Lupus Erythematosus	Lecture	BCQ, SAQ, OSPE	2	
03	Practical 2	A) Leukoplakia B) Lichen Planus C) Lupus Erythematosus	CBLs	BCQ, SAQ, OSPE	2	
PHARMACOLOGY						

01	Drug Absorption	Describe the absorption, processes of absorption & the factors affecting drug absorption	Interactive Lecture	SBQs, SEQS,	01 Hour	
	Bioavailability & Half Life	Describe the bioavailability & half-life with their clinical importance	Interactive Lecture	SBQs, SEQS,	01 Hour	
WEEK-4-THEME-PAIN PATHOLOGY						
S#	**Topics**	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**	**Teacher name**
01	Introduction to Acute Inflammation	Describe the role of inflammation in the defense mechanisms of the body.	Interactive lecture	BCQ, SEQ	1 Hour	
02	Acute inflammation of vascular and cellular events	Describe the vascular changes and cellular events of acute inflammation.	Interactive lecture	BCQ, SEQ	1 Hour	
03	Chemical mediator of inflammation and outcome of inflammation	List the important chemical mediators of inflammation. Describe the systemic effects of inflammation and their possible outcome.	Interactive lecture	BCQ, SEQ	1 Hour	
04	Acute Inflammation	Name cells of acute inflammation and describe morphological features in acute inflammatory condition.	Practical	OSPE	02	
	ORAL PATHOLOGY					
01	Pulpitis I	Describe the aetiology, and pathogenesis of Pulpitis Inflammatory changes of pulp - Pain mediators	Lecture	BCQ, SAQ, OSPE	1	
02	Pulpitis II	Describe the clinical features of a)acute & chronic b)reversible & irreversible Describe the histopathology of Pulpitis - a) pulp polyp c) pulp healing	Lecture	BCQ,SAQ, OSPE	1	

		d) pulp calcification e) pulp necrosis				
03	Practical 3 Periodontitis	a. Pulpitis b. Pulp polyp	Lecture	BCQ, SAQ, OSPE	1	
	PHARMACOLOGY					
01	Drug Distribution	Describe the drug distribution with the factors that affect drug distribution	Interactive Lecture	SEQs, BCQs	01 Hour	
02	Biotransformation	Define biotransformation with its phases & clinical importance	Interactive Lecture	SEQs, BCQs	01 Hour	

WEEK-5
THEME – PAIN
PATHOLOGY

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours	Teachers name
01	Chronic Inflammation	Describe chronic inflammation. Define granuloma. Discuss type and causes of granuloma.	Interactive lecture	BCQ, SEQ	1 Hour	
02	Repair	Discuss Repair and Regeneration	Interactive lecture	BCQ, SEQ	1 Hour	
03	Wound healing	Describe wound healing by first and second intention. Describe the formation of granulation tissue.	Practical	OSPE	2 Hour	
04	Chronic Inflammation	Describe cells of chronic inflammation. Discuss microscopic features of granuloma.	Practical	OSPE	2 Hour	
	ORAL PATHOLOGY					
01	Spread of inflammation	a. Discuss in detail the inflammatory changes occurring around area of infected tooth. b. Acute periapical periodontitis Discuss the pathogenesis and histology of chronic periapical periodontitis (Periapical granuloma) i. **Pericronitis**	Lecture	BCQ, SAQ, OSPE	1	
2	Spread of inflammation	i. Discuss the etiology, microbiology, and route of spread of infection ii. periapical abscess iii. Granuloma iv. Cellulitis	Lecture	BCQ, SAQ, OSPE	1	

		v. Ludwig's angina				
03	Practical 4 (Osteomyelitis)	Discuss the causes, pathogenesis, types and histology of osteomyelitis	cbl	2		
	PHARMACOLOGY					
01	Drug Excretion	Define Drug excretion & describe the renal and non renal routes of drug excretion	Interactive Lecture	BCQs, SEQs	01 Hour	
WEEK-6 THEME-BURNING SENSATION PATHOLOGY						
S#	**Topics**	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**	**Teacher name**
01	Introduction & Innate Immunity	Describe Specific and nonspecific defense mechanisms: - Innate and acquired immunity;	Interactive lecture	BCQ, SEQ	1 Hour	
02	Adaptive Immunity	Distinguish between: antigens & antibodies B lymphocytes and T lymphocytes primary and secondary immune responses	Interactive lecture	BCQ, SEQ	1 Hour	
03	Cell mediated immunity	Outline the role of suppressor T cells in the immune response, and compare cell-mediated immunity with other types of immune response.	Interactive lecture	BCQ, SEQ	1 Hour	
04	Structure and Functions of Immunoglobulin	Understand General Structure & types of Immunoglobulins	PRACTICAL	OSPE	02 Hour	
	ORAL PATHOLOGY					
01	Vesiculobullous Disease I	Enlist the immunological disorders of oral cavity (vesiculobullous diseases) Discuss the aetiology, clinical features, histopathological & immunological features of recurrent apthous ulcers Bechet's syndrome	lecture	BCQ, SAQ, OSPE		
2	Vesiculobullous Disease II	Discuss the clinical features, pathogenesis and histology of Pemphigus vulgaris Pemphigoid Erythema multiforme ● Pemphigoid ● Dermatitis herpetiformis ● Linear Ig A disease	CBL	OSPE	1	

		• Epidermolysis bullosa				
03	Practical 5	Erythema multiforme	CBL	BCQ, SAQ, OSPE	1	
	PHARMACOLOGY					
	Pharmacodynamics	Describe pharmacodynamics with the mechanism of action of different receptors	Interactive lecture	BCQ, SEQ	1 Hour	

WEEK-7
THEME- BURNING SENSATION
PATHOLOGY

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours	Teacher name
01	MHCs	Discuss MHC Class 1 and MHC Class 2. Discuss transplants	Interactive lecture	BCQ, SEQ	1 Hour	
02	Hypersensitivity reactions	Define Hypersensitivity reactions. Describe its various type with examples	Interactive lecture	BCQ, SEQ	1 Hour	
03	Immunodeficiency disorders	Classify immunodeficiency disorders	Interactive lecture	OSPE	2 Hour	
04	Serological testing	Differentiate among various serological tests: Typhi dot; ELISA; ICT e.g Malaria	Practical	OSPE	2 Hour	
	ORAL PATHOLOGY					
01	Vesiculobullous Disease IV	Discuss the clinical features, pathogenesis and histology of	lecture	BCQ,SAQ,	1	
02	Vesiculobullous Disease V		Lecture	BCQ,SAQ,	1	
03	CBL 1 ,2	1- Histology of histological changes in oral mucosa 2- Hemangioma & lymphangioma	Lecture	BCQ,SAQ,	1	
	PHARMACOLOGY					
01	Pharmacodynamics	Describe the factors modifying drug action	Interactive lecture	BCQs, SEQs	01 Hour	

WEEK-8
THEME- BURNING SENSATION
PATHOLOGY

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours	Teacher name
01	Autoimmunity disorders	Define Autoimmunity and	Interactive lecture	BCQ, SEQ	1 hour	

		self-tolerance				
02	CBL		Practical	OSPE	2 hour	
03	CBL				3 hour	
ORAL PATHOLOGY						
01	CBL 3		CBL	OSPE		
02	CBL 4	1 Lichen planus	Lecture	BCQ, SAQ	1	
03	CBL 5	1 Systemic lupus erythematosus 2 pemphigus	Lecture	BCQ, SAQ	2	
PHARMACOLOGY						
01	Pharmacodynamics	Describe an adverse drug reaction	Interactive lecture	BCQ, SEQ	1 hour	

Practical/CBL List Module 1

1) Histopathological changes in squamous epithelium
2) Leukoedema/White sponge nevus
3) Denture induced fibrous hyperplasia
4) Leukoplakia
5) Lichen planus
6) Erythematosus
7) Pulpitis
8) Pulp polyp
9) Erythema multiforme
10) Pemphigus vulgaris
11) SLE
12) RAS

DISEASE, INFECTIONS & THERAPEUTICS II
WEEK-1
THEME-GENERAL MICROBIOLOGY
PATHOLOGY

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours	Teacher name
01	Introduction & Structure of the bacterial cell	List essential and non-essential structures of the bacterial cell wall with their function. Differentiate between Gram-positive and negative cell walls.	Interactive lecture	BCQ, SEQ	1 Hour	
02	Bacterial growth cycle	Describe the growth curve.	Interactive lecture	BCQ, SEQ	1 Hour	
03	Simple staining	Explain the procedure of simple staining	Practical	OSPE	02 hour	
04	Gram staining	Explain the procedure of	Practical	OSPE	02 hour	

		Gram Staining.				
ORAL PATHOLOGY						
01	Caries I	● Discuss the role of bacteria and dental plaque ● Discuss the pathogenesis of dental caries	Lecture	BCQ, SAQ, OSPE	1	
02	Caries II	● Discuss the classifications of dental caries ● Discuss enamel caries with histopathogenesis ● Discuss dentine caries and root caries	Lecture	BCQ, SAQ, OSPE	2	
03	Practical 1	Enamel Caries Dentine Caries	CBL	BCQ, SAQ, OSPE	2	
PHARMACOLOGY						
01	Introduction	Introduction to Antibiotics	Interactive Lecture	BCQs, SEQs	1 hour	

WEEK-2 **THEME-GENERAL MICROBIOLOGY** **PATHOLOGY**						
S#	**Topics**	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**	**Teachers name**
01	Classification & Normal flora	Classify dentally important Bacteria List normal flora of human body	Interactive lecture	BCQ, SEQ	1 Hour	
02	Bacterial Genetics	List different methods of transfer of genetic material between bacterial cells	Interactive lecture	BCQ, SEQ	1 Hour	
03	Z.N staining	Explain the procedure of Ziehl Neelson staining	Practical	OSPE	02 Hour	
04	Sterilization	Define Sterilization. Describe physical and chemical methods of sterilization.	Practical	OSPE	02 Hour	
ORAL PATHOLOGY						
01	Discoloration Of Teeth	● **Discuss** the causes and clinical	Lecture	BCQ	1	

		features of exogenous and endogenous discoloration of teeth.				
02	Non-bacterial tooth loss	a) Erosion b) Abrasion c) Attrition	Lecture	BCQ.SAQ,	2	
03	Practical 2	Erosion	CBL	, OSPE	2	
PHARMACOLOGY						
01	Cell wall synthesis inhibitors	Classify Penicillin & describe their mechanism of action & side effects	Interactive Lecture	BCQs, SEQs	01 Hour	
02	Cell wall synthesis inhibitors	Classify Cephalosporins & describe their mechanism of action & side effects	Interactive Lecture	BCQs, SEQs	01 Hour	

WEEK-3

THEME-GENERAL MICROBIOLOGY

PATHOLOGY

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours
01	Bacterial Pathogenesis-I	Discuss various methods and sources of transmission. Describe virulence factors	Interactive lecture	BCQ, SEQ	1 Hour
02	Bacterial Pathogenesis-II	Discuss various methods and sources of transmission. Describe virulence factors	Interactive lecture	BCQ, SEQ	1 Hour
03	Culture Media-I	Classify culture media and describe basic & Enriched media	Practical	OSPE	1 Hour
04	Culture Media-I	Discuss selective and biochemical test media	Practical	OSPE	1 Hour
ORAL PATHOLOGY					
01	Bacterial Infections I	Discuss the pathogenesis, histopathology, etiology, clinical features • Bacterial Infections • Tuberculosis - actinomycosis	Lecture	BCQ.SAQ, OSPE	1
02	Bacterial Infections II	Discuss the pathogenesis, histopathology, etiology, and clinical features - Syphilis - NUG - Noma - Leprosy - Gonorrhea	Lecture	BCQ.SAQ, OSPE	2
03	Practical 3	Syphilis,	CBL	OSPE	2
PHARMACOLOGY					
01	Protein	Classify Aminoglycosides & describe	Interactive	BCQ, SEQ	1 Hour

	Synthesis Inhibitors	their mechanism of action & side effects	lecture		

WEEK-4
THEME- GENERAL MICROBIOLOGY
PATHOLOGY

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours
01	Host defense	Describe nonspecific & specific defense mechanism against bacterial infection	Interactive lecture	BCQ, SEQ	1 Hour
02	Laboratory diagnosis of bacterial disease	Describe various methods for lab diagnosis of bacterial diseases	Interactive lecture	BCQ, SEQ	1 Hour
03	Isolation of Micro-organism	Explain various methods of isolation of microorganisms	Practical	OSPE	2 Hour
04	CBL		Practical	OSPE	2 Hour
		ORAL PATHOLOGY			
Viral Infections I		Discuss pathogenesis, histopathology, etiology, clinical features ● Viral Infections: a) Herpetic Stomatitis b) Varicella Zoster	Lecture	BCQS, SAQS, OSPE	1
Viral Infections II		c) Herpangina d) hand foot mouth disease e) infectious mononucleosis f) Measles g) cytomegalovirus	Lecture	BCQS, SAQs, OSPE	2
Practical		Varicella zoster	CBL	BCQs, SAQs, OSPE	2
		PHARMACOLOGY			
01	**Protein Synthesis Inhibitors**	Classify Tetracyclines & Chloramphenicol & describe their mechanism of action & side effects	Interactive lecture	BCQ, SEQ	1 Hour

WEEK-5
THEME- SPECIAL MICROBIOLOGY
PATHOLOGY

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours
01	Staphylococcus	Enlist the species of Staphylococci Enlist the virulence factors & toxins. Describe pyogenic and toxin-mediated diseases caused by Staphylococcus aureus.	Interactive lecture	BCQ, SEQ	1 Hour
02	Streptococcus	Classify medically important streptococci Describe toxins, enzymes &	Interactive lecture	BCQ, SEQ	1 Hour

		hemolysins produced by streptococci. Discuss their pyogenic, toxigenic & post streptococcal diseases.			
03	Pneumococcus	Describe morphology, pathogenesis, clinical features and lab diagnosis of Pneumococcus.	Interactive lecture	BCQ, SEQ	1 Hours
04	Lab Diagnosis of Gram Positive Cocci	Describe the lab diagnosis of Gram-positive cocci	Practical	OSPE	2 Hours
ORAL PATHOLOGY					
01	**Candidiasis I**	● Discuss the classification of candidiasis ● Discuss the pathogenesis and histology of pseudomembranous, erythematous and chronic hyper plastic candidiasis	Lecture	BCQ.SAQ, OSPE	1
02	Candidiasis II	Discuss causes, clinical features and histology of candida associated lesions a) Denture stomatitis b) Angular cheilitis c) Median rhomboid glossitis d) Chronic mucocutaneous candidiasis	Lecture	BCQ.SAQ,OSPE	2
03	Practical	Candidiasis	CBL	OSPE	2
PHARMACOLOGY					
01	Protein Synthesis Inhibitors	Classify macrolides & describe their mechanism of action & side effects	Interactive lecture	BCQ, SEQ	1 Hour

WEEK-6
THEME-SPECIAL MICROBIOLOGY
PATHOLOGY

S#	Topics	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**
01	Bacillus	Outline morphology, pathogenesis, clinical features and lab diagnosis of Bacillus	Interactive lecture	BCQ, SEQ	1 Hour
02	Clostridia	Classify clostridia Describe morphology, pathogenesis, clinical features and lab diagnosis of Clostridia	Interactive lecture	BCQ, SEQ	2 Hour
03	Lab diagnosis of Gram-Negative cocci (Neisseria)	Enlist species of Neisseria. Describe their morphology, pathogenesis and laboratory diagnosis.	Practical	OSPE	2 Hour

04	Lab diagnosis of Corynebacterium diphtheria	Describe important properties, transmission, pathogenesis of diphtheria. Discuss the laboratory diagnosis of C. diphtheria.	Practical	OSPE	2 Hour
ORAL PATHOLOGY					
01	**Cyst I**	a) Classification of cyst b) Compare the pathogenesis, Clinical, radiographic & histological features of Odontogenic cyst - Periapical(radicular) cyst - Dentigerous Cyst	Interactive Lecture	BCQ SAQs OSPE	1
02	**Cyst II**	**Describe** clinical, radiographic and histological features of - Odontogenic Keratocyst - Gingival cyst - Lateral periodontal cyst	Lecture	BCQ SAQs OSPE	2
03	**Practical**	Radicular Cyst, OKC	CBL	BCQ SAQs OSPE	2
PHARMACOLOGY					
01	**DNA Synthesis Inhibitors**	Classify fluoroquinolones & describe their mechanism of action & side effects	Interactive lecture	BCQ, SEQ	1 Hour
			Interactive Lecture	BCQ SAQs OSPE	

WEEK-7
THEME-SPECIAL MICROBIOLOGY
PATHOLOGY

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours
01	Salmonella & Shigella	Describe antigenic structure and virulence factor of salmonella & Shigella Discuss lab diagnosis of Salmonella & Shigella	Interactive lecture	BCQ, SEQ	1 Hour
02	Gram negative curved rod	Describe the pathogenesis and laboratory diagnosis of gram Gram-negative curved rod	Interactive lecture	BCQ, SEQ	1 Hour
03	Lab diagnosis of E. coli & Klebsiella	Describe the morphology, cultural characteristics and Lab diagnosis of E.coli and Klebsiella	Practical	OSPE	2 Hour
04	Lab diagnosis of Proteus & Pseudomonas	Describe morphology, cultural characteristics and Lab diagnosis of Proteus & Pseudomonas	Practical	OSPE	2 Hour

ORAL PATHOLOGY					
01	**Cyst III**	a) **Compare** the pathogenesis, clinical, radiographic and histological features of - Calcifying odontogenic cyst - Glandular odontogenic cyst	Interactive lecture	BCQ, OSPE, SAQ	1
02	**Cyst IV**	**Compare** the pathogenesis, clinical, radiographic, and histological features of a) Eruption cyst b) Residual cyst	Lecture	BCQ, SAQ , OSPE	2
03	**Practical**	Calcifying odontogenic cyst	CBL	OSPE	2
PHARMACOLOGY					
01	- **Folate Antagonist**	Classify sulfonamides & describe their mechanism of action & side effects	Interactive lecture	BCQ, SEQ	1 Hour

WEEK-8 **THEME- SPECIAL MICROBIOLOGY** **PATHOLOGY**					
S#	**Topics**	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**
01	Mycobacterium tuberculosis	Describe the pathogenesis and lab diagnosis of Mycobacterium tuberculosis	Interactive lecture	BCQ, SEQ	1 Hour
02	H.influenza & Bordetella pertussis	Describe the important properties, pathogenesis and lab diagnosis.	Interactive lecture	BCQ, SEQ	1 Hour
03	Basic Mycology	Describe characteristics, structure, types and lab diagnosis of fungus.	Interactive lecture	BCQ, SEQ	1 Hour
04	CBL		Practical	OSPE	2 Hour
ORAL PATHOLOGY					
Cyst V		Describe pathogenesis clinical radiographic & histological features of Non-Odontogenic Cysts a) Nasopalatine cyst b) Nasolabial cyst c) Median cyst d) Globulomaxillary cyst	Lecture	OSPE, SAQ, BCQ	1
Cyst VI		1. **Describe** clinical,	Lecture	OSPE, SAQ,	2

		radiographic and histological features of Non-epithelial/ pseudocyst, including a) Traumatic bone cyst b) Stafne's bone cavity c) Aneurysmal bone cyst		BCQ	
Practical		CBL	CBL	OSPE	2
		PHARMACOLOGY			
01	- **Tuberculosis**	Classify anti-tuberculosis drugs & describe their mechanism of action & side effects	Interactive lecture	BCQ, SEQ	1 Hour
02	- **Anti-fungals**	Classify anti fungal drugs & describe their mechanism of action & side effects	Interactive lecture	BCQ, SEQ	1 Hour

List of practical/CBL

1) Dental caries
2) Enamel caries
3) Erosion
4) Syphilis
5) Varicella Zoster
6) Candidiasis
7) Radicular cyst
8) OKC
9) Dentigerous cys

MODULE-2 NEOPLASIA
WEEK-1
THEME-NEOPLASIA
PATHOLOGY

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours
01	Neoplasia	Describe the definition of neoplasia. Describe the nomenclature of neoplasia	Interactive lecture	BCQ, SEQ	1 Hour
02	Characteristic features of tumor	To describe the Characteristic of benign & Malignant tumor To know the Pathways of spread, seeding, lymphatic and haematogenous spread	Interactive lecture	BCQ, SEQ	1 Hour
03	Benign & Malignant Epithelial Tumors	Describe the gross and microscopic features of benign and malignant	Practical	BCQ, SEQ	2 Hour

		epithelial tumors.			
04	Benign & Malignant connective tissue tumors	Describe the gross and microscopic features of benign and malignant connective tissue tumors.	Practical	OSPE	2 Hour
ORAL PATHOLOGY					
01	Disturbances in sizes number of teeth I	**Describe** the clinical radiographic features in number of teeth: a) Anodontia b) hypodontia/ supernumerary teeth c) hypodontia/ oligodontia d) impaction Describe the disturbances in sizes of teeth: a) Macrodontia b) Microdontia	Lecture	BCQ, SAQ, OSPE	1
02	**Disturbances in sizes number of teeth II**	Discuss the alteration in the form of teeth, including a) Germination b) Fusion c) Concrescence d) Dens invaginatus e) Dens evaginatus f) Enamel pearls g) Taurodontism h) Dilaceration i) Supernumerary roots	Lecture	BCQ, OSPE	2
03	Practical	1) Discuss the Disturbance in form of teeth 2) HED	CBL	BCQ, OSPE	2
PHARMACOLOGY					
01	Anti-neoplastic drugs	Discuss the anticancer drugs-1	Lecture	BCQs, SEQs, OSPE	1
02	Anti-neoplastic drugs	Discuss the Anti-cancer drugs -2	Lecture	BCQS, SEQS, OSPE	1

BDS MODULE II-WEEK-2 THEME-NEOPLASIA PATHOLOGY					
S#	**Topics**	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**
01	**MOLECULAR BASIS**	Discuss the Normal cell cycles and the fundamental	Interactive lecture	BCQ, SEQ	1 Hour

	OF CANCER -I	principles of cancer regarding cycle Discuss the Essential alterations in malignant transformation Discuss the Steps of cell proliferation Protooncogenes and growth factors and their receptors			
02	**MOLECULAR BASIS OF CANCER -II**	Discuss the two-hit hypothesis of Knudson's Tumor Suppressor genes Discuss the Cellular changes in tumor cells Discuss the DNA repair defects Discuss the Homing of tumor cells Discuss the Development of sustained angiogenesis	Interactive lecture	BCQ, SEQ	1 Hour
03	**CARCINOGENIC AGENTS (Radiation Carcinogenesis)**	To discuss the Epidemiology of cancers To discuss Different types of carcinogens To discuss the Mechanism of action of radiation carcinogen	Interactive lecture	BCQ, SEQ	2 Hour
04	**CARCINOGENIC AGENTS (Chemical &Viral Carcinogenesis)**	To discuss the Mechanism of action of chemical & viral carcinogens	Interactive lecture	BCQ, SEQ	2 Hour
		ORAL PATHOLOGY			
01	**Disturbance in form of teeth III**	**Describe** the etiology, types, and clinical features of the following disturbances in structure of teeth: a) Disturbance in the structure of enamel - environmental defects of enamel - amelogénesis imperfecta	lecture	BCQ.SAQ, OSPE	1
02	**Disturbance in form of teeth IV**	Describe etiology types clinical, radiographic histological features : a) Disturbance in the structure of dentine - Dentinogenesis imperfecta - Dentine dysplasia	Lecture	BCQ.SAQ, OSPE	2

		b) Disturbance in structure of cementum - Hypercementosis - hypocementosis c) Disturbance in structure of pulp: - Pulp calcifications - Internal resorption - External resorption			
03	**Practical**	Dentinogenetic imperfecta Amelogenesis Imperfecta	CBL	BCQ.SAQ, OSPE	2
		PHARMACOLOGY			
01	**Autonomic drugs**	Introduction to ANS	Lecture	BCQS SEQS OSPE	1
02	**Autonomic Drugs**	**Cholinomimetic Direct Acting**	**Lecture**	**BCQS SEQS OSPE**	**1**
03	**Autonomic drugs**	**Cholinomimetic Indirect Acting**	**Lecture**	**BCQS SEQS OSPE**	**1**

WEEK-3
THEME- NEOPLASIA
PATHOLOGY

S#	Topics	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**
01	Tumor Viruses	Classify the tumor Viruses Describe the role of tumor viruses in malignant transformation. Discuss the mechanism involved in carcinogenesis.	Interactive lecture	BCQ, SEQ	1 Hour
02	Diagnostic approach of Neoplasia	Describe various methods for lab diagnosis of Neoplasia.	Practical	OSPE	2 Hour
03	CBL		Practical	OSPE	2 Hour
		ORAL PATHOLOGY			
01	Odontogenic Tumor I	1) Classify odontogenic tumors 2) Differentiate the following based on etiology, pathogenesis, clinical features, histopathogenesis a) Evaginated odontome b) Enamel pearl c) Complex odontome	Lecture	BCQ.SAQ, OSPE	2

		d) Compound odontome			
02	**Odontogenic Tumor II**	Describe the following on basis of etiology, pathogenesis, clinical features and histopathology a) Ameloblastoma	Lecture	BCQ.SAQ,OSPE	1
03	**Practical**	1) Ameloblastoma 2) Odontomes	CBL	BCQ.SAQ, OSPE	2
		PHARMACOLOGY			
01	**Autonomic drugs**	Anticholinergic drugs	Lecture	BCQS SEQS OSPE	1
02	**Autonomic drugs**	Sympathomimetic	Lecture	BCQS SEQS OSPE	1

WEEK-4
THEME-HAEMODYNAMICS
PATHOLOGY

S#	Topics	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**
01	Edema	Define edema Discuss its pathogenesis.	Interactive lecture	BCQ, SEQ	1 Hour
02	Hemorrhage, Hyperemia and congestion	Define Haemorrhage, Hyperaemia and congestion. Describe pathophysiology of these conditions	Interactive lecture	BCQ, SEQ	1 Hour
03	Thrombosis	Define thrombosis and mention its etiology Describe pathophysiology, risk factors and complications of thrombosis.	Interactive lecture	BCQ, SEQ	2 Hours
04	**CBL**		Practical	OSPE	2 Hours
	ORAL PATHOLOGY				
01	**Odontogenic Tumor III**	**Discuss** etiology, pathogenesis, clinical features, and histopathology of Squamous odontogenic tumors b) Calcifying epithelial odontogenic tumor c) Adenomatoid odontogenic tumor	Lecture	BCQS, SAQS, OSPE	1
02	**Odontogenic Tumor IV**	**. Discuss** etiology, pathogenesis, clinical features, and histopathology of the following a) Ameloblastic fibroma b) Ameloblastic fibroodontoma	Lecture	BCQS, SAQs, OSPE	2

		c) odontoma			
03	**Practical**	CEOT, AOT	CBL	BCQs, SAQs, OSPE	2
	PHARMACOLOGY				
01	**Autonomic drugs**	Alpha blockers	Lecture	BCQS SEQS OSPE	1
02	**Autonomic drugs**	Beta Blockers	Lecture	BCQS SEQS OSPE	1

WEEK-5 **THEME- HEMODYNAMICS** **PATHOLOGY**					
S#	**Topics**	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**
01	**Embolism**	Define emboli. Discuss causes, complications, types and fate of emboli.	Interactive lecture	BCQ, SEQ	1 Hour
02	**Infarction**	Define Infarction. Discuss its mechanism and types.	Interactive lecture	BCQ, SEQ	1 Hour
03	**Shock**	Define Shock and enlist its types. Describe its pathophysiology and stages of shock.	Interactive lecture	BCQ, SEQ	2 Hour
04	**CBL**		Practical	OSPE	2 Hour
	ORAL PATHOLOGY				
01	**Odontogenic Tumor V**	**Discuss** etiology, pathogenesis, clinical features, and histopathology of the following a) Odontogenic cementoblastoma b) Odontogenic myxoma c) cementoblastoma	Lecture	BCQ.SAQ,OSPE	1
02	**Oral potentially malignant lesions**	1) **Describe** the etiology, pathogenesis, clinical features, and histopathology of - Erythroplakia - OSF	Lecture	BCQ.SAQ,OSPE	2
03	**Practical**	OSF	CBL	BCQ.SAQ, OSPE	2
	PHARMACOLOGY				
01	**Drugs acting on CNS**	To Discuss Sedatives & Hypnotics	Lecture	BCQS SEQS OSPE	1
02	**Drugs Acting on CNS**	To Discuss anti Parkinson Drugs	Lecture	BCQS SEQS OSPE	1
WEEK-6 **THEME- GENETICS** **Pathology**					

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours
01	**Classification of Genetic Diseases & Mutation**	Classify genetic diseases. Define mutation and its type	Interactive lecture	BCQ, SEQ	1 Hour
02	**Mendelian disorders**	Define mendelian disorders. Classify mendelian disorders	Interactive lecture	BCQ, SEQ	1 Hour
03	**Chromosomal disorders**	Classify chromosomal disorders. Describe types of structural and numerical abnormalities	Interactive lecture	BCQ, SEQ	1 Hour
04	**Diagnosis of Genetic diseases**	Discuss various method for the diagnosis of genetic diseases.	PRACTICAL	OSPE	02 Hour
	ORAL PATHOLOGY				
01	**Oral potentially malignant and malignant lesions**	**Describe the** etiology, pathogenesis, clinical features, and histopathology of Basal Cell Carcinoma	Interactive Lecture	BCQ SAQs OSPE	1
02	**OSCC**	**Describe** The etiology, epidemiology, pathogenesis, of OSCC **Explain** the clinical features , histopathology staging and grading of Oral squamous cell carcinoma. (OSCC)	Lecture	BCQ SAQs OSPE	2
03	**Practical**	OSCC	CBL	BCQ SAQs OSPE	2
	PHARMACOLOGY				
01	**Drugs Acting on CNS**	General Ansthetics-1	Lecture	BCQS SEQS OSPE	1
02	**Drugs acting on CNS**	General Ansthetics-2	Lecture	BCQS SEQS OSPE	1

WEEK-7 **THEME- GENETICS** **PATHOLOGY**					
S#	**Topics**	**Learning Objectives**	**Teaching Strategies**	**Assessments**	Hours
01	**Inborn errors of Metabolic disorders**		Interactive lecture	BCQ, SEQ	1 Hour
02	**CBL**		Practical	OSPE	2 Hour

ORAL PATHOLOGY					
01	**Benign soft tissue tumors**	Describe the pathogenesis, Clinical features, histopathology of a) Fibroma b) Myofibroma c) Lipoma	Interactive lecture	BCQ,OSPE	1
02	**Benign soft tissue tumors**	d) Lymphangioma e) Hemangioma f) Neurofibroma g) Schwannoma	Lecture	BCQ,SAQ, OSPE	2
03	**Practical**	Benign soft tissue tumors	CBL	OSPE	2
PHARMACOLOGY					
	Drugs Acting on CNS	Local Anesthetics	Lecture	BCQs, SEQs, OSPE	1
	Drugs Acting on CNS	Anti-Depressants	Lecture	BCQS SEQS OSPE	1

WEEK-8
REVISION
PATHOLOGY

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours
		ORAL PATHOLOGY			
	Revision	**Revision**	Lecture	BCQ, OSPE	1
	Revision	**Revision**	Lecture	BCQ, OSPE	2
	Practical	**Revision**	CBL	OSPE	2
		PHARMACOLOGY			
01	**Drugs Acting on CNS**	**Anti Psychotics**	Lecture	BCQS SEQS OSPE	1
02	**Drugs Acting on CNS**	**Alcohol**	Lecture	BCQS SEQS OSPE	1

CBL List:

1) Disturbance in form of teeth
2) HED
3) Dentinogenesis imperfecta
4) Amelogénesis imperfecta
5) Ameloblastoma
6) Odontomes
7) Ceot
8) AOT
9) OSF
10) OSCC

MODULE-III-OROFACIAL COMPLEX
WEEK-1
THEME-OROFACIAL COMPLEX

S#	Topics	Learning Objectives	Teaching Strategies	Assessments	Hours

01	**Structure and classification of virus**	Describe structure of virus List major groups of DNA and RNA viruses that infect humans	Interactive lecture	BCQ, SEQ	1 Hour
02	**Viral Replication**	Describe various steps in replication of virus	Interactive lecture	BCQ, SEQ	1 Hour
03	**Viral pathogenesis**	Describe the effect of virus infection on the cell. Discuss how viral diseases spread inside the body.	Interactive lecture	BCQ, SEQ	1 Hour
04	**Host defense**	Describe the role of interferon and natural killer cell against viral infection.	Interactive lecture	BCQ, SEQ	1 Hour
	ORAL PATHOLOGY				
01	**HIV I**	**Discuss** the Clinical and histopathological features of following Human Immunodeficiency Virus and AIDS	Lecture	BCQS,	1
02	**HIV II**	**Discuss** the oral manifestations of HIV	Lecture	BCQS,	2
03	Practical	HIV	CBL	BCQ, OSPE	2

WEEK-2 **THEME- SPECIAL VIROLOGY**					
S#	**Topics**	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**
01	Lab diagnosis of viral diseases	Discuss various methods for the diagnosis of viral diseases	Interactive lecture	BCQ, SEQ	1 Hour
02	Hepatitis virus	Classify the hepatitis virus and describe the pathogenesis and laboratory diagnosis	Interactive lecture	BCQ, SEQ	1 Hour
03	HIV	Describe the structure of HIV. Discuss clinical stages of HIV infection. Outline opportunistic infection in the late stage of AIDS	Interactive lecture	BCQ, SEQ	1 Hour
04	CBL		Practical	OSPE	2 Hours
	ORAL PATHOLOGY				
01	**Oral Manifestations of Systemic Diseases**	**Discuss** the clinical and histopathological features of the following Systemic diseases and their oral manifestations: Renal disease, GIT disease, liver cirrhosis	Lecture	BCQ, OSPE,	1
02	**TMJD**	**Discuss** the clinical and histopathological features of the following: A) Discuss developmental disorders of TMJ - Aplasia, hyperplasia, hypoplasia	Lecture	BCQ, OSPE	2

		B) Discuss inflammatory disorders of TMJ: - traumatic arthritis - infective arthritis - Rheumatoid arthritis Discuss the causes and clinical features of - Osteoarthritis - Myofacial pain dysfunction - Disc displacement			
03	**Practical**	CBL RA	CBL	BCQ, OSPE	2

WEEK-3 **THEME-SPECIAL VIROLOGY** **PATHOLOGY**					
S#	**Topics**	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**
01	**Herpes virus**	Classify the Herpes virus Describe pathogenesis, clinical presentation, and lab diagnosis of the herpes virus	Interactive lecture	BCQ, SEQ	1 Hour
02	**Polio & Dengue viruses**	Describe the pathogenesis clinical feature and lab diagnosis of important Polio & Dengue viruses	Interactive lecture	BCQ, SEQ	1 Hour
03	**CBL**		Practical	OSPE	2 Hour
	ORAL PATHOLOGY				
01	**Salivary gland diseases I**	**Describe** reactive lesions of salivary gland - Mucous extravasation cyst - Mucous retention cyst - Necrotizing sialometaplasia Describe conditions that alter salivary flow I. Xerostomia II. Sialorrhea	Interactive lecture	BCQ, SAQ OSPE	1
02	**Salivary gland disease II**	**Describe** Clinical features, histopathology and investigations **Sjogren's syndrome** **Describe** pathogenesis, clinical and diagnostic features of the bacterial infections of the salivary glands: I. Bacterial sialadenitis II. Chronic Bacterial sialadenitis **Describe** pathogenesis, clinical and diagnostic features of the	Lecture	BCQ, SAQ	2

		Viral infections of the salivary glands III. i. Mumps IV. ii. Cytomegalovirus sialadenitis			
03	**CBL**	Sjogren's syndrome	CBL	BCQ, OSPE	1

WEEK-4 **THEME- PARASITOLOGY** **PATHOLOGY**					
S#	**Topics**	**Learning Objectives**	**TEACHING STRATEGIES**	**Assessments**	**Hours**
01	**E. histolytica; Giardia**	Classify protozoa and describe the pathogenesis and lab diagnosis of E. Histolytica & Giardia	Interactive lecture	BCQ, SEQ	1 Hour
02	**Leishmania**	Define hemoflagellates Enumerate the medically important species of Leishmania Describe vector, life cycle, pathogenesis clinical manifestation and lab diagnosis of Leishmaniasis	Interactive lecture	BCQ, SEQ	1 Hour
03	**Trichomonas Toxoplasma &**	Describe the pathogenesis, clinical features, and lab Diagnosis of Toxoplasma & Trichomonas.	Interactive lecture	BCQ, SEQ	2 Hour
04	**Lab diagnosis of Malaria**	Classify Plasmodium Describe the life cycle species and lab diagnosis.	Practical	OSPE	2 Hour
	ORAL PATHOLOGY				
01	**Salivary gland disease IV**	**Describe** the pathogenesis, clinical and diagnostic features of salivary gland tumors. I. Pleomorphic adenoma II. Warthin tumor III. Basal cell adenoma	Lecture	BCQ, SAQ, OSPE	1
02	**Salivary Gland Tumors II**	**Describe** the pathogenesis, clinical and diagnostic features of salivary gland tumors. ytoma ular adenoma papillomas **Describe** the pathogenesis, clinical and diagnostic features of salivary gland tumors (Carcinomas) I. Mucoepidermoid	Lecture	BCQ, SAQ, OSPE	2

		carcinoma II. Acinic cell carcinoma III. Adenoid cystic carcinoma			
03	**Practical**	Pleomorphic adenoma Warthin's tumor	CBL	OSPE	2
WEEK-5 **THEME- PARASITOLOGY** **PATHOLOGY**					
S#	**Topics**	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**
01	**Intestinal nematodes**	Classify the medically important intestinal Nematodes. - Describe their life cycle, clinical findings and laboratory diagnosis.	Interactive lecture	BCQ, SEQ	1 Hour
02	**Tissue Nematodes**	Classify the medically important tissue Nematodes. - Describe their life cycle , clinical findings and laboratory diagnosis	Interactive lecture	BCQ, SEQ	1 Hour
03	**Lab diagnosis of Worms**	Discuss lab diagnosis of T.saginata, E. granulosis & D.latum.	Practical	OSPE	1 Hour
04	**CBL**		Practical	OSPE	2 Hour
ORAL PATHOLOGY					
01	**Inherited and developmental disorders of bone**	1. **Discuss** the inherited and developmental disorders: I. Osteogenesis imperfecta II. Osteopetrosis III. Achondroplasia	lecture	BCQ, SAQ,	1
02	**Fibro-osseous lesions I**	**Discuss** etiology, clinical features, and pathogenesis of - monostotic fibro-osseous lesions - poly ostotic fibro-osseous lesions.	Lecture	BCQ, SAQ, OSPE	2
03	**Practical**	CBL fibrous dysplasia	CBL	BCQ, SAQ, OSPE	2
PHARMACOLOGY					
01	**Blood**	Coagulants and anticoagulants.	Interactive Lecture	BCQ, SAQ, OSPE	2
02	**Blood**	Drugs used in Anemia.	Interactive	BCQ, SAQ, OSPE	2
03	**GIT**	Drugs used in peptic ulcer.	Lecture	BCQ, SAQ, OSPE	2

WEEK-6 THEME- SYSTEMIC PATHOLOGY PATHOLOGY					
S#	**Topics**	**Learning Objectives**	**Teaching Strategies**	**Assessments**	**Hours**
01	Anemia	Classify Anemia. List the investigation to reach a diagnosis of anemia.	Interactive lecture	BCQ, SEQ	1 Hour
02	Lipid Profile	Explain the lipid profile test	Practical	OSPE	2 Hour
03	Diagnosis of Ischemic Heart Diseases (IHD)	Define ischemic heart disease and its types. Discuss the lab diagnosis of IHD	Practical	OSPE	2 Hour
04	COPD	Define COPD Discuss various diseases in this term	Interactive lecture	BCQ, SEQ	1 Hour
		ORAL PATHOLOGY			
01	**Metabolic and endocrine disorder of bone I**	2. **Discuss** the pathogenesis and diagnostic features of following metabolic and endocrine conditions: a) Osteoporosis b) Hyperparathyroidism c) Hypothyroidism and hyperthyroidism	Lecture	BCQ, SAQ,	1
02	**Metabolic and endocrine disorder of bone II**	3. **Discuss** the pathogenesis and diagnostic features of the following metabolic and endocrine conditions: d) Hypophosphastasia e) Acromegaly f) Rickets and osteomalacia g) Paget's Disease	Interactive lecture	BCQ, SAQ, OSPE	2
03	**Practical**	Paget's Disease	CBL	BCQ, SAQ,	2
		PHARMACOLOGY			
01	**GIT**	Anti-emetics.	Lecture	BCQ, SAQ, OSPE	1
02	**Respiration**	Drugs used in Asthma.	Interactive lecture	BCQ, SAQ, OSPE	1
03	**CVS**	Drugs used in hypertension.	Interactive lecture	BCQ, SAQ, OSPE	1

WEEK-7 THEME- SYSTEMIC PATHOLOGY PATHOLOGY					
S#	**Topics**	**Learning Objectives**	**TEACHING STRATEGIES**	**Assessments**	**Hours**
01	Crohn's disease &	Describe the pathophysiology and	Interactive	BCQ, SEQ	01

	Ulcerative colitis	Distinguish between the signs, symptoms, and complications of ulcerative colitis and Crohn's disease	lecture		
02	Peptic Ulcers	Discuss the causes, pathogenesis, and clinical presentation of peptic ulcer	Interactive lecture	BCQ, SEQ	01
03	Laboratory interpretation of Diabetes mellitus	Discuss the types, pathophysiology, and lab diagnosis of diabetes mellitus.	Practical	OSPE	2 Hour
04	Thyroid Function Test	Interpret the thyroid function test in thyroid disorders	Practical	OSPE	2 Hour
		ORAL PATHOLOGY			
01	Central giant cell granuloma, Exostosis, Cherubism	1. **Describe the** clinical and diagnostic features of central giant cell granuloma 2. **Describe** exostoses and tori in the mandible and maxilla 3. **Discuss** the pathogenesis and diagnostic features of cherubism	Lecture	BCQ, SAQ, OSPE	1
02	Tumors of Bone I	**Describe** the etiology, pathogenesis, clinical and diagnostic features of bone tumors, including: a) Osteoma and osteoblastoma b) Osteosarcoma c) Ossifying fibroma d) Osteosarcoma e) Ossifying fibroma	Lecture	BCQ, SAQ,	2
03	Practical	CBL Cherubism	CBL	BCQ, SAQ,	2
		PHARMACOLOGY			
01	**CVS**	Anti-anginal drugs.	Interactive Lecture	BCQ, SAQ, OSPE	1
02	**CVS**	Diuretics	Lecture, SGD	BCQ, SAQ, OSPE	1
03	**CCF**	Cardiac glycosides.	Lecture, CBL	BCQ, SAQ, OSPE	1

		WEEK-8 THEME- PATHOLOGY			
		ORAL PATHOLOGY			
01	CBL I, II,	Revision	CBL	OSPE	1
02	CBL III, IV,	Revision	CBL	OSPE	2
03	CBL V, VI, VII	Revision	CBL	OSPE	2
		PHARMACOLOGY			
01	**Endocrinology.**	Drugs used in Diabetes Mellitus. (Insulin)	Lecture, CBL	BCQ, SAQ, OSPE	1

02	**Endocrinology.**	Oral Ant diabetics	Lecture	BCQ, SAQ, OSPE	1
03	**Endocrinology.**	Drugs used in Thyroid diseases.	Interactive Lecture	BCQ, SAQ, OSPE	1
PHARMACOLOGY					
List of CBL: 1) HIV 2) Sjogren's syndrome 3) Rheumatoid arthritis 4) mucocele 5) Pleomorphic adenoma 6) Wartins tumor 7) Fibrous dysplasia 8) Paget's disease 9) Cherubism					

COURSE OUTCOME DENTAL MATERIALS & PRE-CLINICAL DENTAL SCIENCE		
Terminal Objectives	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Recognize patient with special care and perform dental emergencies, having good communication skills. ▪ To exhibit ethical patient centered care based on integrity, humility, social accountability and high ethical values of this sacred profession	
Rationale of Dental Materials	Teaching the *Science of Dental Materials* in the second year of the *Bachelor of Dental Surgery (BDS)* program is essential for providing students with a strong foundation in the properties, manipulation, and applications of various materials used in dentistry. Since dental procedures rely on a wide range of biomaterials, understanding their composition, behaviour, and clinical performance is crucial for ensuring successful treatments. At this stage, students learn about restorative materials, impression compounds, cements, ceramics, and polymer-based materials. This knowledge helps them select appropriate materials based on factors such as biocompatibility, strength, durability, and aesthetics. Practical exposure to material handling enhances their technical skills and prepares them for future clinical work. The student develops critical thinking in material selection and application. This foundation is essential for their transition into clinical dentistry, ensuring they can provide safe, effective, and long-lasting dental restorations and prostheses.	
Biomaterial Pre-Clinical & Clinical	Biomaterials Pre-Clinical &	Clinical Care &

Operative Dentistry-II	Clinical Prosthodontics-II	Professionalism-II
Terminal Objectives	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Recognize patients with special care and perform dental emergencies, having good communication skills. ▪ To exhibit ethical patient-centered care based on integrity, humility, social accountability and high ethical values of this sacred profession	
Rationale: • To equip students with the knowledge and technical skills required for restorative dental procedures. This subject builds on fundamental concepts from the first year, allowing students to refine their understanding of cavity preparation, restorative materials, and techniques for restoring tooth function and aesthetics. • At this stage, students gain hands-on experience in simulated clinical settings, practicing cavity designs, amalgam and composite restorations, and proper instrumentation. • Emphasis is placed on precision, ergonomics, and adherence to infection control protocols. • This training helps students develop confidence and competence before transitioning to real patient care in later years. • To enhance their problem-solving abilities and technical proficiency, ensuring they are well-prepared for advanced clinical practice and the effective management of dental caries and other restorative needs.	**Rationale:** To develop students' understanding and technical skills in the design and fabrication of prosthetic dental devices. This subject provides students with the foundational knowledge needed to restore oral function and aesthetics in patients with missing teeth or compromised oral structures. Students learn the principles of designing complete and partial dentures, including impression techniques, jaw relation recording, and occlusion management. The pre-clinical setting allows them to practice these techniques in a controlled environment, enhancing their precision and manual dexterity. They also gain an understanding of the materials and tools used in prosthodontic procedures. Students are equipped with essential skills and a deeper understanding of prosthetic rehabilitation. This preparation ensures they are ready to move on to clinical prosthodontics in later years, where they can apply their	**Rationale:** It is essential for shaping students into competent, ethical, and compassionate dental professionals. This subject helps students understand the importance of patient-centered care, professionalism, communication skills, and ethical decision-making in clinical practice. At this stage, students begin to observe and participate in clinical settings, where they learn about patient management, treatment planning, and maintaining professional conduct. They are taught the importance of building rapport, maintaining confidentiality, and practicing informed consent. Additionally, students are introduced to the principles of teamwork, time management, and ethical responsibility in healthcare delivery. Students are encouraged to develop a strong professional identity early in their education. This

	knowledge to real patient care.	foundation ensures that they approach clinical practice with integrity, empathy, and the commitment to delivering high-quality, patient-centered care throughout their careers.
Learning Objectives	**Learning Objectives**	**Learning Objectives**
• Instruments used in composite restoration • Adhesive Dentistry • Rubber dam isolation • Principles of Adhesion to Enamel and Dentin • Acid Etch Technique • Dentin bonding agents • Dental composite (composition and classification) • Dental composite (properties and applications) • Class-I Tooth preparation and restoration • PBL-1: Posterior Restoration • Dental Composite Handling • Class-II cavity preparation & Restoration • Class-III cavity preparation & Restoration • Class-IV cavity preparation & Restoration • Cervical Restoration • Pits and fissure sealants • PBL-2: Anterior Restoration • Cavity designs in deciduous teeth • Materials used in pulpotomy for primary teeth • Pulpectomy in deciduous teeth and restoration • Early childhood caries	• Objectives of Fixed Prosthodontics and related Terminologies • History taking, Examination and Radiographs • Diagnostic Casts and their Articulation • Metal and Alloys • Full Metal Crown • Base Metal Alloys • PBL Based Learning • Porcelain Bonding Alloys (Gold Alloys) • Ceramic System • Porcelain Fused to Metal Crown • All Ceramic Crown • Elastomers Impression Materials and relevant techniques • Working Casts and Dies. Basic PINDEX Technique • Wax Pattern Fabrication • Investment Materials and Investing Technique • Casting Technique • PBL Based Learning • Colour and Dental Shade Principles • Dental Cements • Provisional Restoration • Resin Bonded Restoration • Implant Supported	• Orientation, Course Overview, Class Code of Conduct • Dentition and Notation • Examination of Oral Cavity and Examination Instruments • Individual differences Personality (Intelligence & Emotions) • Introducti on to Community & Preventive Dentistry, Instruction about Oral Hygiene Measures • Research Design in Oral Epidemiology • Individual differences Personality (Motivation / Need / Drive and Learning) • Dental OPD Management-1: Specific Department • Biostatistics-I • Interviewing / Psychosocial History Taking • Ethical Decision making Model-I and Anatomy of Medical /

and its management • Model preparation • Access cavity, Working length determination, root canal preparation • Sealers and root canal filling materials, Restoration of endodontically treated teeth • PBL-3: Pulpotomy & Endodontic Materials • Evaluation (Didatic Component) • Evaluation (Psychomotor Component)	and Retained Prosthesis • PBL Based Learning • Discussion & Revision	Dental Malpractice • Biostatistics-II • Anthropology: Culture and Medical / Dental Practice • Dental OPD Management-II: Specific Department • Ethics and Dental Research • Psychological Reaction • Dental OPD Management-III: Specific Department • Ethics Issues in Dental Practice-I (Harassment) • Communication Skills, Counselling, Information Care • Dental OPD Management-IV: Specific Department • Ethics Issues in Dental Practice-II (Patient or Dentist with Infectious Diseases) • Ethical Issues in Dental Practice-III (Conflict or Interest & Relationship with Pharmaceutical Companies) • Case Based Learning / Discussion & Revision

RESEARCH METHODOLOGY-II

- Introduction to research protocol
- Types of research drafts
- How to search literature: -Access to different types of research databases
- Finding an award winning title for research
- Designing research project: -Basic guidelines, -Computer programs -MS word
- How to prepare title page of project
- How to write an introduction and a rationale
- How to add research hypothesis and finalize the objective(s) of research
- How to write material and methods of the project: -Study designs, -Setting, -Period, Types of sampling techniques
- Types of Research designs: -Observational and Experimental studies
- How to calculate Sample size: -
  Types of online sample size calculators, -Sample
- Selection, -Data collection procedure
- Creating Gantt Chart of the project
- How to add the table of content and page numbers to the research draft
- Introduction to SPSS
- Installation of SPSS licensed version
- Types of statistical and methodological variables
- How to enter variables into SPSS
- How to import data into and export from SPSS
- How to code in SPSS
- How to transform continuous variables into categories in SPSS.
- How to analyze categorical variables: -Tabular presentation, -
- Graphical presentation
- How to and analyze numerical variables: -Tabular presentation, -Graphical presentation
- What is hypothesis testing? -null hypothesis, -alternative/research hypothesis
- What is P value and confidence interval?
- How to interpret the significance of the study
- Measures of central tendency: -Mean, Median and Mode
- Measure of Dispersion: -Range, Inter-quartile range, Standard deviation
- Understanding parametric and non-parametric data: -Normal distribution, -Skewed curve
- Types of statistical tests
- Indications of Chi square test
- Indication of Independent sample t-test
- When to apply Paired sampled t-test?
- What in ANOVA and repeated measure ANOVA test?
- What is Correlation?
- Binary logistic and multi-logistic regression analysis
- Types of research articles
- How to design questionnaire and pro forma
- What is citation? -Types of reference styles, -types of reference management software
- Introduction to Mandalay: -
  - How to create Mandalay ID,
  - How to create Mandalaylibrary

- How to add references to the Mandalay library? –
- Mandalay plugin for MS word, -
- Mendeley importer, -What is DOI?, -What is PMID?
- How to add references to MS word file from Mandalay? -citation and bibliography.
- How to apply different citation styles in Mandalay? -More than 6000 references styles are available to selected, -Any reference style can be applied with one click

- How to avoid duplication of references: -Importing references from other reference management applications to Mandalay, -Exporting references to other reference management applications from Mandalay
- How to get research grant/fund: -National and International funding agencies
- How to prepare Informed consent and information sheet for participants/guardians? -translation of IC into local languages
- Filling of research ethics committee form
- How to submit research project for ethical approval? -obtaining REC approval letter prior conducting research
- What is plagiarism? How to avoid plagiarism? Writing tools"
- What is HJRS?
- How to select target journal for publication using HJRS?

COMPETENCIES ACQUIRED IN THE SCIENCE OF DENTAL MATERIAL

By the end of the learning in at Science of Dental Material, *second-year* BDS student would be able to:

1. **Knowledge and Understanding:**

- To demonstrate a comprehensive understanding of the composition, properties, manipulation, and clinical applications of various dental materials.
- To acquire the ability to select appropriate materials based on patient needs, procedural requirements, and material performance

2. Critical Thinking and decision making:

To understand the limitations, hazards, and safety protocols related to dental materials

To enable them to make evidence-based decisions and contribute effectively to restorative and prosthodontic treatment planning.

3. Technical and Practical Skills:

- To develop the skills to handle materials correctly, ensuring biocompatibility, longevity, and aesthetics.

4. Communication and Teamwork:

Use correct **terminology** to communicate material-related choices and justifications with peers and faculty.

- Collaborate in team-based lab activities to improve **group learning and cooperative skill development**.

5. Ethical and Professional Responsibility:

- Recognize the importance of **patient safety**, material toxicity, and **environmental considerations** in the use of dental materials.
- Understand the ethical implications of using **evidence-based materials** and techniques in patient care.

OPD TASK:

No Student will be allowed in Lab without Lab coat and Logbook.

- Demonstrate all the competencies outlined in the competency assessment sheet. (Checklists) must be signed by instructor.
- Perform all the performance tasks mentioned in the study guide up to satisfactory level of supervisor.

Certificate of completion must be signed by the In-charge and Head of department at the end of the task.

COMPETENCIES OF PRE-CLINICAL PROSTHODONTICS

.**Mastery of Prosthodontics Terminology and Concepts**

- Accurately use prosthodontic terminology related to edentulous arch impression, occlusion, retention, stability, and support of dentures.

2. **Manual Dexterity and Lab Skills in Removable Partial Denture Fabrication**
   - Perform step-by-step procedures on typodonts and simulation models for partial denture construction, including impression making, jaw relation recording, teeth arrangement, and trial denture processing.
3. **Application of Infection Control and Dental Material Handling**
   - Implement standard protocols for infection prevention and safely handle dental materials used in prosthodontic procedures such as alginate, wax, impression compound, and acrylic resin.
4. **Preparation for Clinical Prosthodontics**
   - Demonstrate readiness for clinical exposure by simulating patient procedures, understanding patient communication basics, and appreciating the role of prosthodontics in rehabilitation and oral health.

Competencies of Pre-Clinical Prosthodontics – Second Year BDS

- Understand the principles of edentulous and partially edentulous prosthodontics.
- Identify anatomical landmarks relevant to complete and partial dentures.
- Demonstrate skills in impression making, cast pouring, and baseplate fabrication.
- Fabricate complete and partial dentures on models using standard procedures.
- Handle prosthodontic instruments and materials safely and efficiently.
- Recognize occlusal relationships and articulate models accurately.
- Apply infection control protocols during lab procedures.
- Develop critical thinking for problem-solving in prosthodontic scenarios.

EQUIREMENTS FOR PRE-CLINICALS
7. **Student's Protocol**
8. Proper Dress Code With White Coat
9. Gloves
10. Mask

11. Eye Protector

12. **Instruments & Materials**

Dental Unit Preparation Items

- Metal Instrument Box
- Instrument Tray
- Typodont Teeth In Block / Phantom Head

- **Examination Instrument**
  - Mirrors
  - Probe
  - Tweezers
  - Periodontal Probe
- **Instruments**
  - Hand Piece
  - Flat Ended Tapered Fissure Bur
  - Round-Ended Tapered Fissure Bur
  - Round Bur
  - Flame Shaped Bur
  - Wheel Shape Bur
  - Interdental Bur
  - Finishing Bur
  - Spatula
  - Bowl
  - Articulator
  - Hard Plaster

LEARNING OBJECTIVE OF DENTAL MATERIALS					
Sr#	**Topic**	**Learning Objectives**	**Teaching Strategies**	Assessment	Hours
1	**Introduction To Dental Materials**	Students Should Learn To Choose The Appropriate Dental Materials For Specific Dental Applications	Lectures/ Practical /Lab Work	Written Examination/ OSPE	8 Hr Lecture
2	**Properties Of Dental Materials**	To Understand The Materials Biocompatibility, Strength And Durability, Aesthetic,	Lectures	Written Examination/OSPE	8 Hr Lecture

		Thermal Conductivity, Corrosion Resistance, Adhesion Flexibility Radiopacity ,Wear Resistance, Ease Of Use			
3	**Cements**	To Understand The Material Retention, Support, Sealing ,Insulation Strenght And Durability	Lectures/Practical /Lab Work	Written Examination/OSPE	8hours Lec+16 Hr Practical
4	**Dental Amalgam**	To Understand The Primary Goal To Replace And Restore Tooth Structure,Durability, Biocompatibility,Ease Of Placement And Esthetic Consideration	Lecture/Practical /Lab Work	Written Examination /OSPE	8 Hr Lec + 16 Hr Practical
5	**Composite Resin**	Student Should Know To Restore Tooth Function, Preserve Tooth Structure, Aesthetic Results, Bond Securely, Minimize Sensitivity.	Lecture/Practical/Lab Work	Written Examination/OSPE	8 Hr Lec+ 16 Hr Practical
6	**Impression** Materials	Aim To Create Accurate And Reliable Mould Of Oral Cavity, Ensuring The Successful Fabrication Of Prosthetic And Restoration While Prioritizing Patient Comfort And Safety	Lecture /Practical /Lab Work	Written Examination/OSPE	8 Hr Lec + 16 Hr Pratical
7	**Gypsum**	Students Should Know To Make Casts And Model, Diagnostic And Treatment Planning, Prosthodontic Fabrication	Lecture/Practical /Lab Work	Written Examination/OSPE	8 Hr Lec + 16 Hr Practical
8	**Dental Waxes**	Aim Is To Understand Diagnostic Waxups,Imprseion Modlling,Articulation Pattern Waxing, Investment Casting, Temporization	Lecture/Practical /Lab Work	Written Examination/OSPE	8 Hr Lec+16 Hr Practical
9	**Dental Investment and Casting**	Mould Formation, Refractory Properties ,Dimensional Accuracy Surface Finnish, Strength	Lecture/Practical/Lab Work	Written Examination/OSPE	8 Hr Lec + 16 Hr Practical

		And Stability, Material Replication, Material Integrity, Material Bonding, Biocompatibility			
10	**Denture Base Polymer**	Aim Is To Provide Stability And Support To Denture, Natural Looking Aesthetic, Biocompatibilty, and Durability	Lecture/Practical /Lab Work	Written/Examination/OSPE	8 Hr Lec+ 16 Hr Practical
11	**Abrasion And Polishing Materials**	Students Should Know To Remove Surface Irregularities Enhance Esthetics,Prevent Palque Accumulation, Improve Biocompatibility, Optimise Occlusal Function And Increase Patient Comfort	Lecture /Practical /Lab Work	Written/Examination/OSPE	8 Hr
12	**Tissue Conditioner**	To Know Soft Tissue Support, Tissue Handling, Improve Denture Fit Enhance Patient Comfort, Temporary Solutions	Lecture	Written/Examination/OSPE	8 Hr
13	**Metal And Alloys**	Aim Is To Understand Strength And Durability, Conductivity, Corrosion Resistance, Temperature Resistance And Appearance.	Lecture/Practical /Lab Work	Written/Examination/OSPE	8 Hrs
14	**Cermets**	Students Should Know Hardness And Wear Resistance, High Temperatures Resistance, Chemical Inertness, Biocompatibility And Thermal Conductivity	Lectures /Pratical/Lab Work	Written/Examination/OSPE	8 Hrs
15	**Direct Filling Gold**	Objectives Of Gold Are Durability And Longevity, Biocompatibility, Minimal Tooth Preparation, Corrosion Malleability And Adaptability And Patient Comfort	Lecture/Practical/Lab Work	Written/Examination/OSPE	8 Hrs
16		To Create A Strong Bond Between Dental	Lectures	Written/Examination/OSPE	8 Hrs

	Adhesion	Restorative Material (Amalgam And Composite) And Natural Tooth Structures, Minimize Micro leakage, Prevent Infiltration, maintain tooth Integrity			Lecture
17	**Dental Ceramic**	Objective Is To Provide Durability And Aesthetically Pleasing Restoration For Tooth, Natural Appearance, Biocompatibility, Aim To Offer Long Lasting Solutions For Crown, Veneers And Other Restorative Applications	Lectures	Written/Examination/OSPE	8 Hr Lecture
18	**Endodontic Materials**	Discuss The Introduction Of Endodontic Instruments And Materials, To Know About The Composition, Manipulation An Uses Of Endodontic Materials (Irrigants,Intracanal Medication Gp And Paper Points, Sealer)To Know About Root Canal Treatment, To Know About Pulp Capping	Lectures/ Practical/Lab Work	Written /Examination/OSPE	8 Hr Lecture
19	**Dental Implant**	Discuss The Introduction Of Dental Implant, To Know About Titanium, To Learn About Dental Implant, Types, Components ,Advantages, Disadvantages	Lectures	Written/Examination/Ospe	8 Hr Lecture

TABLE OF SPECIFICATION OF SCIENCE OF DENTAL MATERIAL 2ND YEAR BDS				
PAPER -III-Dental Materials & Pre-Clinical Dental Sciences-II				
MODULES		**THEORY**	**OSPE Stations**	
		SBQs	**Static**	**Interactive**
A)	DENT0205: Bio-Materials & Pre-Clinical Operative Dentistry-II	35	4	2
B)	DENT0206: Bio-Materials & Pre-Clinical Fixed Prosthodontics-II	35	4	1
C)	DENT0207: Introduction to Clinical Care & Professionalism-II	16	2	1
D)	DENT0208: Research Methodology-II	8	Nil	Nil
E)	DENT0209: Information Technology-II	6	Nil	Nil
Total		100	10	4
A) DENT0205: Bio-Materials & Pre-Clinical Operative Dentistry-II				
1	Instruments used in composite restoration			
2	Adhesive Dentistry			
3	Principles of Adhesion to Enamel and Dentin			
4	Acid Etch Technique			
5	Dentin bonding agents			
6	Dental composite (composition and classification)			
7	Dental composite (properties and applications)			
8	Rubber dam isolation			
9	Class-I Tooth preparation and restoration			
10	Dental Composite Handling			
11	Matrix Band Applications (Sectional Matrix Band)			
12	Class-II cavity preparation & Restoration			
13	Class-III cavity preparation & Restoration			
14	Class-IV cavity preparation & restoration			
15	Class-V cavity preparation & restoration			
16	Pits and fissure sealants			
17	Cavity designs in decidous teeth			
18	Materials used in pulpotomy for primary teeth			
19	Pulpectomy in decidous teeth and restoration			
20	Early childhood caries and its management			
21	Sealers and root canal filling materials			
22	Root Morphology of all teeth			
	B) DENT0206: Biomaterials & Pre-Clinical Fixed Prosthodontics-II			
1	History taking, Examination and Radiographs			
2	Diagnostic Cast and Articulation			
3	Principles of Crown Preparations			
4	Metal and Alloys			
5	Ceramic System			
6	Elastomers and Impression Techniques			

7	Working Casts and Dies
8	Wax Pattern Fabrication
9	Investment Materials and Techniques
10	Casting Technique
11	Casting Procedure
12	Colour and Dental Shade Principles
13	Dental Cements
14	Provisional Restorations
15	Resin Bonded Restorations
16	Implant Materials
17	Post and Core Materials

TABLE OF SPECIFICATION OF PRE CLINICAL DENTAL SCIENCES				
S. No	**Name of Chapter**	**Total BCQs**	**Total SEQs**	**OSPE Stations 14 static 3 interactive**
1	Information Technology Computers and their parts (hardware ware software) MS Words	**2**	**00**	**00**
2	Research methodology / Hypo thesis Presentation of data Study design Sampling technique	**3**		**00**
	Variables / literature review		**1**	
3	Professionalism in dental practice, Biomedical ethics (autonomy, confidentiality, general consent, informed consent) Cross infection prevention and instruments sterilization Practice management Communication skills Biomedical ethics Stress and time management Radiographs used in dentistry	**5**	**1**	**1 static 1 interactive**
4	Tooth morphology Surfaces of all the teeth Differences between primary and permanent	**12**	**02**	**03 static**

	teeth Differences between maxillary and mandibular teeth			
	Identification of teeth (primary or permanent teeth, maxillary or mandibular teeth, left or right)			**01 Interactive**
4	Pre-clinical operative dentistry: chair positioning, Isolation, fundamentals of cavity preparation. Lining and restoration	**04**	**1**	**01**
3	Dental Amalgam	**3**	**1**	**01 static**
4	Direct gold filling	**1**	**0**	
5	Requirements of Restorative materials and Properties OF Biomaterials 1. Mechanical/ thermal properties 2. Biological properties/Chemical properties	**2**	**0**	
6	Cements/ Liner and bases / pulp capping 1. Glass ionomer cements/ 2. Zinc Phosphate cements/ 3. Calcium hydroxide /MTA cements 4. Zinc oxide Eugenol cement	**04**	**02**	**3 static**
8	Impression materials 1. Impression compound 2. Alginate 3. Agar agar 4. Zinc oxide eugenol paste	**4**	**1**	**2**
9	Preclinical prosthodontics Surveying / construction of custom tray, Articulation/ set up of artificial teeth,	**2**	**1**	**1-interactive**
10	Gypsum products/model and die materials Calcination Difference between dental plaster and dental stone Type 2 Type 3 Type 4 Type 5	**2**	**1**	**1**
	Dental Waxes Sources, Manipulation, Types and their uses	**2**	**0**	**1**
	Resin based Denture base materials	**2**	**1**	**1**
	Separating media	**1**		
	finishing and polishing materials	**1**		
Total	**50**	**12**	**14 static 3 interactive**	

TABLE OF SPECIFICATION OF ORAL PATHOLOGY

S. No.	Topics	BCQ's	SEQ's
1	Principal and investigation of diagnosis	1	0
2	Disorders of development of teeth and related tissue	5	1
3	Dental caries	4	0
4	Pulpitis, periapical periodontitis and hypercementosis	4	1
5	Gingivitis and periodontitis	2	0
6	Major infections of mouth, jaws and perioral tissue	7	1
7	Cyst of jaw	5	1
8	Odontogenic tumors and like lesion of the jaw	4	0
9	Non-odontogenic tumors of jaw	4	0
10	Genetic, metabolic and other neoplastic bone disease	4	0
11	Disorders of TMJ	2	0
12	Infectious diseases of oral mucosa	4	1
13	Non-infectious diseases of oral mucosa	4	0
14	Tongue disorders	2	0
15	Benign chronic white lesions	5	0
16	Oral pre-malignancy	5	0
17	Oral Cancer	4	0
18	Diseases of salivary glands	4	0
19	Benign mucosal swellings	2	0
20	Soft tissue neoplasm	2	0
21	Endocrine disorders	1	0
Total		**75**	**5**

PRE-CLINICAL DEMONSTRATION SCHEDULE (PROSTHODONTICS) AND DENTAL ATERIALS

WEEK 1- ORIENTATION		
Day	**Task**	**Name of Facilitator**
1	Orientation regarding Skill lab, OPD tasks, student armamentarium, terminologies	Dr. Norain
2	Orientation regarding Skill lab, OPD tasks, student armamentarium, terminologies	Dr. Atif Jawad
3	Impression Material & Impression Techniques	Dr. Seher
4	Working Casts & Dies	Dr. Hafiz
5	Impression Material & Impression Techniques	Dr. Seher
WEEK 2 - HISTORY, EXAMINATION		
Day	**Task**	**Facilitator**
1	Wax Pattern Fabrication	Dr. Norain
2	History Taking, Examination and Radiographs	Dr. Paras Talpur
3	Metal Alloys	Dr. Seher
4	Gold Alloys	Dr. Hafiz
5	Ceramic System	Dr. Seher
WEEK 3 - CROWNS		
Day	**Task**	**Facilitator**
1	Investment Material & Investing Techniques	Dr. Norain
2	Diagnostic Casts and Their Articulation	Dr. Atif
3	Concept of All Metal Crowns	Dr. Seher
4	Concept of Porcelain Fused to Metal Crown	Dr. Hafiz
5	Concept of all Ceramic Crown	Dr. Seher

WEEK 4 - TOOTH PREPARATION		
Day	**Task**	**Facilitator**
1	Dental Cements	Dr. Norain
2	Principles of Tooth Preparation	Dr. Atif Jawad
3	Casting Techniques and Porcelain Fixing	Dr. Seher
4	Color and Dental Shade Principles	Dr. Hafiz
5	Casting Techniques and Porcelain Fixing	Dr. Seher
WEEK 5 - FIXED PROSTHESIS		
Day	**Task**	**Facilitator**
1	Dental Cements	Dr. Norain
2	Practice on Typhodont	Prosthodontics faculty
3	Provisional Restorations	Dr. Seher
4	Resin Bonded Restorations	Dr. Hafiz
5	Provisional Restorations	Dr. Seher
WEEK 6 - FIXED PROSTHESIS		
Day	**Task**	**Facilitator**
1	Post and Core Materials	Dr. Norain
2	Practice on Typhodont	Prosthodontics faculty
3	Revision	Dr. Seher
4	Dentifrices	Dr. Hafiz
5	Practice day	Dr. Seher
WEEK 7 - TMJ, FPD, IMPLANT, MAXILLOFACIAL PROSTHESIS		
Day	**Task**	**Facilitator**
1	Post And Core Materials	Dr. Norain
2	Implant Supported And Retained Prosthesis	Dr. Shagufta

3	Resin Bonded Restorations	Dr. Seher
4	Provisional Restorations	Dr. Hafiz
5	Resin Bonded Restorations	Dr. Seher
WEEK 8: ASSESSMENT AND PRESENTATION		
Day	**Task**	**Facilitator**
1	DENTRIFRICES	Dr. Norain
2	Completion of work and signing of logbooks	All faculty
3	Completion of work and signing of logbooks	All faculty
4	Evaluation (Didatic component)	All faculty
5	Evaluation (psychomotor component)	All faculty

PRE-CLINICAL DEMONSTRATION SCHEDULE OPERATIVE DENTISTRY

WEEK 1: ORIENTATION, INSTRUMENTS USED IN COMPOSITE, CHAIRPOSITIONING, ADHESIVEE DENTISTRY AND ISOLATION		
Day	**Task**	**Name of Facilitator**
1	Orientation regarding OPD tasks and student armamentarium Instruments used in composite restoration	Dr.Saima
2	Demonstration on operator chair positions	Dr.Asma
3	Adhesive dentistry	Dr.Asma
4	Demonstration on Rubber dam isolation	Dr.Saima
5	Practice Day	Dr.Saima
WEEK 2: **PRINCIPLES OF ADHESION TO ENAMEL AND DENTINE, ACID ETCH TECHNIQUE AND DENTINE BONDING AGENTS**		
Day	**Task**	**Facilitator**
1	Principles of adhesion to enamel and dentine	Dr. Asma
2	Acid etch technique	Dr.Saima
3	Practice day	Dr.Saima
4	Dentine bonding agents	Dr.Saima
5	Practice day	Dr.Priyanka
WEEK 3: **DENTAL COMPOSITE,CLASS 1 COMPOSITE POSTERIOR TOOTH PREPARATION AND RESTORATION**		
Day	**Task**	**Facilitator**
1	Dental composite (composition and classification)	Dr. Priya
2	Dental composite(properties and application)	Dr.Asma
3	Demonstration on Class 1 posterior tooth preparation and restoration (etching,bonding agent,placement of composite,finshing and polishing)	Dr.Saima

4	Practice day	Dr.Priyanka
5	PBL1:Posterior restoration	Dr.Saima
WEEK 4: **DENTAL COMPOSITE,MATRIX BAND,CLASS 2 AND 3 CAVITY PREPARATION AND RESTORATION**		
Day	**Task**	**Facilitator**
1	Dental composite handling	Dr. Asma
2	Demonstration on matrix band application(sectional matrix band) and Class 2 cavity preparation and restoration (placement of composite, finishing and polishing)	Dr.Saima
3	Practice day	Dr.Asma
4	Demonstration on Class 3 cavity preparation and restoration (shade selection, matrix systems, wedges, placement of composite, finishing and polishing)	Dr.Saima
5	Practice day	Dr.Saima
WEEK 5: **CLASS 4 AND 5 COMPOSITE PREPARATION AND RESTORATIONS,PIT AND FISSURE SEALANTS**		
Day	**Task**	**Facilitator**
1	Class 4 cavity preparation and restoration (shade selection, matrix systems, wedges, Placement of composite, finishing and polishing) Practice	Dr. Saima
2	Practice day	Dr.Asma
3	Class 5 cavity preparation and restoration(cervical restorations)	Dr.Saima
4	Practice day	Dr.Asma
5	Pit and fissure sealants (material selection and handling) PBL 2: Anterior Restorations	Dr.Saima
WEEK 6: **DECIDUOUS TEETH CAVITY DESIGNS,PULPOTOMY AND PULPECTOMY IN PRIMARY TEETH**		
Day	**Task**	**Facilitator**
1	Early childhood caries and its management	Dr. Nirma
2	Model preparation	Dr.Nirma
3	Access cavity, working length determination and root canal preparation	Dr.Nirma

4	Practice day	Dr.Nirma
5	Practice day	Dr.Nirma
WEEK 7: **EARLY CHILDHOOD CARIES, ROOT CANAL IN PRIMARY TEETH**		
Day	**Task**	**Facilitator**
1	Sealers and root canal filling materials	Dr. Nirma
2	Restoration of endodontically treated teeth	Dr.Nirma
3	PBL 3:Pulpotomy and endodontic materials	Dr.Nirma
4	Evaluation (Didactic component)	All teachers
5	Evaluation(Psychomotor component)	All teachers
WEEK 8: **SEALERS, ROOT CANAL FILLING MATERIALS, RESTORATION OF ENDO TREATED TEETH AND PULPOTOMY IN PRIMARY TEETH, EVALUATION**		
Day	**Task**	**Facilitator**
1	Sealers and root canal filling materials	Dr. Nirma
2	Restoration of endodontically treated teeth	Dr.Nirma
3	PBL 3:Pulpotomy and endodontic materials	Dr.Nirma
4	Evaluation (Didactic component)	All teachers
5	Evaluation(Psychomotor component)	All teachers

GENERAL SUBJECTS						
Topic	**Contents**	**Learning Objectives**	**Teaching Method**	**Module**	**Hours**	**Assessment**
PROFESSIONALISM AND BEHAVIOURAL SCIENCES						
Stigma and Reactions to illness	Stigma and Reactions to illness, Strategies for not being judgmental	Describe Stigma and reactions to illness, and how not to be judgmental	Lecture	Research	1	MCQ
MODELS OF LEADERSHIP AND MANAGEMENT						
Models of Leadership and management	Models of leadership & management	Compare different models of Leadership and management	Lecture /group discussion	Research	1	MCQs
COMMUNICATION SKILLS						
Verbal and non- verbal communication skills	Verbal and non-verbal communication skills	Develop and Demonstrate effective verbal and non-verbal communication skills	Role play, Group Discussion	Clinical Rotation	1	MCQ
Listening skills	Listening skills	Develop and demonstrate active listening skills for learning purposes and to the patient's problems	Role play, Group Discussion	Clinical Rotation	1	MCQ
Reading skills	Reading skills	Develop and Demonstrate effective reading skills	Role play, Group Discussion	Clinical Rotation	1	MCQ
RESEARCH						

Sample size	Sample Size Calculation	Calculate sample size for different research projects. Calculate sample size for a specific research project.	Lecture and Hands on Exercise in Computer lab	Clinical Rotation	2	MCQs/Assignment
Sampling techniques and sample selection	Probability and non-probability Sampling techniques Sample Selection Inclusion Criteria Exclusion Criteria	Describe various sampling techniques. Justify sampling techniques chosen for a specific research project. Select sample for a specific research project	Lecture/ Group Discussion	Clinical Rotation	2	MCQs/Assignment
Designing of a Questionnaire	Steps for making a questionnaire	Design a questionnaire Identify validated questionnaire	Lecture/ Group Discussion	Clinical Rotation	2	MCQ and Assignment
Plagiarism	Definition, Types, Strategies to avoid it	Describe plagiarism and how to avoid it	Lecture/ Group Discussion	Clinical Rotation	2	MCQ

LEARNING RESOURCES SECOND YEAR BDS

Recommended Books Second YEAR BDS			
Pathology	**Pharmacology**	**Science of Dental Material**	**Operative Dentistry**
1. Peter D. Turnpenny, Emery's Elements of Medical Genetics (14th ed.). New York: Churchill Livingstone. 2011. 2. Cotran RS, Kumar V and Collins T. Robbin's Pathologic Basis of Disease (8th ed.). Philadelphia: W.B. Saunders. 2010. 3. Walter JB and Talbot IC. Walter and Israel's General Pathology (7th ed.). New York: Churchill Livingstone. 1996. 4. Kumar V, Cotran RS, and Robbins SL. Basic Pathology (8th ed.). Philadelphia:	1. Lazo JS & Parker. Goodman and Gillman's The Pharmacological basis of therapeutics 12th edition McGrawHillCompany, USA 2006. 2. Katzung BG, Masters SB & Trevor AJ. Basic and Clinical Pharmacology-Katzung 14th edition TATA McGrawHill Education Private Ltd, New Delhi 2009. 3. Finkel R Cubeddu L X, Clark MA, Harvey R &Champe P. Lippincott's Illustrated Reviews Pharmacology. 7th edition, Wolters Kluwer-Lippincott Williams & Wilkins New Delhi 2009.	1. Applied Dental Materials, John F McCabe (Latest Edition) 2. Philips Science of Dental Materials, Kenneth J. Anusavice (Latest Edition) 3. Sturdevant Art and Science of Operative Dentistry, Harald O Heyman, Edward J Swift.(Latest Edition) 4. Craig's Restorative Dental Materials, John M Powers Ronald L Sakaguchi. (Latest Edition	1. Joseph R Evans John H Wilke. Atlas of Operative Dentistry: Preclinical and clinical procedures. Quintessence books Publishing Co. 2. Richard L Kahn, Pinkerton RJ, Kagihara LE. Fundamentals of Preclinical Operative Dentistry. 3. The Art & Science of Operative Dentistry by Sturdurant. 2. Pickardards Manual of Operative Dentistry by EAM Kidd. 3. Fundamentals of Operative Dentistry by Schwartz 4. Dental Restorative

W.B. Saunders. 2007. 5. Rubin E, Pathology (4th ed.) Philadelphia: Lippincott-Raven. 2005 6. Ivan Roitt. Riott's Essential Immunology (11th ed.). New Delhi:I.K. International Pvt. Ltd. 2007. 7. Harsh Mohan. Textbook of pathology. 6th ed. Jaypee broth. 2010. **ATLAS** 1. Wheater P et al. Basic Histopathology: A Color Atlas and Text (2nd ed.). Edinburgh: Churchill Livingstone. 1990. 2. Harsh Mohan. Pathology practical book. 2nd ed. Jaypee broth. 2007.			Materials – Craig 5. Textbook of Operative Dentistry by Vimal K Sikri

Microbiology	**WEBSITES**

1. Jawetz .medical microbiology.25th ed.2010 Lange/McGrawHill 2. Levinson W. Microbiology and Immunology: Review. 10th ed. 2009 Lange/TataMcGrawHill 3. Michael j pelczar .Microbiology.6th ed. TataMcGraw 4. Richard a harvey. Microbiology.lippincottsillustrated review 2nd edition.	**Department of Pharmacology** www.studentcorner.com www.drugs.com www.pharmacology.com www.medicalstudent.com **Department of Pathology** The internet pathology laboratory for medical education *library.**med**.utah.edu/WebPath/webpath.html* **Microbiology** www.asm.org

MUHAMMAD DENTAL COLLEGE
DEPARTMENT OF DENTAL EDUCATION
ACADEMIC CALENDAR AND SEQUENCE OF CONTENT OF MODULAR CURRICULUM

MODULES	Module-I Disease Infection & Therapeutic-I & II, ICT & PERLs	Eid ul Fitr Holidays 31-03-25 till - 06-04-2025	Module-II Neoplasia Hemodynamics and Genetics, ICT & PERLs	Eid ul Azha & Summer Holidays 02-06-2025 till 07-07-2025	Module-III Orofacial Complex-II, ICT & PERLs	PRE PROF	Total Weeks
Dates	17 Weeks		10- Weeks		09-Weeks	2 weeks	36 Weeks
Duration	20th January-23RD-MAY 2025		26thMay-2025-05th-September-2025		8-Sep-2025-7th-Nov-2025	10th-Novemebe r-2025-21st-November-2025	
EXAM OF MODULE	27th May 2025		08TH-Sep-2025		03rd-7TH-NOVEMBER-2025		

PRE –CLINICAL ROTATIONS						Final Prof LUMHS Exams
PRE-CLINICAL	GROUPS NAMES DURATION WITH DATES OF POSTINGS-36 WEEKS					
Junior Operative II+ Paedoontic II 20th January-18th- April-2025	12 Weeks A	Eid ul Fitr Holidays 31-03-25 till - 06-04-2025	12 Weeks B	Eid ul Azha & Summer Holidays 02-06-2025 till 07-07-2025	12 Weeks C	01st-December-2025 till 12th-Decemeber-2025
Junior Prosthodontics II + Dental Material II 21st- April-2025 to 15th-August-2025	B		C		A	
Clinical Care & Behavioral Sciences II 18th-August-2025-7th-Nov-2025	C		A		B	

SECOND YEAR BDS-2025-BATCH-V

Department of Dental Education
Muhammad Dental College-2025

PROGRAM INTENDED LEARNING OUTCOMES OF THIRD YEAR BDS

MODULE I: ORAL MEDICINE, ORAL DIAGNOSIS, AND ORAL RADIOLOGY

COURSE DESCRIPTION

To train students in diagnosing and managing oral diseases, conducting comprehensive clinical evaluations, and effectively interpreting radiographs. The course aims to enhance understanding of the interplay between oral and systemic health, preparing students for clinical decision-making and patient management in diverse healthcare settings.

S#	Topics	Learning Objectives	Teaching Strategies	Teacher Name	No of Lectures= 39
SECTION 1: ORAL DIAGNOSIS					
	Introduction	➢ Definition & scope ➢ Role of oral diagnosis in dental practice	Lecture & Clinical Demo	Prof Aqeel Aslam, Dr Sajid, Dr Asma, Dr Narmeen	06
	Patient Evaluation & Diagnosis	➢ History Taking • Chief complaint • History of present illness • Medical and dental history • Family and social history ➢ Clinical Examination • Extraoral Examination • Intraoral Examination • Cranial Nerve V & VII ➢ Differential Diagnosis ➢ Definitive Diagnosis			
SECTION 1: ORAL MEDICINE					
ORAL ULCERATIVE LESIONS					
	Classification	➢ Classification of oral ulcerative lesions based on etiology	Lecture	Dr Sajid,	01
	Traumatic Ulceration	➢ Discuss the cause & clinical features of the Traumatic ulcers. ➢ Investigations are available for the diagnosis of Traumatic ulcers. ➢ Common pharmacological treatment options for the management of Traumatic ulcers			
	Recurrent Aphthous stomatitis & Bechet's Disease	➢ Etiological & clinical features. ➢ Investigations available for Diagnosis. ➢ Common pharmacological treatment options			01

	Vesiculo-bullous conditions	➢ Clinical features of vesiculo-bullous conditions affecting the oral cavity ➢ Investigations available for the diagnosis of vesiculobullous conditions. ➢ Common pharmacological treatment options for the management of vesiculobullous conditions			02
ORAL SOFT TISSUE LESIONS					
	White lesions	➢ Classify white lesions of the oral cavity ➢ Differentiate white lesions based on their etiology, history, and clinical features ➢ Management options for persistent, unresolving white lesions.	Lecture	Dr Sajid, Dr Asma	01
	Red lesions	➢ Classify red lesions of the oral cavity ➢ Differentiate red lesions based on their etiology, history and clinical features ➢ Management options of persistent, unresolving red lesions.			01
	Pigmented lesions	➢ Classify pigmented lesions of the oral cavity ➢ Differentiate between malignant melanoma and other pigmented lesions of the oral cavity ➢ Management of malignant melanoma		Dr Sajid, Dr Asma	01
	Premalignant lesions and conditions	➢ Differentiate between premalignant lesions and conditions ➢ Risk factors for malignant changes in oral premalignant lesions/conditions ➢ Describe the etiological & clinical features.		Dr Sajid, Dr Asma	02
	Oral Cancer & TNM Classification	➢ Prevention and early detection of oral cancer ➢ Describe the TNM classification of oral Squamous cell carcinoma along with staging for prognosis.		Prof Aqeel Aslam, Dr Sajid,	02
ORAL INFECTIONS					
	Bacterial Infections	➢ Discuss the etiology, clinical manifestation, signs, symptoms and oral findings of bacterial infections of the orofacial region • Tuberculosis • Actinomycosis • Syphilis ➢ Investigations required to reach a diagnosis ➢ Management of patients presenting	Lecture, CBL	Prof Aqeel Aslam, Dr Sajid	01

		with bacterial infections at Dental OPD			
	Viral infections	➢ Discuss the etiology, clinical manifestation, signs, symptoms and oral findings of viral infections of the orofacial region • Herpes Simplex Virus (Primary herpetic gingivostomatitis, Recurrent herpes labialis) • Varicella Zoster Virus (Herpes zoster (shingles) • Epstein Barr Virus (Oral hairy leukoplakia, Infectious mononucleosis) • Cytomegalovirus (Hand, foot, and mouth disease, herpangina) ➢ Management of patients presenting with viral infections at Dental OPD			01
	Fungal infections	➢ Classification of Fungal infections ➢ Discuss etiology, pathogenesis, signs, symptoms and clinical features of fungal infections of the orofacial region • Oral Candidiasis • Histoplasmosis • Blastomycosis • Cryptococcosis • Mucormycosis • Aspergillosis ➢ Investigations required for their diagnosis ➢ Management of patients presenting with fungal infections at Dental OPD			01
	OROFACIAL PAIN AND FACIAL PALSY				
	Facial pain & neurological Disturbances	➢ Classification of orofacial pain • Neuropathic Pain (Trigeminal neuralgia, Glossopharyngeal neuralgia, post-herpetic neuralgia, Ramsay hunt syndrome) • Musculoskeletal Pain (Myofascial pain dysfunction syndrome, Chronic facial pain) • Idiopathic Pain (Atypical facial pain, Burning mouth syndrome) • Vascular Pain (Migraine, Cluster headache, Temporal arteritis) ➢ Describe the Etiological factors, clinical features, diagnosis and management	Lecture, CBL, Tutorial	Prof Aqeel Aslam, Dr Sajid	02

		(pharmacological, non-pharmacological and interventional)			
	Facial Palsy	• List the causes of facial palsy • Diagnosis of bell's palsy in patients presenting to dental clinic • Management of patients with bell's palsy			01
SALIVARY GLAND DISORDERS					
	Classification and Diagnosis	➢ Classification of salivary Gland Diseases. ➢ Diagnostic modalities for salivary gland disorders	Lecture, CBL, Tutorial	Dr Narmeen	01
	Obstructive Conditions	➢ Sialolithiasis (Diagnosis, causes, clinical features and management)			
	Extravasation and Retention Conditions	➢ Mucocele and Ranula (Etiology, clinical presentations and treatment of mucocele and ranula)		Prof Aqeel Aslam, Dr Sajid, Dr Narmeen	01
	Infections (Sialadenitis)	➢ Clinical features of bacterial and viral sialadenitis. ➢ Management of patients presenting with sialadenitis			
TEMPOROMANDIBULAR JOINT DISORDERS					
	TMJ Disorders	➢ Classify TMJ Disorders. ➢ Discuss common signs and symptoms associated with TMJ disorders ➢ Discuss current investigations available for the evaluation of TMJ disorders	Lecture, CBL, Tutorial	Dr Sajid	02
	Treatment	➢ List common Conservative & specialist management of TMJ Disorders.			
ORAL CONSIDERATION IN SYSTEMIC DISEASES					
	Cardiovascular diseases	➢ Discuss clinical considerations for dental management of patients • with cardiovascular diseases • on warfarin therapy • on antiplatelet medication ➢ Describe current guidelines for antibiotic prophylaxis for infective endocarditis ➢ Discuss oral manifestations of antihypertensive medication	Lecture, CBL, Tutorial	Prof Aqeel Aslam, Dr Rana, Dr Narmeen	01
	Respiratory diseases	➢ Oral health consideration in upper airway diseases ➢ Discuss the management of an asthmatic and chronic obstructive pulmonary disease patient.			01

	Gastrointestinal diseases	➢ Discuss oral manifestations of GI diseases: • Crohn's disease, • Ulcerative colitis, • Orofacial granulomatosis, • Coeliac disease, • Hepatitis B and C ➢ Discuss considerations for dental management of a patient with Hepatitis B and C		Dr Rana, Dr Narmeen, Dr Sajid	01
	Renal diseases	➢ Discuss oral manifestations of renal diseases ➢ Discuss considerations for dental management of a patient with renal disease			01
	Endocrine Disorders	➢ Discuss the oral manifestation and management of different endocrine disorders			01
	Hematological diseases	➢ Discuss oral manifestations of hematological diseases: • Anaemia • Leukaemia • Lymphoma ➢ Discuss considerations for dental management of a patient with hematological disease		Dr Rana, Dr Sajid	01
	Malnutrition	➢ Oral manifestation associated with Malnutrition • Deficiencies & Oral Symptoms • Epidemiology • Preventive strategies		Dr Sajid	01
SECTION 3: ORAL RADIOLOGY					
	Radiation Physics, Characteristics & Quality Assurance	➢ Concepts of ionization radiation ➢ Production of X rays & its types ➢ X ray beam Quality & intensity ➢ Radiographic visual characteristics & exposure factors		Dr Fatima	02
	Radiation Biology, Protection & Infection Control	➢ Radiation injury & its effects ➢ Protective measures for patients & X ray personnel ➢ Radiation risks & safety principles ➢ Infection control & guidelines			01

	ORAL MEDICINE **PRINCIPLES OF INVESTIGATION & DIAGNOSIS**

S. No	Topic	Learning Objectives
1	**History Taking**	• Record a comprehensive history. • Discuss the significance of each component of history, e.g. importance of recording the presenting complaint inthe patient's own words, impact of an underlying dental condition on the patients' oral health management
2	**Investigations**	• Perform General Physical, Extraoral and Intraoral examination: ➢ TMJ and muscles of mastication; ➢ Cervical lymph nodes; • Cranial nerve examination, with emphasis on CN- Vand VII. • Interpret findings seen on the following investigations: ➢ Haematological; ➢ Radiological; ➢ Histological; Specialized imaging, e.g ➢ Sialography, ➢ CT scan, ➢ MRI, Radioisotope scan; ➢ Molecular biology; ➢ Culture and sensitivity testing, Serology, PCR; ➢ Immunohistochemistry.
3	**Diagnosis**	• Formulate differential diagnoses for common oral pathologies on the basis of ➢ Site of lesion; ➢ Type/physical characteristics of the lesion
4	**Treatment planning**	• Formulate treatment plans for common oral and maxillofacial pathologies presenting to the dental OPD.
	ORAL INFECTIONS	
1	**Bacterial Infections**	• Describe the signs, symptoms and clinical features ofbacterial infections of the oro-facial region: ➢ Odontogenic infections ➢ Cellulitis ➢ Ludwig's angina; ➢ Actinomycosis; ➢ Syphilis. • List the investigations required to reach a diagnosis Manage patients presenting with bacterial infections tothe dental OPD. • Justify the choice of antibiotic use in treating bacterial infections. • List down reasons for failure of antibiotic therapy
2	**Viral Infections**	• Discuss signs, symptoms and clinical features of viralinfections of oro-facial region: ➢ Herpes simplex virus; ➢ Varicella zoster virus;

		➢ Coxsackie virus; ➢ Epstein Barr virus; ➢ Cytomegalovirus; ➢ Human immunodeficiency virus. • Manage patients presenting with viral infections to thedental OPD. • Justify the choice of antiviral therapy.
3	**Fungal Infections**	• Classify fungal infections. • Manage patients presenting with fungal infections to thedental OPD. • Discuss reasons for failure of antifungal therapy • Discuss the signs, symptoms and clinical features offungal • List investigations required for diagnosis infections of the oro-facial region
	ORAL ULCERATIVE LESION	
1	**Classification**	• Classify oral ulcerative lesions on the basis of etiology
2	**Non- vesiculobullous conditions**	• Discuss the clinical features of the non-vesiculobullousconditions affecting the oral cavity. • List the investigations available for diagnosis of non-vesiculobullous conditions. • List the common pharmacological treatment options formanagement of non-vesiculobullous conditions
3	**Vesiculo- bullous ulcers conditions**	• Discuss the clinical features of vesiculo-bullous conditionsaffecting the oral cavity. • List investigations available for diagnosis of vesiculo-bullous conditions. • Discuss the common pharmacological treatment optionsfor management of vesiculo-bullous conditions.
	ORAL SOFT TISSUE LESIONS	
1	**White Lesions**	• Classify white lesions of the oral cavity. • Differentiate white lesions on the basis of their etiology,history and clinical features. • Discuss management options of persistent, unresolvingwhite lesions.
2	**Red Lesions**	• Classify red lesions of the oral cavity. • Differentiate red lesions on the basis of their etiology,history and clinical features. • Discuss management options of persistent, unresolving red lesions.
3	**Pigmented Lesions**	• Classify pigmented lesions of the oral cavity. • Differentiate between malignant melanoma and other pigmented lesions of the oral cavity. • Discuss management of malignant melanoma
4	Premalignant lesions and conditions	• Differentiate between premalignant lesions and conditions. • Discuss management of dysplastic lesions. • List risk factors for malignant changes in oralpremalignant

		lesions/conditions.
	FACIAL PAIN	
1	**Facial Pain**	• Describe causes of Oro-facial Pain. • Differentiate amongvarious presentations of facial pain based on the historyand clinical examination. • Describe clinical features, diagnosis and management of:Trigeminal neuralgia; • Atypical facial pain; Burning mouth syndrome.
2	**Facial Palsy**	• List causes of facial palsy. • Diagnose Bell's palsy in patients presenting to the dentalclinic. • Manage patients presenting to the dental clinic with facialpalsy.
	SALIVARY GLAND DISORDERS	
1	**Salivary Flow Obstruction**	• Classify salivary flow obstruction on the basis ofaetiology.
2	**Infections (Sialadenitis)**	• Describe the clinical features of bacteria land viral sialadenitis. • Manage patients presenting to the dental OPD with sialadenitis
	TEMPOROMANDIBULAR JOINT DISORDER	
1	Evaluation	• Discuss common signs and symptoms associated withTMJ disorders. • Discuss current investigations available for the evaluationof TMJ disorders, e.g. arthrography, CT scan, MRI.
2	Treatment	• List common pharmacological treatment options, occupational therapy, prosthetic splint therapy, alternativedental therapy for pain.
	SYSTEMIC DISORDERS	
1	**Cardiovascular Diseases**	• Discuss clinical considerations for dental management of patients: with cardiovascular diseases;on warfarin therapy; on anti-platelet medication. • Describe current guidelines for antibiotic prophylaxis forinfective endocarditis. • Discuss oral manifestations of antihypertensivemedication
2	**Respiratory Diseases**	• Discuss the management of an asthmatic and chronicobstructive pulmonary disease patient. • Discuss clinical features, investigations and treatment ofSarcoidosis
3	**Gastrointestinal Diseases**	• Discuss oral manifestations of GI diseases: ➢ Crohn's disease; ➢ Ulcerative colitis; ➢ Orofacial granulomatosis. ➢ Coeliac disease; ➢ Hepatitis B and C. • Discuss considerations for dental management of a patient with inflammatory bowel disease, Hepatitis B and C.

4	**Renal Diseases**	• Discuss oral manifestations of renal diseases. • Discuss considerations for dental management of apatient with chronic renal disease.
5	**Haematological Diseases**	• Discuss oral manifestations of haematological diseases: ➢ Anaemia; ➢ Leukaemia; ➢ Lymphoma. • Discuss considerations for dental management of apatient with haematological disease.
6	**Haemorrhagic Diseases**	• Discuss oral manifestations of haemorrhagic diseases: Purpura; von Willebrand's disease; Haemophilia. • Discuss considerations for dental management of apatient with haemorrhagic disease.
	MEDICAL ASPECTS OF ORAL SURGERY	
1	**Management of Medically Compromised Patients**	• Diagnose dental problems in medically compromised patient • How to obtain informed written consent • Discuss dental management of patients with compromising medical condition • Management of pregnant patients in dentistry

	MODULE I: PRINCIPLES OF ORAL SURGERY	
1	**Sterilization**	• Aseptic techniques and universal precautions • Techniques of instrument sterilization and disinfection • Maintenance of sterility • Operating disinfection • Surgical staff preparation. • Explain post-surgical asepsis
2	**Incision, Flap Design and Tissue Handling**	• Discuss and demonstrate incisions and flap design • Prevention of flap necrosis, flap dehiscence and flap tearing
3	**Post-Operative care, Hemostasis, nutrition, and prevention of infection**	• Discuss haemostasis and means of promoting wound haemostasis • Explain decontamination and debridement, edema control • Patient general health and nutrition
4	**Wound Healing**	• Discuss causes of tissue damage • Discuss wound repair and epithelialization • Explain stages of wound healing • Discuss surgical significance of wound healing concepts • Facial neuropathy of traumatic origin • Classification of nerve injury and discuss nerve healing.
	EXODONTIA	
1	**Principles of use of instruments**	• Explain uses of various instruments used in oral surgery for exodontia purpose • Discuss the instrument tray system

2	**No- Surgical Extraction**	• Discuss indications and contraindications for removal of teeth • Discuss mechanical principles involved in tooth extraction • Principles of forceps use • Discuss specific techniques for removal of each tooth • Post extraction care of tooth socket • Discuss the potential side effects
	Surgical Extraction	• Principles of flap design, development and management • Design parameters of soft tissue flap • Types of mucoperiosteal flap • Principles of suturing • Indications, principles and techniques of surgical extraction • Technique for open extraction of single and multirooted teeth • Removal of small root tip and fragment • Discuss policy for leaving root fragments • Sequence of multiple extractions
	BASICS OF PAIN AND ANXIETY CONTROL	
	Module Outcome	• The goal of the pain and anxiety control module is to help dentistry students learn how to administer and utilise local anaesthetics. • Knowing the pharmacology, neurophysiology, neurochemistry, and anatomy of administering local anaesthetics. • Aware and skilled in assessing the patient's physical and mental health before administering local anaesthetic, sedation, or having dental treatment. Knowledgeable about the difficulties, side effects, and treatment of those issues related to sedatives and local anaesthetic drugs.
	Course Competencies	**Critical Thinking:** • Apply biomedical science knowledge in the delivery of patient care. **Communication and Interpersonal Skills** • Apply the fundamental principles of behavioural sciences using patient-centered approaches for promoting, improving and maintaining oral health. **Assessment, Diagnosis, and Treatment** • Patient Assessment, Diagnosis, Treatment Planning and Informed Consent: • Provide oral health care within the scope of general dentistry to include patient assessment, diagnosis, comprehensive treatment planning, prognosis, and informed consent. **Establishment and Maintenance of Oral Health** • Provide oral health care within the scope of general dentistry to include local anesthesia and pain and anxiety control, including consideration of the impact of prescribing practices and substance use disorder.
BASICS OF PAIN AND ANXIETY CONTROL		
S.NO	**TOPICS**	**LEARNING OBJECTIVES**
	Scope of Pain and Anxiety Control	• Discuss the differences between the types of sedation / anesthesia • Discuss the pros and cons of each method of sedation / anesthesia

1		• Describe the risks and benefits of each method of sedation / anesthesia • Summarize the requirements of state law regarding the administration of local anesthesia, sedation and general anesthesia • Discuss the legal ramifications of administration of local anesthesia, sedation and general anesthesia
2	**Neurophysiology of anxiety / pain conduction / pain control**	• Discuss the desirable properties of local anesthetics • Discuss the fundamentals of impulse generation and transmission • Discuss the mode and site of action of local anesthetics • Discuss the active forms of local anesthetics • Discuss the kinetics of local anesthetic onset and duration of action.
3	**Pharmacology of local anesthetics / vasoconstrictors**	• Discuss the pharmacokinetics of local anesthetics, including uptake, distribution, metabolism, and excretion • Discuss the systemic actions of local anesthetics on the following: a. Central nervous system b. Cardiovascular system c. Respiratory system d. Other miscellaneous actions • Describe the indications for using a vasoconstrictor in a local anesthetic solution. Consider the following: a. Mechanism of action b. Metabolism c. Maximum dosage d. Toxic effects e. Contraindications • Discuss the following information for lidocaine, mepivacaine and bupivacaine: a. Type of anesthetic, ester or amide b. Brand name(s) c. Onset and duration of action d. Metabolism, including uptake, redistribution, inactivation, and excretion e. Common concentrations used in dentistry Maximum dosage • Explain the two general categories of topical anesthetics • Discuss benzocaine, lidocaine, and tetracaine topical anesthetics • Calculate the amount of anesthetic and vasoconstrictor contained in the various types of anesthetic solutions
	CLINICAL APPLICATION OF LOCAL ANESTHESIA IN DENTISTRY	
1	**Armamentarium**	• Identify the components of the breech-loading aspirating syringes, needles, and carpules. • Discuss the problems that can occur with the syringes, needles and carpules • Discuss the component chemicals contained within the cartridge and their function • Explain when local anesthetic is no longer safe to administer.
	Anatomic considerations, clinical	• Discuss the following types of administration of local anesthetics: a. Maxillary anesthesia

2	**application and supplemental injection techniques**	b. Mandibular anesthesia c. Gow-Gates d. Akinosi Vazirani e. PDL Injection f. Interosseous g. Controlled delivery devices
3	**Local and systemic complications**	• Discuss the causes, problems, prevention and management of the following local complications: a. Needle breakage b. Pain on injection c. Persistent anesthesia: paresthesia d. Trismus e. Hematoma f. Infection g. Tissue sloughing h. Lip chewing i. Facial nerve paralysis • Discuss the causes, problems, prevention and management of the following systemic complications: a. Local anesthetic overdose b. Epinephrine overdose c. Allergy d. Idiosyncratic reaction e. Side effects
	SEDATION IN DENTISTRY	
1	**Pharmacology of Sedative Agents – PO, IM, IV**	• Discuss the risks, benefits and complications associated with each route of sedation • Discuss the pharmacological properties, therapeutic effects and side effects of the each of the following sedative agents: • a. Benzodiazepines • b. Narcotics • c. Barbiturates • d. Chloral hydrate • e. Phenothiazines • f. Phenergan
	Nitrous Oxide/Oxygen Sedation	• Discuss the pharmacology of nitrous oxide / oxygen sedation • Discuss the equipment safety features • Discuss patient preparation • Discuss the clinical effects • Discuss the potential side effects
	• **EVALUATION**	
	Basic Injection Techniques	Students must bring their own dental charts/medical history, stethoscopes, safety glasses, a sterilized syringe and dental mirror for their assigned lab. Anesthetics, topical, needles and the required supplies will be provided. Students must make an appropriate chart entry.

	Review	Injection Videos in the document section, prior to your lab session • Chapters 5-15, Malamed (Local Anesthesia) (Armamentarium, Anatomy technique to supplement videos) • Chapters 2, 3, 5, 6 Malamed (Medical Emergencies) (Basic Emergency Information)
	Demonstrate the following injection techniques	• Anterior Superior Alveolar Nerve Injection • Middle Superior Alveolar Nerve Injection • Posterior Superior Alveolar Nerve Injection • Greater palatine injection • Inferior alveolar nerve block • Lingual nerve injection • Long buccal nerve injection • Mental foramen injection, mandibular anterior infiltration

MODULE I: DEPARTMENT OF ORAL RADIOLOGY		
TOPIC	**Learning objectives**	**TEACHER**
Introduction to dental radiology	• Describe the historical perspective of dental radiology • Discuss the Importance of radiology in dentistry • Discuss the differences between radiology and radiography	Dr Fatima
Radiographic equipment and imaging modalities	• Describe components of a dental x-ray machine in depth • Define the production of x radiation • Define the basic concepts related to electricity and currents	
Clinical applications of dental radiology	• Overview of radiographic techniques and their applications • Describe Types of dental radiographs (periapical, bitewing, panoramic) • Describe basics of Intraoral and extraoral imaging techniques • Explain the role of radiology in treatment planning	
Radiation biology	• Describe radiation injury • Discuss various effects of the radiation injury	
Radiographic image characteristics and image processing	• Define Radiographic visual characteristics • Define radiographic geometric characteristics • Define radiographic exposure factors • Define factors influencing image quality • Ensuring image accuracy and consistency • Explain Film characteristics • Identify the four naturally occurring densities visible on a conventional radiograph in order from highest to lowest density. • Explain methods of processing	*Dr Fatima*
Quality assurance and Quality control	• Explain Routine maintenance and calibration of radiographic equipment • Define Quality assurance protocols • Operator competence	**Dr Fatima**
Infection control	• Discuss basics of infection control • Enlist the guidelines for practice in dental radiography	**Dr Fatima**

Legal and ethical aspects of dental radiology	• Explain types of consent • Explain informed consent for radiographic procedures • Describe Legal responsibilities of dental professionals • Describe Patient confidentiality and data protection in radiography • Discuss risk management, malpractice issues and patients' records	**Dr Fatima**
Risks and safety	• Explain protective measures for patients and dental personnel • Describe the radiation risks • Define radiation safety principles and guidelines	**Dr Fatima**
Radiation physics	• Define fundamental concepts of ionizing radiation • Define radiation units and measurements • Describe the production of Dental X-rays • Discuss the types of X-rays produced • Define the definitions of X- radiation • Define the Interactions of X- X-radiations • Define the X-ray beam quality, quantity, and intensity	**Dr Fatima**
Radiographic techniques, positioning, and errors	• Explain patient positioning and techniques for intraoral and extraoral radiographs in detail • Define proper alignment and angulation for image clarity • Explain common errors in radiographic techniques, including the exposure errors • Describe bisecting, paralleling and other techniques	**Dr Fatima**
Radiographic anatomy of the oral cavity	• Define normal radiographic anatomy of the teeth • Define anatomical landmarks and structures in dental radiographs • Describe the interpretation of tooth numbering systems • Describe types of bone and the prominences • Describe the spaces and depressions in bone • Enlist the bony landmarks of the maxilla • Enlist the bony landmarks of the mandible • discuss the tooth structure and the supporting structures • Describe the air space seen on panoramic Images • Describe soft tissue seen on panoramic images	**Dr Fatima, Dr Maya**
Radiographic identification of materials	• identify the restorations used in dentistry • Identification of miscellaneous objects • Identification of various materials used in dentistry	**Dr Fatima**
Radiography for other special populations and digital imaging	• Define Radiography for geriatric patients • Describe Radiographic considerations for medically compromised patients • Describe radiography for patients with gag reflex • Enlist the differences of digital imaging and conventional radiology • Define the types of digital imaging • Discuss sensor preparation and sensor placement • Discuss the advantages and disadvantages of digital imaging	**Dr Fatima, Dr Faryal, Dr Doha**
Oral and maxillofacial pathologies	• Enlist the radiographic identification of the dental anomalies related to Disturbance in number of teeth Disturbance in form of teeth	**Dr Maya**

	✚ Disturbance in the structure of the tooth structure (enamel, dentine, and cementum) ✚ Enlist radiology related to bone in oral pathology ✚ Describe radiology of odontogenic, non-odontogenic and non-epithelial cysts ✚ Describe radiology of odontogenic, non-odontogenic and mesenchymal odontogenic tumors	
Endodontic radiology	• Describe the radiographic evaluation of root canals and periapical regions • Describe the diagnosis of periapical pathologies	**Dr Shuja**
Periodontal radiology	• Understand the role of radiographs in the assessment and diagnosis of periodontal diseases. • Identify normal periodontal anatomy and recognize signs of periodontal disease on radiographs, including bone loss, furcation involvement, and periapical lesions. • Differentiate between various types and degrees of periodontal bone loss on radiographs. • Interpret radiographic signs of periodontal disease progression, such as vertical and horizontal bone loss, as well as angular defects. • Utilize radiographic measurements, such as alveolar bone height and density, to quantify periodontal disease severity. • Recognize the limitations of radiographic assessment in periodontal disease diagnosis, including the inability to detect soft tissue changes and the need for clinical correlation. • Formulate treatment plans based on radiographic findings, including periodontal therapy and surgical interventions.	**Dr Tipu Sultan**

COMMUNITY OUTREACH PROGRAMME		
Overview of dental informatics, basics of technology	▯ Define dental informatics and its scope and applications in dentistry ▯ Identify the basic components and functions of a health information system ▯ Describe the benefits and challenges of using information technology in dental practice	**Dr Muhammad Ali, Dr Rehmatullah, Dr Doha,**
Introduction to dental informatics software EHR	▯ Explain the concept and purpose of electronic health records (EHR) and their advantages over paper records ▯ Compare and contrast different types of EHR systems and their features ▯ Demonstrate the use of a selected EHR system for data entry, retrieval, and analysis	**Dr Muhammad Ali, Dr Rehmatullah, Dr Doha**
Dental terminology introduction to digital health records DHR implementation and management (DENTAL DEREC)	• Recognize and use common dental terminology and coding systems for clinical documentation and billing • Understand the principles and processes of digital health records (DHR) implementation and management • Evaluate the quality and completeness of DHR data and identify potential errors and gaps	**Dr Muhammad Ali, Dr Rehmatullah, Dr Doha**

Emerging trends in dental informatics, case studies and discussions. Digital radiology software Intraoral scanner **CBCT overview (DROID RENDER app)**	• Discuss current and future trends and innovations in dental informatics, analyze and critique real- world case studies, and reflect on own learning and practice. • Describe and use various digital radiology software tools and platforms and evaluate digital radiology images and reports. • Explain intraoral scanners and their advantages, compare different types and brands of intraoral scanners, and operate an intraoral scanner for capturing 3D digital dental impressions. • Define CBCT and its applications and benefits in dentistry, understand CBCT imaging and reconstruction principles and techniques, and use the DROID RENDER • app for viewing and manipulating 3D DICOM images from CBCT scans	**Dr Muhammad Ali, Dr Rehmatullah, Dr Doha**
Interoperability and standards, security, and privacy in dental informatics	Define interoperability and standards and their importance for data exchange and integration, Describe security and privacy issues and risks in dental informatics and the strategies and policies to address them, and apply ethical and legal principles and guidelines for data protection and confidentiality in dental informatics	**Dr Muhammad Ali, Dr Rehmatullah, Dr Doha**

Assessment

COURSE GOALS

- Understand the fundamental principles of dental radiography.
- Develop proficiency in the use of dental radiographic equipment and techniques.
- Recognize the indications for and limitations of various dental imaging modalities.
- Interpret dental radiographic images accurately and identify common pathologies.
- Apply principles of radiation safety and protection in dental radiography.
- Understand the legal and ethical considerations related to dental radiography practice.
- Communicate effectively with patients and colleagues regarding dental radiographic findings and treatment planning.
- Stay abreast of advancements in dental radiographic technology and techniques through continued learning and professional development.

ASSESSMENT STRATEGIES:

- MCQs & SAQs (50% weightage of each)
- Extended matching questions (EMQs)
- Structured Essay questions (SEQs)
- Long Answer Question
- Oral Examination (OSPE)
- Modified Essay Questions (MEQs)
- Problem-based Questions (PBQs)
- Best Answer Questions (BAQs

TEACHING STRATEGIES:

- Interactive lectures
- Practical demonstration

MODULE II: PERIODONTOLOGY	
Learning Outcomes	• Students must acquire the knowledge of oral hygiene promotion, disease prevention and management of periodontal problems. • Students should become proficient in basic clinical skills of history taking, clinical examination, data interpretation, and basic clinical treatment of periodontal problems. • Students must develop a sympathetic attitude towards patients and take care of patient safety. • Students should develop a desire for self-learning and become lifelong learners. • Able to visualize the impact of disease on the community as a whole and able to study the pathogenesis of specific disease and to plan the prevention of those. • Students should adopt good clinical practices with knowledge of preventive, standardized care, and management of common periodontal problems. • Students are equipped with knowledge and confidence to play a role of facilitator, supervisor and organizer in a primary health care program.

LEARNING OBJECTIVES

Knowledge and Cognition	Skills	Attributes
• Student should be able to give description of common periodontal problems and diseases at different ages. • Student should show an understanding of national strategies aimed for health promotion, disease prevention and community management of periodontal disease. • Student should show understanding of importance of oral hygiene on systemic health, oral health and oral manifestation of systemic disease. • Student should show an understanding of interaction between genetic and environmental factors in the genesis of periodontal disease. • Student should be able to describe oral health care of periodontium when suffering from periodontal disease along with etiological factors causing it.	Students should be able to: • Obtain a proper clinical history from patient. • Perform adequate clinical examination of patient. • Interpret clinical and laboratory investigation. • Arrive at provisional/ definitive diagnosis regarding periodontal problems. • Advice proper oral hygiene maintenance measures for healthy periodontium. • Perform essential clinical procedures to treat periodontal disease.	To develop the right attitude to acquire knowledge and the willingness to learn newer concept; also seek the opinion from a dental specialist when required.

LEARNING OBJECTIVES DURING CLINICAL POSTINGS

During Clinical posting and at the end of academic year, students must have thorough knowledge of:

- Infection control
- Periodontal instrumentation
- Chair position, Patient position, History taking 20 cases
- Principle of instrumentation; maintenance of instruments
- Tissue-gingiva, periodontal ligament, cementum, alveolar bone.
- Plaque control-both mechanical and chemical
- Motivation of patients-oral hygiene instructions
- Common soft and hard tissues in disease and health
- Pathologies related to Gingiva, Periodontal ligament, Cementum and Alveolar Bone.
- Be capable of establishing differential diagnosis for common hard and soft periodontal tissues.
- Examination of Patients with Periodontal disease and emphasis should be given towards:
    - Gingival texture and consistency
    - Gingival bleeding
    - Gingival swelling (hyperplasia)
    - Gingival recession/Muco-gingival defects
    - Gingival pigmentation and ulceration
    - Epidemiological evaluation/Examination methods/Index system:
        - Plaque Index
        - Oral hygiene Index
            - Debris index
            - Calculus index
        - Sulcus bleeding index
        - Gingival index
        - Mucogingival index
        - Periodontal index
        - Community Periodontal Index and Treatment Needs (CPITN)
        - Tooth mobility Grade 1,2,3 Method
- Perio Pockets Type: Gingival/Suprabone/Infrabone
- Probing methods
- Dental Plaque and calculus recognition
- Dental Radiographic analysis of bone loss and patterns of bone destruction
  Purposes/General Aspects/ClinicalvsRadiographic Information
- Perio disease recognition and diagnosis
- Plaque induced
- Non-plaque induced
- Conditions
- Risk Factor
- Smoking
- Importance of Supragingival plaque removal
- Importance of Instruction/motivation
- Self-performed plaque control:

- Brushing
- Interdental cleaning
- Adjunctive aids
- Side effects

- Chemical Supragingival and Subgingival plaque control:
  - Local: Vehicle for the delivery of chemical agent and drugs
  - Systemic: Toxicology, Safety and side effects
- Non-surgical therapy:
  - Detection and removal of dental calculus, halitosis control
  - Methods used for Non-surgical root surface debridement
  - Hand instruments, Sonic and ultrasonic scalar, manual and ultrasonic instrumentation
  - Implication of furcation involvement
  - Pain and discomfort following non-surgical therapy
  - Re-evaluation, Prediction of outcome and evaluation of treatment
- Surgical therapy:
  - Introduction
  - Periodontal surgical procedures
  - Techniques in Periodontal Pocket Surgical Therapy
  - Gingivectomy procedures
  - General guidelines for Periodontal Surgery/Instrument
  - Indications, Contraindications, Objectives, Local anesthesia in periodontal surgery
- Suturing techniques:
  - Periodontal dressings
  - Postoperative pain control
  - Post-surgical care
- Diagnosis /classification of periodontal disease
- Determination of prognosis and treatment plan
- Radiographic interpretation and lab diagnosis
- Principle of periodontal surgery
- Occlusion-correction & management.
- Splinting techniques
- Treatment of dental hypersensitivity
- Implants-basics
- GCF and Saliva
- Plaque and calculus
- Basic Periodontal Examination
- Lab investigations
- Systemic disease:
  - Diagnosis of Gingivitis, Periodontitis (Acute, Chronic)
  - Clinical features of Acute, Chronic
- Treatment planning protocol patient with periodontal disease and Oral manifestations of Periodontal diseases:
  - Screening for Periodontal disease
- Initial Periodontal therapy (Infection control)
- Oral hygiene motivation
  - Counseling in Periodontal Care

- Giving advice
- Mechanical Supra-gingival plaque control, including Curettage/Root planning
- Surgical therapy for all above
- Gingivectomy Procedures
- Flap procedures
- Regenerative procedures (Guided Tissue Regeneration/Guided Bone Regeneration)
- Osseous surgery
- Selection of surgical technique
- Outcomes of surgical periodontal therapy
- Healing following surgical pocket therapy
- Clinical outcome of surgical access therapy in comparison to non-surgical therapy
- Treatment of Furcation involved teeth
- Treatment of Endodontic and Periodontic lesions
- Muco-gingival therapy
- Dental Implant maintenance
- Diagnosis and management of Peri-implant disease
- Antibiotics in Periodontal therapy
- Regenerative Periodontal therapy (Barrier materials)

ASSESSMENT		
Knowledge and Cognition	**Skills**	**Attributes**
Case Discussion/PBL Session/Clinical Rotation test:	Case Discussion/PBL Session/Clinical Rotation test:	Case Discussion/PBL Session/Clinical Rotation test:
*OSCE: Objective Structured Clinical Examination	*OSCE: Objective Structured Clinical Examination	*OSCE: Objective Structured Clinical Examination
	OSPE: Objective Structured Performance Evaluation	

PRACT. #	SCHEDULE OF SKILLS AND PROCEDURES	FACILITATORS
	Following Skills & Procedures Performed by the Students under Supervision	Faculty of Periodontology
1	Cross Infection Control Protocol	
2	History Taking	
3	Basic Periodontal Examination (BPE)	
4	Periodontal Charting	
5	Instruments, Equipment, and their uses	
6	Chair Position, Patient's Position, Instruments grasping, and Finger Rests	
7	Clinical features, Diagnosis of Gingivitis. (All types and classifications), emphasis should towards • Gingival texture &consistency • Gingival bleeding • Gingival swelling(hyperplasia)	

	• Gingival recession / Muco gingival Defects • Gingival pigmentation and ulceration	
8	Examination of Patients with Periodontal Disease- recognition and diagnosis	
9	Identification of types of Periodontal Pockets Gingival / Supra Bone / Infra Bone	
10	Periodontal Probing methods	
11	Dental Plaque and calculus recognition	
12	Dental Radiographic examination Purposes / General Aspects / Clinical VS –Radiographic information	
13	Recognition of systemic risk factors causing periodontal diseases.	

14	Epidemiological evaluation / Examination methods / Index system / Grading/Scoring
	• Plaque Index
	• Oral Hygiene Index
	  • Debris Index
	  • Calculus Index
	• Sulcus bleeding Index
	• Gingival Index
	• Mucogingival Index /gingival recession index
	• Periodontal Index
	• Tooth mobility grading
	• Furcation involvement grading	

15	Initial Periodontal Therapy (Plaque Control) Oral Hygiene motivations • Counseling in Periodontal Care • Giving instructions and advise Self performed plaque control techniques and methods • Brushing techniques • Inter dental Cleaning aids and techniques • Adjunctive aids Side effects of each techniques and methods	
16	Chemical Supra gingival plaque control Local : Vehicle for the delivery of chemical agent Systemic: Toxicology, Safety and side effects	
17	Non-Surgical Periodontal Therapy: • Hand scaling • Sonic and Ultra sonic scaling • Non-surgical root surface debridement and root planning • Management of Pain and discomfort following Non-surgical Therapy • Re-evaluation, Prediction of outcome and evaluation of	

	treatment • Halitosis/breath Malodor control	
18	General guide lines for Periodontal Surgery / Instrument	
19	Local anesthesia in periodontal surgery – Techniques	
20	Suturing	
21	Periodontal Dressings	
22	Assessment of Clinical/radiographic outcome of surgical therapy in comparison to non-surgical therapy	
	For the Following Procedures, Students' Status will remain as Observer	
23	Techniques in Periodontal pocket Surgery - Gingivectomy, Gingivoplasty	
24	Surgical Treatment of Furcation involved teeth	
25	Surgical management of Endodontics and Periodontics lesions	
26	Muco gingival Therapy- surgical management of gingival recession	
27	Treatment of Peri-Implant Lesions	
28	Regenerative periodontal therapy (Barrier materials)	

CURRICULUM LEARNING OUTCOMES, OBJECTIVES, ASSESSMENT TOOLS
DEPARTMENT OF PERIODONTOLOGY

S #	TOPICS	Learning Outcomes	Learning Objectives	Assessment tools
1	Cross contamination and cross infection control protocol	-Understand the concept of cross contamination. - Identify common sources and pathways of cross contamination. - Acquire knowledge of effective cleaning, disinfection, and sterilization procedures.	- Describe appropriate control measures to prevent cross contamination in healthcare - Describe infection control protocols to ensure a safe and hygienic environment.	SEQs
2	The Anatomy, structure and functions of The Periodontal Tissues/ The normal periodontium	-Outline the main components of the periodontium. - Recognize the functional roles of each part of the periodontium in supporting tooth stability and overall oral health.	- Identify the key components; the gingiva, periodontal ligament, cementum, and alveolar bone. - Understand the structural and functional roles of each element within	BCQs

		-Recognize the structural changes in periodontal tissues associated with different stages of periodontal disease. - Outline the knowledge of periodontal anatomy to assess oral health and contribute to treatment planning in a dental or clinical setting.	the periodontium; GCF, Saliva, Blood supply, nerve supply, lymphatic drainage. - Describe the anatomical distinctions between healthy periodontal tissues and those affected by periodontal disease, age changes in the periodontium. - Describe the application of knowledge of periodontal anatomy to oral health assessments and treatment planning.	
3	The Anatomy, structure and functions of The Periodontal Tissues/ The normal periodontium	Mentioned above	Mentioned above	
4	Oral Bio film and Calculus	- Describe the stages of dental calculus development and the consequences of its accumulation. - Outline the knowledge of oral biofilm and calculus in disease prevention strategies.	- Recognize the formation and composition of oral biofilm and its role in dental diseases. - Factors influencing biofilm formation and its relationship to oral health.	BCQs SEQs
5	Periodontal microorganism	- Outline the major microorganisms in periodontal diseases and host inflammatory response after bacterial interactions. - Outline the mechanisms by which periodontal	-Identify key periodontal microorganisms, their colonies and role in the pathogenesis of periodontal diseases. - Describe how these microorganisms contribute to the pathogenesis of	BCQs SEQs

		microorganisms can evade host defenses and cause tissue destruction.	periodontal diseases and the mechanisms involved. - Describe host response against bacterial invasion. - Describe the application of knowledge of periodontal microorganisms to develop effective treatment and prevention strategies for periodontal diseases.	
6	Pathogenesis of Plaque associated Periodontal disease	- Identify and describe the key factors contributing to the pathogenesis of periodontal diseases, including microbial involvement and host response.	- Explain the sequential stages of plaque-associated periodontal disease, from initial inflammation to advanced tissue destruction. - Describes the knowledge and skills to develop effective preventive and treatment strategies for plaque-associated periodontal diseases, thereby promoting better oral health.	BCQs SEQs
7	Etiology and susceptibility in Periodontal Disease -Local risk factors.	-To assess an individual's susceptibility to periodontal disease based on local risk factors, and understand how these factors influence periodontal health.	- Identify local risk factors that contribute to the development and progression of periodontal disease, including factors related to dental anatomy, oral	BCQs SEQs

			hygiene, and lifestyle habits. - Outline the knowledge and skills to recommend appropriate preventive and therapeutic measures to manage local risk factors in order to improve periodontal health and prevent disease progression	
8	Systemic risk factors for periodontal diseases	- Recognize the complex interactions between systemic health and periodontal conditions, including the bidirectional relationships and potential mechanisms involved.	-Describe various systemic risk factors, such as diabetes, cardiovascular disease, and immunological conditions, and their influence on the development and progression of periodontal diseases.	BCQs SEQs
9	Instruments use in periodontal therapy-classification	-Classify and categorization of instruments used in periodontal therapy, including hand instruments, ultrasonic devices, and rotary instruments. -	- Identify the specific functions and applications of different periodontal instruments, such as scalers, curettes, and periodontal probes. - Develop the ability to select appropriate instruments based on the patient's periodontal condition and treatment goals.	BCQs OSPE/OSCE
10	Instruments use in periodontal therapy-handling, grasping, finger	- Enlist the ability to effectively grasp and handle periodontal	-Describe various finger rest techniques and their	BCQs

	rests, maintenance	instruments, ensuring precise control and minimal patient discomfort during treatment. - Knowledge and skills in maintaining periodontal instruments, including sharpening, sterilization, and routine care to prolong their lifespan and maintain optimal performance.	applications, allowing for steady hand support and improved instrument maneuverability in different treatment scenarios. - Describe the protocols for instrument sterilization and infection control to ensure the safety of both patients and dental healthcare providers during periodontal therapy procedures.	
11	Chair position, patient and dentist position- ergonomics	- Recognize proper patient positioning in the dental chair for efficient examination and treatment, while considering patient comfort and safety. -Recognize how effective chair, patient, and dentist positioning can contribute to the efficiency of dental procedures and the delivery of high-quality patient care.	- Describe how to adjust and maintain the dental chair for the comfort of both patients and dental professionals, reducing the risk of musculoskeletal strain and discomfort.	BCQs
12	Identification and diagnosis of periodontal diseases in general dental practice- Basic Periodontal Examination (BPE)	- Classify the severity of periodontal diseases based on BPE scores and assess the appropriate treatment approach.	- Identify the signs and symptoms of periodontal diseases, including gingivitis and periodontitis, using BPE and other diagnostic tools. - Determine patients comprehensive treatment plans, integrating BPE	BCQs

			findings with other clinical assessments.	
13	Record of periodontal Examination/periodontal charting	- Developing the ability to accurately and comprehensively chart periodontal conditions, including pocket depths, clinical attachment levels, bleeding points, and other relevant data. - Understand the importance of periodontal charting for tracking disease progression and evaluating the effectiveness of periodontal therapy over time.	- Describe how to make periodontal diagnoses based on charting findings, distinguishing between various stages and types of periodontal diseases. - How to utilize periodontal charting data to formulate evidence-based treatment plans that address individual patient needs and the severity of periodontal conditions.	BCQs OSPE/OSCE
14	Radiographic aids in the diagnosis of periodontal disease	-Develop the skill to accurately interpret dental radiographs, including intraoral and panoramic images, for the diagnosis of periodontal conditions. - Utilize radiographic findings to support treatment planning decisions, including the choice of surgical procedures and therapeutic interventions in periodontal therapy.	- How to use radiographic aids to assess bone loss, furcation involvement, and other periodontal disease indicators in a patient's oral health. - Identify radiographic anomalies and pathologies associated with periodontal diseases.	BCQs
15	Initial Periodontal Therapy/non-surgical periodontal therapy in general dental practice-Oral hygiene Motivations for plaque control and	- Develop skills in employing strategies to encourage patients to adhere to plaque control measures and engage in	- Teach patients how to perform proper toothbrushing, flossing, and other oral hygiene	BCQs SEQs

	periodontal care.	periodontal care. - Understand the role of oral hygiene motivation in promoting overall periodontal health and contribute to long-term disease management and prevention.	techniques to maintain periodontal health.	
16	Initial Periodontal Therapy Mechanical and chemical Supragingival plaque control.	-Develop proficiency in the mechanical removal of supragingival plaque using instruments such as toothbrushes and dental scalers. - Understand the use of chemical agents, such as mouthwash and antimicrobial rinses, in supragingival plaque control and their role in oral hygiene.	- Identify the impact of mechanical and chemical plaque control on supragingival health, leading to improved overall oral hygiene and periodontal wellbeing. - How to educate patients on the proper use of mechanical and chemical plaque control methods to maintain oral health.	BCQs SEQs
17	Sonic and ultrasonic scaling techniques and methods	-Develop proficiency in operating and handling sonic and ultrasonic devices used in dental scaling procedures.	- How to use sonic and ultrasonic scalers to efficiently and effectively remove calculus deposits and biofilm from tooth surfaces and below the gumline.	BCQs
19	Subgingival scaling, root planning and curettage	-Develop proficiency in subgingival scaling techniques, which involve the removal of calculus and biofilm from below the gumline. - Perform root	- How to sequence subgingival scaling, root planning, and curettage procedures within comprehensive periodontal therapy treatment plans.	BCQs

		planing effectively, smoothing root surfaces to promote reattachment of periodontal tissues and prevent disease progression.		
20	Local delivery antibiotics	- Recognize effective methods of delivering antibiotics to targeted periodontal sites, such as subgingival pockets, to enhance their therapeutic efficacy.	- Identify the specific indications for local delivery antibiotics and recognize contraindications, ensuring safe and appropriate treatment decisions. - How to Integrate local delivery of antibiotics into comprehensive periodontal therapy plans to improve clinical outcomes and manage disease progression.	BCQs
21	Systemic Chemotherapeutic agents	-Recognize the specific indications for systemic chemotherapeutic agents in periodontal therapy and understand contraindications to their use.	- How to integrate systemic chemotherapeutic agents into comprehensive periodontal treatment plans, considering individual patient needs and disease severity.	BCQs
22	Maintenance in Periodontal therapy	- Understand the importance of regular professional monitoring, including periodontal assessments and dental cleanings, to evaluate the effectiveness of treatment and detect early signs of disease	- How to develop and implement effective maintenance protocols to support long-term periodontal health and prevent disease recurrence.	BCQs

		recurrence. - Develop the ability to educate patients about proper oral hygiene practices and their crucial role in maintaining periodontal health.		
23	Gingivitis – Clinical features	-Develop the ability to recognize and diagnose gingivitis based on clinical features, including visual assessment and patient symptoms.	- Identify the typical signs and symptoms of gingivitis, such as redness, swelling, bleeding, and changes in gingival texture.	BCQs SEQs OSPE/OSCE
24	Acute gingival infections	-Develop the ability to identify and diagnose acute gingival infections based on clinical features, patient history, and symptoms. - Understand the microbial and viral etiology of acute gingival infections and the pathogenesis that leads to their development.	- Identify and differentiate various types of acute gingival infections, including abscesses, ulcers, and herpetic lesions. - How to clinically diagnose and assess acute gingival infections, including evaluating clinical signs and symptoms.	BCQs OSPE/OSCE
25	Deseqamative gingivitis	- Comprehensive understanding of the underlying causes and contributing factors of desquamative gingivitis, such as autoimmune disorders and mucocutaneous diseases. - Develop the ability to identify desquamative gingivitis and	- How to distinguish between the various mucocutaneous disorders that can manifest as desquamative gingivitis, ensuring accurate diagnosis. - Understand the treatment options and management strategies available for desquamative gingivitis, including topical and systemic	

		differentiate it from other oral conditions, based on clinical presentation and patient history.	therapies to alleviate symptoms and control disease progression.	
26	Gingival enlargement	- Understand the underlying causes and contributing factors of gingival enlargement, such as medication-related factors, systemic diseases, and local irritants.	- Identify and classify various types of gingival enlargement, including inflammatory, drug-induced, and hereditary forms, based on clinical and histological features. - How to differentiate between different forms of gingival enlargement, ensuring accurate diagnosis and appropriate treatment planning.	BCQs OSPE/OSCE
27	Gingival recession	- Understand the underlying causes and risk factors associated with gingival recession, such as periodontal disease, aggressive toothbrushing, and anatomical factors.	- Identify and diagnose gingival recession based on clinical examination, including assessment of recession depth and contributing factors. - Knowledge about treatment options and management techniques for gingival recession, including surgical procedures and non-surgical approaches like oral hygiene instruction.	BCQs
28	Gingival diseases in childhood	- Understand the underlying causes and risk factors associated with gingival diseases in children, such as	- Identify and diagnose gingival diseases specific to childhood, including conditions like gingivitis, eruption	BCQs

		poor oral hygiene, systemic conditions, and medication-related factors.	gingivitis, and congenital gingival disorders. - Knowledge about the treatment options and management strategies for gingival diseases in childhood, including behavior management and age-appropriate interventions.	
29	The periodontal pocket	-Diagnostic techniques, including probing and radiographic assessment, to evaluate periodontal pockets and their impact on periodontal health. - Understand the causes and progression of periodontal pockets, including the role of bacterial biofilm and host response in their development.	- identify periodontal pockets, measure pocket depths accurately, and classify them based on severity. - Treatment options and management strategies for periodontal pockets, including non-surgical and surgical approaches, to promote pocket reduction and periodontal health.	OSPE/OSCE
30	Radiographic Examination of Bone loss, pattern of Bone loss and Periodontal pockets	- Interpret dental radiographs to identify and quantify bone loss, periodontal pockets, and the pattern of bone loss in periodontal disease.	- Identify different patterns of bone loss, such as horizontal, vertical, and furcation involvement, and understand their significance in periodontal diagnosis and treatment planning. - Ability to integrate radiographic findings with clinical data to provide a	BCQs OSPE/OSCE

			comprehensive periodontal diagnosis and treatment plan.	
31	Chronic Periodontitis	- Understand the underlying causes and the progressive nature of chronic periodontitis, including the roles of microbial biofilm and host response.	- How to diagnose chronic periodontitis and classify it based on clinical and radiographic criteria. - Knowledge of maintenance protocols and preventive measures to ensure long-term periodontal health and prevent disease recurrence. - Treatment modalities and strategies for managing chronic periodontitis, including non-surgical and surgical interventions.	BCQs OSPE/OSCE
32	Aggressive Periodontitis	- Understand the specific etiological factors and risk factors associated with aggressive periodontitis, including microbial and genetic influences.	- How to diagnose aggressive periodontitis, differentiate it from other forms of periodontal disease, and classify it based on clinical and radiographic criteria. - Long-term management and maintenance protocols to ensure the stability of periodontal health and minimize disease recurrence.	BCQs OSPE/OSCE
34	Necrotizing Periodontal disease	- Understand the specific etiological factors and contributing factors associated with	- How to diagnose and recognize necrotizing periodontal diseases based on clinical	BCQs

		necrotizing periodontal diseases, including microbial agents, systemic conditions, and lifestyle factors.	presentation, symptoms, and risk factors. - Treatment approaches and interventions for managing necrotizing periodontal diseases, including debridement, systemic antibiotics, and supportive care.	
35	Periodontal abscess	- Understand the specific etiological factors and risk factors associated with periodontal abscesses, including microbial pathogens and local irritants.	- How to diagnose and identify periodontal abscesses based on clinical signs and symptoms, such as localized pain, swelling, and purulent discharge. - Treatment strategies and management approaches for periodontal abscesses, including drainage, debridement, and antibiotic therapy when necessary.	BCQs
36	Halitosis/Breath Malodor causes and management	- Understand the various causes of halitosis, including oral and systemic factors, and learn how to diagnose the specific etiology in individual patients.	- Describe the effective oral hygiene practices and treatment approaches for managing halitosis, including proper tooth brushing, tongue cleaning, and antimicrobial rinses.	BCQs
37	Periodontal diseases in female patient	- Outline gender-specific risk factors that may predispose female patients to periodontal diseases,	- Female patients on oral hygiene practices, nutrition, and lifestyle choices that promote healthy	BCQs

		including hormonal changes and pregnancy, and their impact on oral health.	gums and overall well-being throughout various life stages. -How to manage periodontal treatment plans to address the unique needs and challenges faced by female patients, taking into account their reproductive and hormonal status..	
38	**EVALUATION/CLASS TEST**			
39	Restorative and periodontal interrelationship	- Develop an understanding of the complex interrelationship between restorative dentistry and periodontal health, including how restorative procedures can impact periodontal tissues.	- How to assess and manage the risks associated with restorative treatments on periodontal health, considering factors such as occlusion, margin placement, and material selection.	BCQs
40	Endodontics and Periodontics interrelationship	- Develop a comprehensive understanding of the interrelationship between endodontics and periodontics, including how endodontic and periodontal conditions can impact each other.	- How to to diagnose and assess cases involving both endodontic and periodontal issues and develop treatment plans that address both aspects effectively.	BCQs OSPE/OSCE
41	Orthodontics and periodontics interrelationship	- Develop an understanding of the interrelationship between orthodontics and	- How to assess and evaluate the risks associated with orthodontic treatments on	BCQs

		periodontics, including how orthodontic treatments can impact periodontal health. - Understand techniques and strategies to minimize complications and adverse effects on periodontal tissues during orthodontic procedures.	periodontal health, including factors like tooth movement and occlusion changes. - Describes collaborative treatment planning that integrates orthodontic and periodontal considerations to achieve the best possible outcomes for patients.	
42	Periodontal disease as a risk for systemic disease	-Deep understanding of the bidirectional relationship between periodontal disease and systemic conditions, including the mechanisms through which periodontal health can impact overall health.	- Identify systemic diseases and conditions that are influenced by periodontal disease, such as cardiovascular disease, diabetes, and respiratory conditions. - Skills in assessing and managing the risk of systemic diseases associated with periodontal disease, including patient evaluation and preventive measures.	BCQs
43	Periodontal treatment of medically compromised patients	- Develop the ability to assess and understand the medical conditions and medications that may impact periodontal health and treatment.	- How to periodontal treatment plans to accommodate the specific needs and limitations of medically compromised patients. - Potential effects of medications on periodontal health and learn how to	BCQs

			manage side effects and complications.	
44	Treatment of periodontal emergencies	- Develop the ability to promptly recognize and diagnose periodontal emergencies, such as acute periodontal abscesses or traumatic injuries to the periodontium. - Understand the potential risks and complications associated with periodontal emergencies, including the spread of infection and tooth mobility, and learn to mitigate these risks.	- How to provide immediate management and relief of pain or discomfort in cases of periodontal emergencies through procedures like drainage, debridement, and antibiotic therapy.	BCQs
45	General principle of periodontal surgery	- Develop proficiency in the fundamental surgical protocols, indications, contraindications and techniques used in periodontal surgery, including flap design, tissue manipulation, and suturing.	- How to conduct thorough patient assessments, including the evaluation of periodontal health, risk factors, and the selection of appropriate surgical procedures.	SEQs
46	Periodontal Pocket Irradiation/periodontal flap technique for pocket therapy	- Develop proficiency in designing and elevating periodontal flaps to access and visualize the root surfaces and periodontal pockets for effective therapy.	- How to perform thorough root debridement and root surface smoothing as part of pocket therapy to remove microbial biofilm and calculus deposits. - Which techniques for reducing pocket depth and achieving complete pocket closure through flap	BCQs

			surgery, enhancing periodontal health?	
47	Periodontal surgical therapy-periodontal flap surgery	- Develop proficiency in designing and elevating periodontal flaps to provide access to the root surfaces and periodontal pockets for thorough therapy.	- How to perform effective root surface debridement, including the removal of microbial biofilm and calculus deposits, to promote periodontal health. - Techniques for reducing pocket depth and achieving complete pocket closure through flap surgery, optimizing periodontal outcomes.	BCQs
48	Periodontal surgical technique- (gingival curettage, gingivectomy)	- Develop proficiency in performing gingival curettage to remove inflamed and necrotic tissues, facilitating improved periodontal health. - Understand the indications for and appropriate case selection criteria for gingival curettage and gingivectomy procedures.	- How to execute gingivectomy procedures to remove excess or diseased gingival tissue, optimizing esthetics and periodontal health. - Planning and execution of periodontal surgical techniques, including incision design, tissue removal, and suturing.	
49	Periodontal dressing	- Comprehensive understanding of periodontal dressings, their purposes, and the different types available for clinical use.	- How to properly apply periodontal dressings to protect surgical sites, control bleeding, and promote wound healing. - Describe the role of periodontal dressings in postoperative care, including patient comfort and promoting a healthy	BCQs

			healing environment.	
50	Treatment of Gingival enlargement	- Classify various types of gingival enlargement, including inflammatory, drug-induced, and hereditary forms, based on clinical and histological features. - Understand the underlying causes and risk factors associated with gingival enlargement, such as medication-related factors, systemic diseases, and local irritants.	- Differentiate gingival enlargement from other conditions that may present with similar clinical features, ensuring accurate diagnosis and treatment planning. - Treatment options and management techniques for gingival enlargement, including periodontal surgery, medication adjustments, and oral hygiene education.	BCQs
51	Periodontal plastic and aesthetic surgery / Muco-gingival Therapy/ - introduction	- Understanding of the aesthetic concerns and patient expectations related to the appearance of the periodontium. -Knowledge of the surgical techniques and procedures used in muco-gingival therapy to improve the appearance and symmetry of the gingiva.	- How to conduct a comprehensive diagnostic assessment of the periodontium to identify areas in need of muco-gingival therapy. - Identify various treatment options available for enhancing the aesthetics of the periodontium, including soft tissue grafting and gingival recontouring.	SEQs OSPE/OSCE
52	Therapy to correct marginal tissue recession – flap procedures	- Understand the surgical techniques for achieving root coverage incases of marginal tissue recession, including connective tissue grafts and free gingival grafts.	- How todiagnose and select cases for flap procedures to correct marginal tissue recession, considering factors like recession depth, attachment loss, and esthetic concerns.	**SEQs**

			- How to design and elevate flaps to access the recession defects, allowing for effective root coverage and soft tissue enhancement.	
53	Surgical treatment of gingival recession-pedicle flap and free gingival grafts	- Able to differentiate between pedicle flap and free gingival graft techniques. - Understand the indications, contraindications, and clinical outcomes of pedicle flap and free gingival graft procedures.	- Explain the principles and techniques of pedicle flap and free gingival graft surgeries.	SEQs
54	Surgical crown lengthening	- Develop the ability to diagnose excessive gingival display (gummy smile) and select appropriate cases for surgical crown lengthening, considering esthetic and functional factors. - Understand techniques for managing both soft and hard tissues during crown lengthening, ensuring an esthetically pleasing outcome and adequate tooth structure exposure.	- How to plan and execute surgical crown lengthening procedures, including the design of incisions, flap elevation, and bone recontouring.	SEQs

55	Frenectomy and Frenotomy	- Develop the ability to evaluate the anatomy and attachment of oral frenula, including maxillary labial frenum and lingual frenulum.	How to identify cases requiring frenectomy or frenotomy and understand the indications for these procedures. - surgical techniques and instruments used in frenectomy and frenotomy procedures, including incision design and tissue resection.	BCQs SEQs
56	Introduction to Periodontal Regenerative and Reconstructive Therapy	- Understanding of the principles of periodontal regeneration and reconstructive therapy to restore lost periodontal structures.	- How to conduct a comprehensive diagnostic assessment to identify cases where periodontal regeneration or reconstruction is indicated. - Identify the various treatment options available for periodontal regeneration and reconstruction, including guided tissue regeneration and bone grafting.	BCQs
57	Periodontal Regenerative and Reconstructive Therapy – types of graft material	- Able to identify and differentiate between various types of graft materials used in periodontal therapy. - Understand the indications, contraindications, and clinical outcomes associated with different graft materials.	- Describe the types of graft materials used in periodontal regenerative and reconstructive therapy, including autografts, allografts, xenografts, and alloplasts.	BCQs OSPE/OSCE

58	Flap Techniques for Periodontal Regenerative and Reconstructive Therapy	- Understand the principles and goals of flap techniques in periodontal regenerative and reconstructive therapy. -Able to differentiate between various flap techniques used in periodontal surgery.	- Identify and explain the different types of flap techniques, including modified Widman flap, envelope flap, and papilla preservation flap.	BCQs
59	Treatment of Furcation Involved teeth	- Develop the ability to assess and classify furcation involvement in multi-rooted teeth, considering factors like location and severity.	- Describe the surgical techniques and instruments used to access and treat furcation-involved areas, including root resection, furcation plasty, and guided tissue regeneration. - How to develop treatment plans for furcation-involved teeth, considering factors like tooth anatomy, defect morphology, and systemic health.	BCQs OSPE/OSCE
60	Trauma from occlusion/periodontal response to external forces	- Understanding of trauma from occlusion and its potential impact on periodontal health, including the etiology and mechanisms involved.	- How to conduct clinical assessments to identify signs and symptoms of trauma from occlusion, such as tooth mobility, fremitus, and occlusal interferences.	BCQs

61	Periodontal splinting	- Cases and indications for periodontal splinting, considering factors like tooth mobility, periodontal support, and patient needs	- Describe various techniques and materials used in periodontal splinting, including flexible splints, rigid splints, and wire splints.	BCQs
62	**Discussion & Revision of the whole course**			
63	**Discussion & Revision of the whole course**			
64	**Weekly Class Test**			
65 66	**Clinical Practical Test Viva** **Weekly online test**			
	Summative assessment	**Total marks=100** **BCQs=60** **OSCE/OSPE=40**		

Commencement of Module		MODULE III: OPERATIVE DENTISTRY Weekly Schedule of Module	
Activity	**Week**	**Interactive Lectures (Groups A, B, C, D)**	**Clinical Rotation in OPD/SGD/Skill Lab (Groups A, B, C, D)**
Academic Session – BDS Third Professional	Week- 1	Definition & Etiology of Dental caries.	Orientation to the Operative OPD Identify restorative instruments Demonstrate positioning of the patients and the Dentist in the OPD.
	Week- 2	Pathogenesis of Dental Caries Prevention of Dental Caries	Understanding of Radiographs Application of matrix band retainer, band & wedge on phantom teeth in skill lab
	Week- 3	Examination and Diagnosis of Dental Caries, Examination and Diagnosis of Erosion, Attrition, and Abrasion	Revision of the principles of cavity design of Class I, V & its restoration on the patient's tooth in the OPD
	Week- 4	Examination and Diagnosis of Cracked Tooth	Preparation & restoration of Class II slot, III, cavities on patients' teeth in OPD
	Week- 5	Selection of restorative materials (Dental amalgam, tooth-colored materials)	Application of a Rubber dam on the phantom teeth in the skill lab
	Week- 6	Causes of restorative failure & Postoperative problems	Discuss steps of root canal procedure Demonstration of Endodontic Instruments
	Week- 7	Understand the methods of isolation and control of the operating field	Demonstration of the root canal procedure on an extracted tooth
	Week- 8	Discuss esthetic considerations in diagnosis and treatment planning, Use of lasers in dentistry	Poster /Presentation/Quiz competition **Clinical OPD test (OSCE)**
	Week- 9	***Theory & Practical/viva Exam***	

MODULE IV: PROSTHODONTICS REMOVABLE PARTIAL DENTURE				
S #	**Lecture topic**	**Learning outcomes** At the end of each topic, a final year student should be able to:	**Mode Of Teaching**	**Assessment Method**
1	**Introduction, Objectives, Terminology of RPD**	• Define the term "Removable partial denture" • Discuss the benefits of partial dentures • Enumerate the basic parts of a partial denture • Differentiate between acrylic and cast partial dentures	IL, SGD	MCQs, SEQs
2	**Considerations for managing partial tooth loss**	• Understand the demands of patients after tooth loss • Understand the consequences of tooth loss • Explain the benefits of restoration of the missing teeth	IL, SGD	MCQs, SEQs
3	**Classification of partially edentulous arches**	• Recall the requirements of a universally acceptable classification system • Enlist a few classification systems in use • Summarize the salient features of Kennedy's classification • Enlist the Applegate rules (in correct order) • Identify the given casts according to Kennedy's classification	IL	MCQs, SEQs, OSCE
4	**Biomechanics of RPD**	· Describe possible movements of a partial denture and various components that counter these movements.	IL	MCQs, SEQs
5	**Major and Minor Connectors**	Describe principles the for design and location of connectors Describe indications, contraindications and characteristics of various maxillary and mandibular major connectors •Define minor connectors •Describe the function, form, and location of minor connectors	IL	MCQs, SEQs, OSCE
	Rest and Rest Seat	• Define the terms "Rest" and "Rest	IL	MCQs, SEQs,

6		seat" • Enlist the functions of a rest • Recall the form of an occlusal rest and rest seat • Explain the concept of an extended occlusal rest • Discuss the features of the interproximal rest seats • Describe the application of intracoronal rests • Recall the support for occlusal rests • Comprehend the application of lingual rests on anterior teeth • Comprehend the application of incisal rests		OSCE
7	**Direct Retainer**	• Define the term "Direct retainer" • Summarize the role of direct retainer in prosthesis movement control • Classify the direct retainers used in partial dentures • Carry out analysis of tooth contours for retentive clasps • Discuss the factors affecting the amount of retention of clasps • Recall the main types of clasp assemblies • Outline the criteria for selecting a given clasp	IL, SGD	MCQs, SEQs, OSCE
8	**Indirect Retainer**	• Define the term "Indirect retainer" • Recall the functions of an indirect retainer • Recall the factors affecting the effectiveness of indirect retainers • Classify the forms of indirect retainers	IL	MCQs, SEQs, OSCE
9	**Denture base considerations**	• Recall the functions of denture bases • Enumerate the methods of attaching the denture bases to framework • Describe the ideal denture base material • Discuss the advantages of metal bases	IL	MCQs, SEQs, OSCE
10	**Principles of RPD design**	• Describe the design principles of Kennedy's Class I, II and III situations • Outline the strategies for controlling the amount of stress	IL, Lab Demo	MCQs, SEQs, OSCE

		transmitted to the abutment teeth • Outline the essential steps in designing the partial denture • Explain the components of partial denture design • Perform designing of partial dentures		
11	**Surveying**	Principles of surveying and its application in designing a prosthesis	IL, SGD	MCQs, SEQs, OSCE
12	**Diagnosis and treatment planning**	• Define the terms “Diagnosis” and “Treatment planning” • Understand the uniqueness of treatment for a patient • Perform a detailed history taking • Perform a detailed clinical examination • Order and interpret appropriate radiographs • Explain the role of diagnostic casts in treatment planning • Formulate a list of differential diagnosis • Formulate a treatment plan for a given case	IL, CST	MCQs, SEQs, OSCE
13	**Preparation of mouth for RPD**	• Identify the mouth preparations required for a given case • Order the oral surgical preparation • Implement procedures to manage/condition abused and irritated soft tissues • Understand the need for periodontal preparation • Understand the need for abutment teeth preparation	IL	MCQs, SEQs
14	**Preparation of abutment teeth**	• Classify the abutment teeth according to need of modifications • Understand the sequence of abutment preparations • Plan the abutment preparations on sound enamel or existing restorations • Plan the abutment preparations using conservative restorations • Plan the abutment preparations using complete coverage crowns • Identify the need for splinting abutment teeth • Plan using isolated teeth as	IL	MCQs, SEQs

		abutments		
15	**Impression Materials and Procedures**	• Summarize the properties of available impression materials • Understand the precautions to be observed in handling hydrocolloid impressions • Perform the step-by-step procedure for making hydrocolloid impressions • Perform the step-by-step procedure for making a stone cast • Explain the possible causes of an inaccurate or weak cast • Fabricate individual impression trays from acrylic resin	IL, Lab Demo	MCQs, SEQs, OSCE
16	**Support for distal extension denture base**	• Understand the requirements of support for the distal extension denture base • Outline the factors that influence the support of a distal extension denture base • Plan for recording the anatomic form impression • Plan for recording the functional form impression	SGD	MCQs, SEQs
17	**Occlusal relationships for RPD**	• Describe the desirable occlusal contact relationships • Enumerate the methods of establishing occlusal relationships • Select appropriate materials for posterior teeth • Understand the jaw relations for a mandibular removable partial denture opposing a maxillary complete denture	SGD	MCQs, SEQs
18	**Types of RPD**	Provision of the prosthesis in different types of RPD cases	IL	MCQs, SEQs

Commencement of Module		**MODULE IV: PROSTHODONTICS Weekly Schedule of Module**
Activity	**Week**	**Lecture 1**
Academic Session – BDS Third Professional	Week- 1	The Partial Denture Equation
	Week- 2	Dental Prostheses and Classification Systems
	Week- 3	Interim Removable Partial Dentures, Denture Bases and Impression Techniques

	Week- 4	Treatment Planning
	Week- 5	Major and minor connectors
	Week- 6	Rests and Rests seats, Direct Retainer
	Week- 7	Tooth tissue supported Dentures-CBL-RPD
	Week- 8	Maxillomandibular Relations and Occlusion, Delivery of Dentures
	Week- 9	**THEORY AND VIVA EXAMINATION**

CURRICULUM OUTLINES OF THE THIRD YEAR BDS PARELLEL SUBJECTS

GENERAL MEDICINE

INTRODUCTION TO GENERAL MEDICINE: PRINCIPLES OF HISTORY, EXAMINATION,INVESTIGATION & DIAGNOSIS

S:NO	TOPIC	LEARNING OBJECTIVES-TOTAL HOURS =180
1.	**Introduction To General Medicine**	• Discuss the scope of general medicine. • Identify goals of studying general medicine. • Discuss the importance of a doctor and patient relation. • Explain the importance of Ethics when managing patients

2.	**Clinical teachings-History, examination, investigationsand diagnosis**	• Take dental history of a patient presenting to general medicine ward/clinic.
		• Interpret various signs and their clinical correlation whenperforming a general physical examination:
		  • Pallor;
		  • Cyanosis;
		  • Jaundice;
		  • Clubbing;
		  • Thyroid;
		  • Lymph nodes;
		  • Dehydration;
		  • Edema;
		  • Pulse, B.P Temp, R/R.

GASTRO-INTESTINAL & LIVER DISEASES		

1.	**Liver Diseases**	➢ Discuss the etiology, clinical features, types, differential diagnosis, investigations, diagnosis, management and complications of the following GI/Liver diseases:
		  ➢ GERD;
		  ➢ Gastritis/Peptic Ulcer;
		  ➢ Gastroenteritis;
		  ➢ Mal-Absorption;
		  ➢ IBS/IBD;
		  ➢ Hepatitis (Acute/Chronic);
		  ➢ CLD and Hepatocellular Carcinoma**.**

		➢ Take a comprehensive history for a patient presenting to the

2.	**Clinical teachings-History and Examination of GI/ LiverDisease**	general medicine clinics with complaints of GI/Liver disease. Perform clinical examination of patient presenting to the generalmedicine clinics with complaints of GI/Liver disease: 1. Inspection; 2. Palpation; 3. Percussion; 4. Auscultation
	CARDIOVASCULAR DISEASES	
1.	**CardiovascularDiseases**	➢ Discuss the etiology, clinical features, types, differentialdiagnosis, investigations, diagnosis, management and complications of the following cardiovascular diseases: ➢ Ischemic Heart Diseases (Angina/MI) ➢ CHF ➢ Rheumatic Fever ➢ Infective Endocarditis ➢ Hypertension ➢ Valvular Heart Diseases (MS/MR/AS/AR) ➢ Congenital Heart Diseases (VSD/TOF)
2.	**Clinical Teachings-History takingin CVS**	• Take a comprehensive history for a patient presenting to the general medicine clinics with complaints of cardiovascular disease pain and symptoms: ➢ Chest pain; ➢ Dyspnea; ➢ Syncope.
	RESPIRATORY DISEASES	
1.	**RespiratoryDiseases**	➢ Discuss the etiology, clinical features, types, differential diagnosis,investigations, diagnosis, management and complications of the following respiratory diseases: ➢ TB; ➢ COPD; ➢ Pneumonia; ➢ Asthma; ➢ Bronchogenic Carcinoma; ➢ Bronchiectasis; ➢ Pneumothorax/Pleural effusion.
2.	**Clinical Teachings-History taking and clinical examination inRespiratory disease**	➢ Take a comprehensive history for a patient presenting to the general medicine clinics with complaints of respiratory disease painand symptoms: ➢ Cough; ➢ Chest pain; ➢ Wheezing; ➢ Haemoptysis. • Perform clinical examination (front and back of chest) of patient presenting to the general medicine clinics with complaints of

		respiratory disease: ➢ Inspection; ➢ Palpation; ➢ Percussion; ➢ Auscultation. • Interpret findings seen on chest x-rays for Pneumothorax/ pleural effusion.
		NEUROLOGICAL DISEASES
1.	**Neurological diseases**	➢ Discuss the etiology, clinical features, types, differential diagnosis, investigations, diagnosis, management and complications of the followingneurological diseases ➢ Facial Pain/Palsy; ➢ Headache; ➢ Stroke; ➢ Epilepsy; ➢ Parkinsons; ➢ Meningitis
2.	**Clinical Teachings-History taking and clinical examination inNeurological disease**	• Take a comprehensive history for a patient presenting to the generalmedicine clinics with complaints of neurological disease pain and symptoms: ➢ Headache; ➢ Facial pain; ➢ Dizziness; ➢ Coma; ➢ Amnesia.
		• Assess higher mental functions of patients presenting to the generalmedicine clinics: ➢ Level of consciousness; ➢ Behavior; ➢ Speech; ➢ Memory. • Perform examination of: ➢ Cranial nerves; ➢ Motor system and reflexes; ➢ Sensory system Crude touch, pain and temperature; ➢ Fine touch, pressure, vibration, joint position; ➢ Two-point localization and two-point discrimination Cerebellem
		KIDNEY AND URINARY TRACT
1.	**Diseases of Kidney and Urinary Tract**	• Discuss the etiology, clinical features, types, differential diagnosis, investigations, diagnosis, management and complications of the following diseases of kidney and urinary tract: ➢ Acute and Chronic Renal Failure; ➢ Nephrotic and Nephritic Syndrome; ➢ UTI;

		➢ Electrolytes Imbalances.
ENDOCRINE SYSTEM		
1.	**Diseases of Endocrine System:**	• Discuss the etiology, clinical features, types, differential diagnosis, investigations, diagnosis, management and complications of the followingdiseases ➢ Pituitary Diseases; ➢ -Thyroid Disorders; ➢ -Parathyroid Disorders; ➢ -Adrenal Disorders; ➢ -Diabetes Mellitus; ➢ -Vitamin Deficiencies (Vit. B, C, D).
INFECTIOUS DISEASE		
1.	**InfectiousDiseases**	• Discuss the sources, etiology, clinical features, types, differential diagnosis, investigations, diagnosis, managementand complications of the following Infectious diseases: ➢ Tetanus; ➢ Malaria; ➢ Viral Fevers (Dengue, Chikungynea); ➢ HIV/Mumps; ➢ Sepsis; ➢ Diphtheria; ➢ Hospital Acquired Infections (Hepatitis, Pneumonia, Candidiasis).
	BLOOD	
1.	**Blood Disorders**	• Discuss the sources, etiology, clinical features, types, differential diagnosis, investigations, diagnosis, management and complicationsof the following blood disorders: ➢ Anemia; ➢ Leukemia; ➢ Lymphoma. ➢ Thrombocytopenia; ➢ Bleeding disorders/Anti-coagulants; ➢ Blood products and transfusions; ➢ Shock (anaphylactic, cardiogenic, hypovolemic). • Discuss the following: Blood products and transfusion; • Anticoagulant and antithrombotic therapy; • Haematopoietic stem cell transplant
RHEUMATOLOGICAL AND BONE DISEASES		
	Diseases of joints and bones	• Discuss the sources, etiology, clinical features, types, differentialdiagnosis, investigations, diagnosis, management

1.		and complications of the following diseases of joints and bones: ➢ SLE; ➢ RA; ➢ Sero-negative Arthropathy; ➢ Osteoporosis/ Osteomalacia; ➢ Sjogren's syndrome.

GENERAL SURGERY

PRINCIPLES OF SURGERY

S/No.	Topic	Learning Objectives
1.	**Physiological Response to Surgical Trauma and Homeostasis**	• Discuss the classical concepts of homeostasis and the physicochemical and biochemical changes associated with it. • Enlist: ➢ Mediators of metabolic response to injury; ➢ Avoidable factors that compound the metabolicresponse to injury. • Describe changes in body composition. • Describe optimal perioperative care.
2.	**Wound and itsRepair**	• Describe the normal healing response. • Discuss the management of wounds. • List disorders of healing. • Categorize a variety of scars and their treatment
3.	**Pathophysiologyand Management of Shock**	• Discuss the pathophysiology and patterns of shock. • Prioritize the sequence of resuscitation. • Discuss the use of blood and blood products in shock.Describe the risks of blood transfusion.
4.	**Investigation and treatment of infection and parasitic infestation of surgical**	• Classify infections. • List the determining factors for the development of infection. • Discuss the local and systemic manifestations, signs and symptoms of bacterial and parasitic infections • Describe the principles of antimicrobial treatment. • Justify the choice of antibiotics and prophylaxis in various infections.
5.	**Haemorrhage, Blood Transfusion, and their implications**	• Define: ➢ Haemorrhage; ➢ Blood transfusion. • Discuss the types and pathophysiology of Haemorrhage. • List various blood and blood products used for transfusion. • Describe the preparation of blood products and theprocedure for transfusion.

6.	**Management of Acutely injured and critically ill patients**	• Define: ➢ Trauma; ➢ Aspiration pneumonia; ➢ Embolic phenomenon. • Describe types of injuries • Discuss: ➢ Primary and secondary survey; ➢ Resuscitation.
7.	**Principles in management of common Skin and Soft Tissue problems**	• Discuss the sign and symptoms of acutely injured andcritically ill patients. • Diagnose acutely injured and critically ill patients basedon history and clinical examination and investigations. • Formulate treatment and prevention plan for acutely injured and critically ill patients. • Define: ➢ Ulcers; ➢ Abscess; ➢ Sinus; ➢ Fistula; ➢ Swelling. ➢ Embedded foreign bodies and Minor injuries • Discuss types, signs and symptoms, and pathophysiologyof common skin and soft tissue problems. • List investigations. • Diagnose common skin and soft tissue problems basedon history and clinical examination, and investigations. • Justify management of common skin and soft tissue problem by antibiotics, surgery, or a combination of both
8.	**Principles of Anaesthesia**	• Define Anaesthesia. • Classify various types of anaesthesia. • Discuss the mechanism and stages of different anesthesia. • Manage patients that are scheduled for general anesthesia, including considerations for pre-operative fasting and airway assessment.
9.	**Nutrition of surgical patients**	pre-operative and post-operative malnutrition.Describe the balance of ytes. e the nutritional status of surgical patients.Manage the nutritional status of patients
EMERGENCIES		
1.	**Poly trauma with airway difficulty and circulatory instability**	• Discuss initial evaluation and intervention of patients with polytrauma and airway difficulty. • Discuss steps of intubation of trauma patient. • Describe simple airway strategy

2.	**Uncontrolled External Hemorrhage**	• Define uncontrolled external hemorrhage. • Discuss types of uncontrolled external hemorrhage. • Describe primary and secondary survey. • Manage patients with uncontrolled external hemorrhage
3.	**Patient in Hypovolemic or Septicemic Shock**	• Define: ➢ Hypovolemic; ➢ Septicaemic Shock. • Classify hypovolemic and septicaemic shock. • Differentiate between hypovolemic and septicemic shockbased on pathogenesis and signs and symptoms. • Discuss management of hypovolemic and septicemicshock.
4	Tension Pneumothorax	• Define Tension Pneumothorax. • Discuss pathophysiology, signs and symptoms andtreatment of Tension Pneumothorax
5.	**Cardiac Tamponade**	• Define Cardiac Tamponade. • Discuss pathophysiology, signs and symptoms andtreatment of cardiac tamponade
6.	**Unconscious patient due toHead Injury**	• Discuss signs, symptoms and management of anunconscious patient due to a head injury.
7.	**Gas Gangreneand Tetanus**	• Define: Gas Gangrene;Tetanus. • Discuss types of Gas Gangrene and Tetanus. Differentiate gas gangrene and tetanus based on signand symptoms and treatment.
8.	**Burns**	• Discuss the depth of burn, quantity of fluid to be given, techniques, and pathophysiology of burn. • Manage patients presenting to the department withburns.
	HEAD & NECK	
1.	Development abnormalities ofpalate, lip	• Discuss types and features of developmental abnormalities of palate and lip. • Manage developmental abnormalities of palate and lip
2	Principles of management ofHead Injuries and its complications	• List types of head injuries. • Manage patients presenting to the hospital with headinjuries. • Discuss complications of patients presenting with headinjuries
3	Diseases of Salivary Glands(Inflammation, Calculus, Tumors)	• Describe various diseases and abnormalities of salivaryglands. • Discuss clinical features and management of variousdiseases and abnormalities of salivary glands

4.	Neck lumps,including Lymphatic Thyroid, Parathyroid	• Discuss clinical features, abnormalities and managementof neck lumps, including: ➢ Lymphatics; ➢ Thyroid ➢ Parathyroid
	GASTRO-INTESTINAL TRACT	
1	Conditions Causing Acute Abdomen	• Discuss causes, clinical features, and management ofconditions causing acute abdomen.
2	Abdominal Wall lHernia	• Discuss clinical presentation and management of patients with abdominal wall hernia
	LIVER	
1	Obstructive Jaundice	• Discuss clinical features and management of ObstructiveJaundice
2	Hydated cyst	• Discuss clinical features and management of Hydated cyst.
	GALL BLADDER	
1	**Acute and chronic Cholecystitis**	• Discuss types, clinical features, and management ofacute and chronic cholecystitis
2	**Cholelithiasis and its Complications**	• Discuss clinical features, management andcomplications of Cholelithiasis
	SKIN AND SOFT TISSUE	
1	**Common benign and malignant skin lesions**	• Discuss causes, clinical features and management ofcommon benign and malignant skin lesions
2	**Infections**	• Discuss clinical features and management of: ➢ Wounds; ➢ Ulcers; ➢ Abscesses; ➢ Sinuses; ➢ Fistulae.
3	**Soft Tissue Lumps**	• Discuss clinical features and management of Soft TissueLumps.
	VASCULAR AND NERVE DISORDERS	
1	**Arterial Disorders (Aneurysm and Gangrene**	• Discuss causes, clinical features and management ofAneurysm and Gangrene
2	**Varicosities**	• Discuss causes, clinical features and management ofVaricosities
3	**Deep Venous Thrombosis**	• Discuss causes, sign and symptoms and managementof Deep venous thrombosis
4	**Peripheral nerve Injuries**	• Discuss causes, clinical features and management ofPeripheral nerve Injuries

SURGERY PLANNER			
Week number/ Dates	**Friday 10.00-11.30 am- Prof. Syed Razi Muhammad/ Dr. Jamshed Bashir**	**Friday 11.30-2 pm- Surgical Ward Dr. Jamshed Bashir (GP. A)/ B)**	**Friday 2:30 Pm to 4:00 Pm Small group/PBL**
1			
2 (24-Jan-2025)	Thyroid anatomy/Investigations	History taking	
3 (31-Jan-2025)	Non Toxic goite	History taking	
4 (07-Feb-2025)	Toxic goitre	General Physical Exam	
5 (14 -Feb 2025)	Thyroid tumours	General Physical Exam	
6 (21-Feb 2025)	Gas gangrene	Examination of swelling	
7 (28-Feb 2025)	Tuberculosis	Exam of Thyroid	
8 (07-March-2024)	Tetanus	Exam of Parotid	
9(14-March-2024)	Abscess	Exam of cervical LN	
10(21-March-2024)	Ulcer/Benign lesion of oral cavity	Exam of Ulcer/Sinus/wound	
11(28-March-2024)	Ca tongue	Exam of Neck	
12(04-April-2025)	Daycare surgery	X-Rays/Basic Surgical Investigations	
13(11-April-2025)	Branchial Cyst	Sutures	
14(18-April-2025)	Tracheostomy	Basic Surgical Instruments	
15(25-April-2025)	Metabolic response to injury	Workshop basic procedures (IV line, NG tube, Endotracheal tube, Urethral Catheter)	
16(02-May-2025)	Anatomy of the oral cavity	Review and feedback	
17(09-May-2025)	Oropharyngeal cancer		
18(16-May-2025)	Biopsy		
19(23-May-2025)	Trauma to face/mouth		
20(30-May-2025)	Nutrition		
21(06-Jun-2025)	Introduction to plastic/reconstructive surgery		
22(13-Jun-2025)	Cleft lip Palate		
23(20-Jun-2025)	Skin tumours		
24(27-Jun-2025)	Hypertrophic scars/Keloids		
25(04-July-2025)	Shock, Types & Management		
26(11-July-2025)	Ca tongue		
27(18-July-2025)	Goitre		
28(25-July-2025)	Thyroid Tumors		
29(01-Aug-2025)	Neck swellings		
30(08-Aug-2025)	Surgical Ethics		

DEPARTMENT OF COMMUNITY AND PREVENTIVE DENTISTRY
MUHAMMAD DENTAL COLLEGE
THIRD YEAR BDS PROGRAM
MODULAR CURRICULUM
BATCH-IV-2024-2025

	COMMUNITY DENTISTRY **MODULE-IV**	**Total HOURS**	**200**
S.no	**Learning Objectives**	**Teaching Strategies**	**Assessment Tool**
	At the end of the session, third year student would be able to		
1.	Define dental public health and its significance	IL, SGD	SEQs, Viva
2.	Compare relevance of public health to clinical practice	IL, SGD	SEQs
3.	Discuss criteria for public health problem	IL, SGD, PBL	BCQs, SEQs, PBL, Viva,
4.	Justify dental caries, periodontal disease and oral cancer as a public health problem	IL, SGD, PBL, FV	BCQs, SEQs, PBL, Viva
5.	Explain features of biomedical model of health	IL, SGD	SEQS
6.	Discuss Alma Ata Declaration along with its features	IL, SGD, FV	BCQs, SEQs, OSPE,Viva,
7.	Explain the salient features of Ottawa Charter	IL, SGD, PBL, FV	BCQs, SEQs, OSPE,Viva,PBL
8.	Describe core themes of dental public health	SGD	SEQs,Viva,
9.	Explain the implications of dental public health	SGD	SEQs, , Viva
10.	Describe the limitations of life style approach	SGD	BCQs, SEQs, Viva,
11.	Describe determinants of oral health	IL, SGD, PBL,	BCQs, SEQs, OSPE, PBL, Viva,
12.	Discuss the basic package of oral care (BPOC) with its examples	IL, SGD, PBL, FV, VD, lab skills	BCQs, SEQs, OSPE, PBL, Viva,
13.	Define health, disease, disability, illness & ill health	IL,	SEQs, Viva,
14.	Compare health with disease & illness	SGD	SEQs
15.	Discuss dimensions of health	IL, SGD	BCQs, SEQs, Viva,
16.	Understand different concepts and taxonomy of need	IL, SGD	BCQs, SEQs, Viva,
17.	Define inequalities in oral health	IL	BCQs, Viva

18.	Illustrate conceptual model of oral health	SGD	SEQs, OSPE
19.	Define risk	SGD	BCQs, Viva
20.	Describe principles of strategy design	IL, SGD	SEQs, Viva,
21.	Explain different strategy approaches with examples	IL, SGD, PBL,	BCQs, SEQs, Viva,.
22.	Define and classify epidemiological studies	IL, SGD	BCQs, SEQs, Viva,
23.	Describe the scope of epidemiology	SGD	SEQs, Viva,
24.	Define epidemiological triad and discuss its factors	IL, SGD	BCQs, SEQs, Viva,
25.	Compare different types of epidemiological studies in detail	IL,	BCQs, SEQs, OSPE, Viva,
26.	Discuss descriptive studies	IL,	BCQs, SEQs, VIVA,
27.	Discuss analytical studies	IL,	BCQs, SEQs, VIVA,
28.	Discuss and calculate different measures applied in epidemiology surveys	SGD, Practical	BCQs, SEQs, OSPE, Viva,
29.	Define screening and its aims	IL	BCQs, SEQs, Viva,
30.	Describe the principles and its type of test	IL	BCQs, SEQs, Viva,
31.	Define causation and association	SGD	SEQs, Viva,
32.	Explain Bradford Hill's Criteria	IL,	BCQs, SEQs, Viva,
33.	Describe etiology , natural history & epidemiology of dental caries and early childhood caries	IL, SGD, PBL, Practical, VD, OPD, FV	BCQs, SEQs, OSPE, PBL,Viva,
34.	Recognize etiology, natural history & epidemiology of periodontal disease	IL, SGD, PBL, Practical, VD, OPD, FV	BCQs, SEQs, OSPE, PBL,Viva,
35.	Discuss etiology, natural history & epidemiology of oral cancer	IL, SGD, PBL, Practical, VD, OPD, FV	BCQs, SEQs, OSPE, PBL,Viva,
36.	Explain etiology, natural history & epidemiology of dental fluorosis	IL, SGD, PBL, Practical, VD, OPD, FV	BCQs, SEQs, OSPE, PBL,Viva,
37.	Define index and its objective	IL,	SEQs, Viva
38.	State the properties of an ideal index	IL,	SEQs, Viva

39.	Describe the purpose and uses of an index	IL,	SEQs, Viva
40.	Enumerate and discuss different dental indices for oral diseases	SGD,	BCQs, SEQs, Viva,
41.	Discuss limitations of existing indices	IL,	SEQs, Viva,
42.	Identify different tooth notation systems	SGD, Practical	OSPE,
43.	Predict age on clinical pictures and study models	SGD, Practical	OSPE
44.	Demonstrate ergonomics in clinical practice	SGD, Practical	OSPE,
45.	Perform exercises on patients in the out patients department	SGD, OPD	OSPE
46.	Execute examination of institutionalized population like school children	FV,	OSPE
47.	Calculate different measures of oral diseases used in epidemiology	Practical	OSPE
48.	Calculate DMFT measurement	SGD, Practical, FV	OSPE
49.	Calculate CPITN and other periodontal measurements	SGD, Practical, FV	OSPE
50.	Predict the types of Fluorosis	SGD, Practical, FV	OSPE
51.	Topic selection	SGD, Practical	Assign
52.	Literature search	SGD, Practical	Assign
53.	Synopsis Draft	SGD, Practical	Assign, CP
GENERAL MEDICINE			
1.	Discuss the approach to a patient with chest pain & describe the investigations, management and complications of ischemic heart disease including acute coronary syndrome and myocardial infarction.	IL	BCQs/SEQs/OSCE
2.	Discuss the pathophysiology, clinical manifestations and management of different types of heart failure.	IL	BCQs/SEQs/OSCE
3.	Diagnose the of normal ECG, arrhythmias & MI	IL/SGD	BCQs/SEQs/OSCE
4.	Discuss the approach to a patient with primary and secondary hypertension with its investigations & management.	IL	BCQs/SEQs/OSCE
5.	Discuss and describe the Valvular Heart Diseases & its management.	IL	BCQs/SEQs/OSCE
6.	Describe the usual presentations of rheumatic fever and infective endocarditis	IL/ SGD	BCQs/SEQs/OSCE
7.	Describe in detail the pathogenesis, clinical features, evaluation and treatment plan for asthma.	IL	BCQs/SEQs/OSCE

8.	Discuss in detail the pathogenesis, clinical features, evaluation and treatment plan for COPD.	IL	BCQs/SEQs/OSCE
9.	Define TYPE 1 And TYPE 2 respiratory failure and understand the causes.	IL	BCQs/SEQs/OSCE
10.	Assess the benefits and hazards of long term oxygen therapy.	IL	BCQs/SEQs/OSCE
11.	Differentiate between community acquired and hospital acquired pneumonia, assessment of severity and its management.	IL	BCQs/SEQs/OSCE
12.	Discuss the clinical manifestations, evaluation and investigation of pulmonary thromboembolism.	IL	BCQs/SEQs/OSCE
13.	Discuss the pathogenesis, etiology, clinical picture and management of Pleural effusion and pneumothorax	IL	BCQs/SEQs/OSCE
14.	Describe in detail the etiology, pathogenesis, clinical features, diagnostic tests, and treatment of Tuberculosis.	IL/SGD	BCQs/SEQs/OSCE
15.	Describe the etiology, pathogenesis, clinical features, diagnostic tests, and treatment of Nephritic syndrome	IL	BCQs/SEQs/OSCE
16.	Discuss the etiology, pathogenesis, clinical features, diagnostic tests, and treatment of acute renal failure	IL	BCQs/SEQs/OSCE
17.	Define Urinary tract infections along with their evaluation and treatment	IL	BCQs/SEQs/OSCE
18.	Discuss the etiology, pathogenesis, clinical features, diagnostic tests, and treatment of chronic renal failure	IL	BCQs/SEQs/OSCE
19.	Describe the clinical features, diagnostic tests, and treatment of post streptococcal glomerulonephritis	IL	BCQs/SEQs/OSCE
20.	Understands the relationship between the various clinical presentations of intrinsic renal disease and their underlying cause.	IL/ SGD	BCQs/SEQs/OSCE
21.	Describe the etiology, pathogenesis, clinical features, diagnostic tests, and treatment of Nephrotic syndrome	IL	BCQs/SEQs/OSCE
22.	Discuss the evaluation and treatment of folic acid, Vitamin A, B1, B2 and B12 deficiency	IL	BCQs/SEQs/OSCE
23.	Understand the basis of metabolic acidosis and lactic acidosis.	IL	BCQs/SEQs/OSCE
24.	Discuss the approach and management of dehydration and shock.	IL	BCQs/SEQs/OSCE
25.	Discuss the approach to diagnose and manage electrolyte imbalance.	IL/ SGD	BCQs/SEQs/OSCE

TABLE OF SPECIFICATION PERIODONTOLOGY

TOPICS	BCQs	SEQs
Cross contamination and cross-infection control protocol		1
The Anatomy, structure and functions of Periodontal Tissues/The normal periodontium	1	
Oral Bio film and Calculus	1	1
Periodontal microorganism		
Pathogenesis of Plaque associated Periodontal disease		
Etiology and susceptibility in Periodontal Disease -Local risk factors.	1	1
Etiology and susceptibility in Periodontal Disease -Systemic risk factors for periodontal diseases		
Instruments use in periodontal therapy-classification	1	
Instruments use in periodontal therapy-handling, grasping, finger rests, maintenance	1	
Chair position, patient and dentist position-ergonomics	1	
Identification and diagnosis of periodontal diseases in general dental practice- Basic Periodontal Examination (BPE)	1	
Record of periodontal Examination/periodontal charting		
Radiographic aids in the diagnosis of periodontal disease	1	
Initial Periodontal Therapy/non-surgical periodontal therapy in general dental practice- Oral hygiene Motivations for plaque control and periodontal care	1	1
Initial Periodontal Therapy: Mechanical and chemical supra-gingival plaque control,		
Sonic and ultrasonic scaling techniques and methods	1	
Subgingival scaling, root planning, and curettage		
Local delivery of antibiotics	1	
Systemic Chemotherapeutic Agents		
Maintenance in Periodontal therapy.		
Gingivitis – Clinical features	1	1
Acute gingival infections	1	
Desquamative gingivitis		
Gingival enlargement	1	
Gingival recession	1	
Gingival diseases in childhood	1	
The periodontal pocket		
Radiographic Examination of Bone loss, pattern of Bone loss, and Periodontal pockets	1	
Chronic Periodontitis		
Aggressive Periodontitis	1	
Necrotizing Periodontal disease	1	
Periodontal abscess	1	
Halitosis/Breath Malodor causes and management	1	
periodontal diseases in female patient	1	
Restorative and periodontal interrelationship	1	
Endodontics and Periodontics interrelationship	1	
Orthodontics and Periodontics interrelationship	1	
Periodontal disease as a risk for systemic disease	1	
Periodontal treatment of medically compromised patients		
Treatment of periodontal emergencies		

General principle of periodontal surgery		1
Periodontal Pocket Irradiation/periodontal flap technique for pocket therapy	1	
Periodontal surgical therapy-periodontal flap surgery	1	
Periodontal surgical therapy- Periodontal surgical technique (gingival curettage, gingivectomy)		
Periodontal dressing	1	
Treatment of Gingival enlargement	1	
Periodontal plastic and aesthetic surgery/Muco-gingival Therapy/ -introduction		1
Periodontal plastic and aesthetic surgery- therapy to correct marginal tissue recession –flap procedures		
Periodontal plastic and aesthetic surgery- therapy to correct marginal tissue recession – Grafts		
Periodontal plastic and aesthetic surgery- Therapy to Correct Excessive Gingival Display -Surgical crown lengthening		
Periodontal plastic and aesthetic surgery- Frenectomy and Frenotomy	1	1
Periodontal Regenerative and Reconstructive Therapy- Introduction	1	
Periodontal Regenerative and Reconstructive Therapy-Flap Techniques		
Periodontal Regenerative and Reconstructive Therapy Ridge Augmentation Procedures	1	
Treatment of Furcation Involved teeth	1	
Supportive periodontal therapy/Maintenance in periodontal surgical therapy	1	
Trauma from occlusion/periodontal response to external forces		
Periodontal splinting		
TOTAL	35	08

CLINICAL SUPERVISION SCHEDULE OF ORAL MEDICINE AND DIAGNOSIS MODULE

Day	Task	Name of Facilitator
WEEK 1: HISTORY & CLINICAL EXAMINATION (H&E)		
1	• Orientation of Dental Unit • Introduction of History form • Importance of History taking • Demonstration on history taking • Practice on patients using H&E proforma	Dr. Asma Anwer
2	• Introduction of Clinical Examination form • Importance of Clinical Examination & its sequence • Demonstration on Clinical Examination • Practice on patients using H&E proforma	Dr. M Aqeel Aslam
WEEK 2: INVESTIGATIONS		
1	• Requirements & Importance of Investigations • Types of Investigations • Interpretation of various blood investigations • Practice on patients using H&E proforma	Dr. M Aqeel Aslam
2	• Introduction to periapical & OPG radiographs • Explanation of terms of Radiolucency & Radiopacity • Structures notices in radiograph • Practice on patients using H&E proforma	Dr. Fatima
WEEK 3: DIAGNOSIS & FACIAL PAIN		
1	• Introduction, Explanation and importance of terms Differential diagnosis, Provisional diagnosis and Definitive diagnosis • Road map for establishing Definitive diagnosis • Practice on patients using H&E proforma	Dr. M Aqeel Aslam
2	• Causes of Odontogenic & Non-odontogenic pain • Management of handling patients with pain • Practice on patients using H&E proforma	Dr. Sajid Ali
WEEK 4: FACIAL SWELLING & ULCERS		
1	• Introduction to facial asymmetry • Types, causes and management of facial swelling • Practice on patients using H&E proforma	Dr. Asma Anwar
2	• Introduction to Oral ulceration • Types, causes and management of Oral ulceration	Dr. Sajid Ali

	• Management of Premalignant and Malignant Lesions • Practice on patients using H&E proforma	
WEEK 5: LYMPHATICS & TMJ		
1	• Discuss Lymphatic system and its importance • Discuss various causes of Cervical Lymphadenopathy • Examination of Cervical lymph nodes • Practice on patients using H&E proforma	Dr. Asma Anwar
2	• Discuss normal mouth opening and its importance • Discuss causes and management of Trismus • Examination of TMJ and its muscles • Practice on patients using H&E proforma	Dr. Narmeen Irfan
WEEK 6: FACIAL NEUROSENSORY		
1	• Discuss Neurosensory supply of face • Discuss Neurosensory supply of Oral Cavity • Discuss the local anesthesia utilization • Practice on patients using H&E proforma	Dr. M Aqeel Aslam
2	• Examination of Facial nerve • Examination of the Trigeminal nerve • Practice on patients using H&E proforma	Dr. Sajid Ali
WEEK 7: ASSESSMENT		

CLINICAL SUPERVISION SCHEDULE OF OPERATIVE MODULE

WEEK 1: ORIENTATION, INFECTION CONTROL PROTOCOL, DENTAL CARIES, INSTRUMENTS USED IN OPERATIVE DENTISTRY		
Day	**Task**	**Name of Facilitator**
1	Orientation regarding OPD tasks and student armamentarium Demonstration on Infection Control Protocol & Disposal of Waste, History Taking Performance of history taking by students	Dr.Shuja Aslam
2	Demonstration on Clinical Examination, Dental Caries Detection, ICDAS Coding of Dental Caries Practice by students	Dr.Asma
3	Instruments Identification & Clinical Handling	Dr.Priyanka
4	Dental Caries - Risk Assessment Practice by students	Dr.Asma
5	Orientation regarding OPD tasks and student armamentarium Demonstration on Infection Control Protocol & Disposal of Waste, History Taking Practice of history taking by students	Dr.Shuja Aslam
WEEK 2: **PATIENT COUNSELING, DENTAL CARIES PREVENTION, FORMULATION OF PROBLEM LIST AND TREATMENT PLAN IN SEQUENCE, CHAIR POSITIONING, LINER AND BASE MATERIALS**		
Day	**Task**	**Name of Facilitator**
1	Patient Counseling & Communication for Dental Caries Prevention Practice	Dr. Asad Tareen
2	Formulation of Problem List & Treatment Plan in Sequence Practice	Dr.Shuja Aslam
3	Patient & Operator Position for Operative Dentistry Procedure Practice	Dr.Asma
4	Clinical Handling, & Application of Liner & Base Materials Practice	Dr. Saima
WEEK 3: **CLASS 1 AND 2 AMALGAM CAVITY PREPARATION AND RESTORATION, RADIOGRAPH TAKING, MATRIX AND WEDGE PLACEMENT**		
Day	**Task**	**Name of Facilitator**
1	Demonstration on Class I Amalgam Cavity Preparation & Restoration Practice	Dr. Asma

2	Demonstration on Class II Amalgam Cavity Preparation & Restoration Practice	Dr.Shuja Aslam
3	Technical & Clinical Competency in Taking Radiograph for Dental Caries Practice	Dr.Priyanka
4	Matrix Application & Wedge Placement (Tofflemire, Ivory, & Sectional Matrix) Practice	Dr. Saima
WEEK 4: RUBBER DAM APPLICATION, RETRACTION CORD AND OTHER METHODS OF ISOLATION,CLASS 1 AND 2 COMPOSITE RESTORATIONS		
Day	**Task**	**Name of Facilitator**
1	Demonstration on Rubber Dam Application Practice	Dr.Asma
2	Demonstration on use of Retraction Clamp, Retraction Cord & Other Methods for Access & Isolation of Class V Cavity Practice	Dr. Priyanka
3	Demonstration on Class I Composite Practice	Dr. Asma
4	Demonstration on Class II Composite Practice	Dr.Saima
WEEK 5: FINISHING AND POLISHING OF COMPOSITE RESTORATION, CLASS 3,4, AND 5 COMPOSITE CAVITY PREPARATION AND RESTORATION		
Day	**Task**	**Name of Facilitator**
1	Demonstration on finishing & polishing of composite restoration Practice	Dr.Asad Tareen
2	Demonstration on class III & class IV Cavity Preparation Practice	Dr. Asma
3	Demonstration on composite Restoration with Incremental Technique Practice	Dr. Shuja Aslam
4	Demonstration on class V cavity preparation & restoration Practice	Dr.Saima
WEEK 6: CLASS 6 CAVITY PREPARATION AND RESTORATION,PIT AND FISSURE SEALANTS,EVALUATION OF FAULTS IN RESTORATIONS AND ITS MANAGEMENT		
Day	**Task**	**Name of Facilitator**
1	Class VI Cavity Preparation & Restoration Practice	Dr. Saima
2	Technique for Pits & Fissure Sealant Application Practice	Dr. Priyanka
3	Clinical & Radiographic Evaluation of Faults in Dental Restorations & It's Management Practice	Dr. Asma

4	Completion and Signing of log books	Dr.Shuja Aslam and Dr.Asad Tareen
WEEK 7: PSYCHOMOTOR AND ASSESSMENT		
Day	**Task**	**Name of Facilitator**
1	Performing endodontics on patients	Dr.Saima
2	Performing endodontic on patients	Dr. Asma
3	Completion and signing of logbooks	Dr. Shuja Aslam and Dr.Asad Tareen
4	Presentations	Dr. Asad Tareen
5	Posting test	Dr. Shuja Aslam and Dr. Asad Tareen

LEARNING RESOURCES THIRD YEAR BDS

RECOMMENDED BOOKS THIRD YEAR BDS		
OMFS	**PROSTHODONTICS**	**OPERATIVE DENTISTRY**
○ Handbook of Local Anesthesia – Stanley F. Malamed, 7th Edition ○ Local Anesthesia in Dentistry – Geoffrey L. Howe, 5th Edition ○ Contemporary Oral and Maxillofacial Surgery – Hupp, Tucker & Ellis, 7th Edition ○ Textbook of Oral and Maxillofacial Surgery – S. M. Balaji, 1st Edition ○ Medical Emergencies in Dentistry – Scully	4. Lazo JS & Parker. Goodman and Gillman's The Pharmacological Basis of Therapeutics, 12th edition, McGraw-Hill Company, USA, 2006. 5. Katzung BG, Masters SB & Trevor AJ. Basic and Clinical Pharmacology-Katzung 14th edition TATA McGraw-Hill Education Private Ltd, New Delhi 2009. 6. Finkel R, Cubeddu L X, Clark MA, Harvey R &Champe P. Lippincott's Illustrated Reviews Pharmacology. 7th edition, Wolters Kluwer-Lippincott Williams & Wilkins New Delhi 2009.	1. Joseph R Evans John H Wilke. Atlas of Operative Dentistry: Preclinical and clinical procedures. Quintessence Books Publishing Co. 2. Richard L Kahn, Pinkerton RJ, Kagihara LE. Fundamentals of Preclinical Operative Dentistry. 3. The Art & Science of Operative Dentistry by Sturdurant. 6. Pickardards Manual of Operative Dentistry by EAM Kidd. 7. Fundamentals of Operative Dentistry by Schwartz 8. Dental Restorative Materials – Craig 9. Textbook of Operative Dentistry by Vimal K Sikri

RECOMMENDED BOOKS THIRD YEAR BDS			
PERIODONTOLOGY	**ORAL MEDICINE**	**GENERAL MEDICINE**	**GENERAL SURGERY**
1. Neman and Carranza's Clinical Periodontology, 13th edition. 2. Linda's Clinical Periodontology and Implant Dentistry	• William R.Tyldesley, Oral Medicine, 5th Edition • Lester W. Burket, Oral Medicine, 11th Edition • Roderick A.Cawson, Oral Medicine, 8th Edition • Crispian Scully, Oral Medicine, 3rd Editio	1. Parveen Kumar, Kumar and Clark's Clinical Medicine, 8th Edition 2. Maxine A Papadakis, Current Medical Diagnosis and Treatment, Edition 2016 8th Edition	1. 1. Short Surgery Practice by Bailey & Love. 27th Edition 2. An Introduction to the Symptoms & Signs of Surgical Diseases by Norman S Bros 3. Manual of Clinical Surgery by S. Das
RECOMMENDED E-BOOKS THIRD YEAR BDS			
1. Clinical periodontology Implant Dentistry by Lindhe	1. Text Book of Oral Medicine ,Oral Diagnosis and Oral Radiology by Ongole	1. Atlas of Oral Microbiology by Zhou 2. Oral Pathology Clinical Pathologic Correlation by Regezi 3. Oral Pathology by Soames, 4th edition. 4. Oral Radiology by Eric Waites	

LEARNING RESOURCES

DEPARTMENT OF COMMUNITY & PREVENTIVE DENTISTRY

1. Burt, B. &Eklund, S. (2005) Dentistry, Dental Practice & The Community. 6th ed. Saunders
2. SS Hiremith, (2009), textbook of Preventive and Community Dentistry
3. Daly B, Watt R, Batchelor P & Treasure E (2013) Essential Dental Public Health, Oxford University Press.
4. Smeeton Nigel (2012) Dental Statistics Made Easy 2nd edition Radcliffe Publication
5. Essential of Preventive and Community Dentistry Soben Peter (Latest Edition)
6. Text Book of Preventive and Community Dentistry Joseph John (Latest Edition

PROGRAM INTENDED LEARNING OUTCOMES OF FINAL YEAR BDS

MODULE: I-OPERATIVE DENTISTRY	
Terminal Objectives	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. ▪ Recognize patients with special care and perform dental emergencies, having good communication skills. ▪ Engage in research activity aimed at improving the quality of health care, including behavior modification of individuals and the community for a quality life ▪ Elicit professional skills while providing patient-centered care by a relevant and comprehensive physical and dental examination. ▪ Commit to lifelong learning to keep up to date with developments in dental practice and trends in disease at the population level by strong leadership and management skills. ▪ To exhibit ethical patient-centered care based on integrity, humility, social accountability and high ethical values of this sacred profession
Rationale	Teaching Endodontics and Operative Dentistry in the final year of BDS equips students with essential clinical skills needed for independent dental practice. These subjects develop competence in diagnosing and restoring diseased teeth, managing dental pain, and performing root canal treatments with confidence. Students learn to apply evidence-based techniques, select appropriate materials, and prioritize patient-centered care. Training in these areas strengthens critical thinking, enhances manual dexterity, and prepares graduates to handle common restorative and endodontic challenges encountered in daily practice. By mastering these skills, future dentists are better prepared to deliver safe, effective, and comprehensive oral healthcare.

S.no	Learning Objectives: At the end of the module, students should be able to:	Teaching Strategies	Assessment Tool
1.	Define Endodontics	IL	BCQs/VIVA
2.	Memorize Aims of Endodontics	IL	BCQs
3.	Identify Anatomy of the root canal system	IL	OSCE
4.	Review the dental Pulpal System	IL/SGD	BCQs/SEQs
5.	Know the cells and extracellular components of the dental pulp	IL	BCQs
6.	Debate the blood vessels, lymphatic system and Innervations of dental pulp	IL	BCQs
7.	Discuss the theories of dentine hypersensitivity	IL/SGD	SEQs
8.	Recognize the age changes in the dental pulp	IL	BCQs
9.	Revise the function of the dental pulp	IL/SGD	BCQs

10.	Illustrate various canal configurations	IL/SGD	OSCE
11.	Understand the periapical tissues	IL	BCQs
12.	Debate Iatrogenic Effects on the dental pulp	IL/SGD	BCQs/SEQs/OSCE
13.	Manage how to protect the Dental pulp	IL/CR/CBL	BCQs/SEQs/ VIVA
14.	Plan Vital Pulp Therapies	IL/CR	SEQs/OSCE
15.	Perform Step-wise excavation	IL/CR	BCQs/SEQs/OSCE
16.	Execute Direct Pulp Capping	IL/CR	SEQs/OSCE
17.	Propose Pulpotomy (partial and complete)	IL/CR	SEQs/OSCE
18.	Understand Apexogensis	IL/CR/CBL	SEQs/OSCE
19.	Discuss the procedure of Apexification	IL/CR/CBL	SEQs/OSCE
20.	Describe the types of endodontic infection	IL/SGD	BCQs/SEQs
21.	Relate the route of entry of microorganisms to the pulpal infection	IL/SGD	BCQs/ VIVA
22.	Name the microorganisms associated with pulpal and periradicular diseases	IL	BCQs/SEQs /VIVA
23.	Explain the development of pulpal pathosis	IL	BCQs
24.	Differentiate between pulp diseases and their clinical features	IL/SGD/CR	BCQs/SEQs/OSCE
25.	Know etiology of reversible and irreversible pulpitis	IL/SGD	BCQs/SEQs/VIVA
26.	Perform management of reversible and irreversible pulpitis	IL/CR	BCQs/SEQs/OSCE
27.	Recognize the pulp polyp	IL/CR	BCQs/SEQs/OSCE
28.	Classify Periapical Lesions of pulpal origin	IL/SGD	BCQs/SEQs/OSCE
29.	Explain etiology, sign symptoms and management of symptomatic apical periodontitis	IL/SGD	BCQs/SEQs/OSCE
30.	Discuss clinical features and management of asymptomatic apical periodontitis	IL/SGD	BCQs/SEQs/OSCE
31.	Define Condensing Osteitis	IL/SGD	BCQs
32.	Differentiate between acute apical abscess and chronic apical abscess	IL/SGD	BCQs/SEQs/OSCE
33.	Relate primary endodontic and secondary periodontal lesion	IL/CR	BCQs/SEQs/OSCE
34.	Know primary periodontal lesion and secondary endodontic lesion	IL/CR	BCQs/SEQs/OSCE
35.	Report the healing of periapical lesions after root canal treatment	IL/CR	BCQs

36.	Practice diagnosis for pulpal & periapical infection	CR	BCQs/OSCE
37.	Speak the correct questions about history and symptoms of the present complaint	CR	OSCE /VIVA
38.	Apply methods for Extraoral & Intraoral examination	CR	OSCE /VIVA
39.	Perform clinical tests to check pulp and periapical status	CR	OSCE
40.	Interpret Radiographic findings for diagnosis	CR/SGD	BCQs/OSCE
41.	Formulate treatment plan for endodontic emergencies	IL/CR/SGD	BCQs/OSCE
42.	Identify endodontic instruments	CR/SGD	BCQs/OSCE
43.	Express importance of endodontic radiology	IL/CR	BCQs/OSCE
44.	List components of X-ray film packet	IL/CR	BCQs/OSCE
45.	Revise principle of ALARA	IL/CR/SGD	BCQs/SEQs/OSCE
46.	Restate indications of Periapical radiograph	IL/CR	BCQs/SEQs
47.	Demonstrate and apply positioning technique of periapical radiograph	CR	BCQs/OSCE
48.	Compare paralleling and bisecting angle technique	IL/SGD	BCQs/OSCE
49.	Use SLOB rule	IL/SGD	BCQs/OSCE
50.	Recognize the importance of digital radiography	IL/SGD	BCQs
51.	Apply techniques of local anesthesia (Infiltration & Block anesthesia)	CR	BCQs/SEQs/OSCE
52.	Implement technique of supplemental anesthesia including Intraosseous, Intraligamentary, Intrapulpal	IL/CR	BCQs/SEQs/OSCE
53.	Practice principal of Isolation in endodontic	Skill Lab/CR	OSCE
54.	Identify objectives of straight line access preparation in both anteriors and posteriors teeth	IL/SGD/CR	BCQs/ VIVA
55.	Describe the sequences of operations to start access preparations on various teeth	IL/SGD/CR	BCQs/ VIVA
56.	Demonstrate the location of each canal orifice	IL/SGD/CR	BCQs/OSCE
57.	Perform the pulpectomy	IL/SGD/CR	BCQs/OSCE
58.	Establish the working length of the root canals	IL/SGD/CR	BCQs/OSCE
59.	Explain cleaning and shaping of root canals	IL/SGD/CR	BCQs/SEQs/OSCE
60.	Differentiate between step-back and crown-down techniques of canal preparation	IL/SGD/CR	BCQs/SEQs/OSCE
61.	Know the Irrigants use during cleaning and shaping	IL/SGD/CR	BCQs/SEQs/ VIVA
62.	Execute passive step-back, balanced force and Ni-ti rotary techniques of canal preparation	IL/CR	BCQs/SEQs

63.	Quantify the criteria for evaluating cleaning and shaping	IL/SGD/CR	BCQs/SEQs
64.	Understands the objectives of intracanal medicaments in root canal treatment	IL/SGD/CR	BCQs/SEQs/ VIVA
65.	Perform the use of intracanal medicaments	IL/SGD/CR	BCQs/SEQs
66.	Apply temporary restorations to seal the access cavity	IL/SGD/CR	SEQs
67.	Know when to obturate the canal	IL/SGD/CR	BCQs
68.	Write obturation and sealer materials	IL/SGD	BCQs/SEQs
69.	Perform different techniques of obturation (lateral condensation, vertical compaction)	IL/CR	BCQs/SEQs/ OSCE
70.	Execute restoration of endodontically treated teeth	IL/CR	BCQs /VIVA
71.	Recognize Procedural Accidents during root canal treatment	IL/CBL	BCQs/SEQs/OSCE
72.	Memorize Indications of retreatment in failed endodontic tooth	IL	BCQs/SEQs
73.	Execute procedure for Retreatment	IL	BCQs/SEQs/ VIVA
74.	Describe indications and contraindications of periapical surgery	IL	BCQs/SEQs
75.	Perform procedures involved in periapical surgery	IL	BCQs/SEQs
76.	Differentiate between Root amputation, Hemisection and Bicuspidization	IL	BCQs/SEQs/OSCE
77.	Evaluate Endodontic Outcomes	IL	BCQs
78.	Categories longitudinal tooth fractures	IL	BCQs/SEQs
79	Perform Diagnosis of longitudinal tooth fractures	IL	BCQs/SEQs/OSCE
80	Plan management of longitudinal tooth fractures	IL	BCQs/SEQs/OSCE
81	Define Dental Caries	IL	BCQs (one best)
82	Recall carious lesions according to GV. Black	IL	BCQs(one best)
83	Memorize Graham Mount Classification	IL	BCQs/SEQs
84	Debate causes of dental caries	IL/CBL	BCQs/SEQs
85	Summarize caries risk factors	IL/CBL	BCQs/ VIVA
86	Classify Dental caries by ICDAS	IL/CBL	BCQs/SEQs
87	Perform clinical examination and diagnosis of dental caries	IL/SGD/ CBL	OSCE
88	Know new tools for caries detection	IL	BCQs/SEQs
89	Plan risk-based caries management	IL/SGD	BCQs/SEQs
90	Explain preventive treatments for dental caries	IL/CBL	BCQs/SEQs/ VIVA

91	Apply noninvasive treatments for dental caries	IL/CBL	BCQs/SEQs/ VIVA
92	Discuss the risk factors for root caries	IL	SEQs
93	Apply preventive and restorative treatment for root caries	IL/CR	SEQs
94	Use NICE guidelines for patient recall interval	IL	SEQs
95	Know the importance of dental record	IL	BCQs
96	Identify the Instruments used in restoration	CR	OSCE
97	Apply method of isolation in restorative dentistry	IL/SGD	OSCE
98	Review the composition of amalgam	IL	BCQs/SEQs
99	Establish the significance of gamma-2 phase	IL	BCQs/ VIVA
100	Know the advantages and disadvantages of amalgam	IL	BCQs/SEQs
101	Distinguish between different types of amalgam according to their composition and shape	IL	BCQs
102	Apply principles of cavity preparation for Class I, II,& V amalgam restorations	CR/SGD/CA	BCQs/SEQs /OSCE
103	Describe complex restorations for amalgam	IL	BCQs
104	Perform Nayyar core and compo core	IL/CR	BCQs /VIVA
105	Execute accessory means of retention	IL/CR	BCQs/ VIVA
106	Memorize significance of amalgam bonding	IL/CR	BCQs/SEQs
107	Differentiate between cavity liners, sealers and bases	IL/SGD	SEQs/OSCE/SC
108	Apply lining to protect the pulpal floor of the cavity	CR	OSCE
109	Explain different steps of amalgam placement	SGD/CR	OSCE/SC
110	Execute finishing and polishing of amalgam restorations	SGD/CR	BCQs/SEQs /OSCE/SC
111	Rewrite mercury hazards and describe its hygiene	IL/CR	SEQs
112	Discuss methods of Sterilization and Disinfection	IL/CR	BCQs/SEQs
113	Describe Adhesive Dentistry	IL	BCQs
114	State the Principles of Adhesion to enamel & dentine	IL	BCQs/SEQs
115	Explain the process of etching to enamel and dentine	IL	BCQs/SEQs/ OSCE
116	Enumerate the factors affecting adhesion to enamel and dentine	IL	SEQs/ VIVA
117	Classify bonding systems	IL	BCQs/SEQs
118	Argue dry and wet bonding	IL	BCQs/SEQs
119	Memorize composition of dental composites	IL	BCQs
120	Execute clinical steps for Class III & Class IV for resin composite restorations	IL/CR	BCQs/SEQs/ OSCE

121	Explain advantages & disadvantages of posterior composite as a restorative material	IL	BCQs/SEQs
122	Describe the indications of posterior composite	IL	BCQs/SEQs
123	Perform fissure sealant application	IL/CR/SGD	BCQs
124	Use of preventive resin restoration technique	IL/CR/SGD	BCQs/SEQs
125	Distinguish between fissure sealant and preventive resin restorations	IL	BCQs/SEQs/ VIVA
126	Perform placement of posterior composite restoration in Class I, II	IL/CR	OSCE
127	Establish tight proximal contact for posterior composite restoration	IL/CR	OSCE
128	Recognize the importance of C-factor	IL	BCQs/SEQs
129	Know how to decrease C-factor to improve longevity of composite restoration	IL/CR	BCQs/SEQs/ OSCE
130	Apply various matrix systems for Class II, III, IV	IL/Skill Lab	OSCE
131	Explain the principles behind bonded based and snow plough techniques	IL	BCQs/SEQs/ VIVA
132	Identify the instruments and materials used for finishing and polishing of composite restorations	IL/CR	OSCE
133	Perform finishing & polishing of composite fillings	IL/SGD/CR	OSCE
134	List the etiology of non-carious cervical lesions	IL	BCQs/SEQs
135	Use different restorative materials for non-carious cervical lesions	IL/CR	OSCE
136	State the causes of discoloration	IL	BCQs/SEQs
137	Enlist the Indications and contraindications of bleaching	IL	BCQs/SEQs
138	Know the mode of action of bleaching agent	IL	BCQs/SEQs
139	Plan bleaching of endodontically treated teeth	IL	BCQs/SEQs
140	Explain bleaching of vital teeth	IL	BCQs/SEQs
141	Factors affecting both the in-office and at-home bleaching	IL	BCQs/SEQs
142	Propose the procedure of micro abrasion and macroabrasion	IL	BCQs/SEQs/ OSCE
143	Write down the indications of veneers	IL	SEQs
144	Enlist materials used for veneers	IL	SEQs
145	Demonstrate tooth preparation for veneers	IL/CR	OSCE
146	Distinguish between inlay and on lay	IL	BCQs/SEQs
147	Perform tooth preparation of inlay and on lay	IL/CR	BCQs/SEQs/ OSCE
148	Execute cementation of inlay and on lay	IL	BCQs
149	Discuss the core materials	IL/CR	BCQs/SEQs

150	Discuss the indications of dental posts	IL/CR	BCQs/SEQs
151	Describe designs of dental posts and types	IL/CR	BCQs/SEQs/ OSCE/ VIVA
152	Perform preparation of the dental post in the canal	IL/CR	BCQs/SEQs/ OSCE
153	Execute cementation of post in the canal of tooth	IL/CR	BCQs/SEQs OSCE
154	Discuss mechanical and chemomechanical methods of fluid control	IL	BCQs/SEQs
155	Summarize steps of placement of the retraction cord	IL/CR	BCQs/SEQs
156	Recommend the use of CAD/CAM in dentistry	IL	BCQs/SEQs/ OSCE

S. No	**Objectives: At the end of the module, students should be able to:**	**Teaching strategy**	**Assessment tool**
	OPERATIVE		
1.	Apply behavior management strategies' to the pediatric patient in a dental practice	IL/CBL	BCQs/SEQs
2.	Know Pharmacological management of the anxious child	IL	BCQs/SEQs
3.	Demonstrate local anesthesia for Paediactric dentistry	IL/CR	OSCE
4.	Describe the pattern of caries in pre-school children	IL	BCQs/SEQs
5.	Understand assessment of caries risk factors in children	IL/CR	BCQs/ VIVA
6.	Explain the relationship between diet, plaque, saliva and caries	IL/CBL	BCQs/SEQs
7.	Perform Dental caries detection and diagnosis in pre-school children in dental OPD	IL/CR	BCQs/SEQs
8.	Recognize the importance of Diet counseling to the parent and the child	IL	BCQs/SEQs/ VIVA
9.	Discuss the prevention of dental caries	IL	BCQs/SEQs
10.	Describe the importance of Fluoride administration in caries control	IL	BCQs/SEQs
11.	Explain Mode of action of Fluoride	IL/CBL	BCQs/SEQs
12.	Know importance of Water fluoridation	IL	SEQs
13.	Prescribe Fluoride supplement to reduce caries	IL/CR	SEQs
14.	Apply Fluoride gel/ varnish as a preventive measure	IL	SEQs
15.	Apply fissure sealant	IL/SGD	OSCE
16.	Appreciate the importance of temporization in Paediactric patients with multiple caries lesions	IL/CR	BCQs/SEQs
17.	Apply operative procedure to restore the primary teeth when pulp is not involved	IL/CR	BCQs/SEQs
18.	Recognize the importance of pulp therapy in a primary dentition	IL/CR	BCQs/SEQs/O

			SCE
19.	Express medicaments used for pulpotomy in primary dentition	IL/CR	BCQs/SEQs/ VIVA
20.	Perform pulpotomy procedure in primary teeth	IL/CR	BCQs/SEQs/OSCE
21.	Discuss indication of Pulpectomy for primary teeth	CR/SGD	BCQs/SEQs/OSCE
22.	Demonstrate the procedure of pulpectomy in primary teeth	CR	BCQs/SEQs/OSCE
23.	Revise the application of fissure sealants and Preventive resin restoration in primary dentition	IL/CR	BCQs
24.	Know indications of Stainless steel crown	IL/CR	BCQs/SEQs
25.	Demonstrate procedure of stainless steel crown preparation	IL/CR	BCQs/SEQs
26.	Preform cementation of stainless steel crown	IL/CR	BCQs/SEQs
27.	Describe rational of Hall technique in primary teeth	IL/CR	BCQs/SEQs /VIVA
28.	Outline the use of adhesive coping	IL/CR	BCQs/SEQs
29.	Explain alternatives to conventional cavity preparation	IL	BCQs
30.	Understand use of lasers in dentistry	IL	BCQs
31.	Apply operative procedure to restore the permanent teeth in mixed dentition when pulp is not involved	IL/CR	BCQs/SEQs
32.	Recognize the aetiological factors of dental trauma	IL	BCQs/SEQs/ VIVA
33.	Classify the nature of dento-alveolar injuries	IL	BCQs/SEQs
34.	Recognize the importance of history (medical & dental) in traumatic injuries	IL/CR	BCQs/SEQs/VIVA
35.	Examine intra-oral, extra-oral tissue in case of dental trauma	IL/CR	BCQs/OSCE
36.	Describe radiographic and clinical features of the various injuries to the primary dentition	IL/CR	SEQs/OSCE
37.	Write the sequelae of traumatic injuries to the primary dentition	IL	BCQs/SEQs
38.	Know the management of complications in permanent dentition occur due to traumatic injuries to the primary dentition	IL/CR	BCQs/SEQs/OSCE
39.	Describe clinical and radiographic features of the traumatic injuries to the hard dental tissue and the pulp in permanent dentition	IL/CR	BCQs/ SEQs/OSCE
40.	Apply treatment options to manage traumatic injuries to the hard dental tissue and the pulp in permanent dentition	IL/CR	BCQs/SEQs/OSCE/ VIVA
41.	Use pulp therapy procedures to treat traumatic injuries	IL/CR	BCQs/SEQs/OSCE
42.	Differentiate between various Tooth luxations injuries	IL	BCQs/SEQs/ OSCE

43.	Explain clinical and radiographic features of luxation injuries	IL	BCQs/SEQs/ OSCE
44.	Mange Concussion, Subluxation Lateral luxation, and Extrusive luxation injuries	IL	BCQs/SEQs/OSCE
45.	Use different treatment modalities to manage Intrusive luxation injuries of various degree	IL	BCQs/SEQs/ OSCE
46.	Execute replantation procedure for Avulsion injuries	IL	BCQs/SEQs/OSCE
47.	Know types of splints use in Paediatric dentistry	IL	BCQs/SEQs/OSCE
48.	Apply different types of Splinting techniques	IL	BCQs/SEQs
49.	Differentiate between various types of resorption	IL/CR/SGD	BCQs/SEQs/
50.	Define root resorption and explain its types	IL	BCQs/SEQs
51.	Write clinical and radiographic features of External inflammatory root resorption	IL/CR/SGD	BCQs/SEQs/OSCE/ VIVA
52.	Know management of External inflammatory root resorption	IL	BCQs/SEQs/OSCE
53.	Describe diagnosis of cervical resorption	IL	BCQs/SEQs
54.	Recognize various types of invasive cervical resorption	IL	BCQs/SEQs/OSCE
55.	Perform management of invasive cervical resorption	IL	BCQs/SEQs/OSCE
56.	Identify radiographic features of internal root resorption	IL	BCQs/SEQs/OSCE
57.	Apply procedure to manage internal root resorption	IL	BCQs/SEQs/OSCE
58.	Write clinical and radiographic differences between external and internal root resorption	IL	BCQs/SEQs/OSCE
59.	Explain the process of replacement resorption	IL	BCQs /VIVA
60.	Know management of replacement root resorption	IL	BCQs
61.	Recognize various abnormalities of tooth size	IL	BCQs/SEQs
62.	Explain prevalence and clinical difference between Megadont and microdontia	IL	BCQs
63.	Examine accessory cusp abnormalities in tooth form	IL/CR	OSCE
64.	Execute management for accessory cusp	IL/CR	BCQs/SEQs/OSCE
65.	Differentiate between Invaginated and Evaginated teeth	IL/CR	BCQs/SEQs
66.	Apply management for Invaginated and Evaginated teeth	IL/CR	OSCE/ VIVA
67.	Appreciate abnormalities of root form	IL	BCQs
68.	Explain Taurodontism and its types	IL	BCQs/SEQs

69.	Debate the inherited anomalies of enamel	IL/CR	OSCE
70.	Discuss diagnose and management of Amelogenesis Imperfecta in primary and mixed dentition	IL/CR	OSCE
71.	Know clinical features of Molar-incisal hypo mineralization	IL	BCQs/SEQs
72.	Understand clinical problems of Molar-incisal hypo mineralization	IL/CR	BCQs/SEQs/OSCE
73.	Perform management of Molar-incisal hypomineralization in primary and mixed dentition	IL/CR	BCQs/SEQs/OSCE
74.	Describe the inherited anomalies of dentine	IL/CR	OSCE
75.	Express clinical and radiographic findings of Dentinogenesis Imperfecta	IL	BCQs/SEQs/OSCE
76.	Execute management for Dentinogenesis Imperfecta in primary, mixed and permanent dentition	IL	BCQs/SEQs/OSCE

MODULE: II-ORAL AND MAXILLOFACIAL SURGERY	
Terminal Objectives	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. ▪ Recognize patients with special care and perform dental emergencies, having good communication skills. ▪ Engage in research activity aimed at improving the quality of health care, including behavior modification of individuals and the community for a quality of life ▪ Elicit professional skills while providing patient-centered care by a relevant and comprehensive physical and dental examination. ▪ Commit to lifelong learning to keep up to date with developments in dental practice and trends in disease at the population level by strong leadership and management skills. ▪ To exhibit ethical patient-centered care based on integrity, humility, social accountability, and high ethical values of this sacred profession
Rationale	Teaching Oral and Maxillofacial Surgery in the final year of BDS prepares students to manage common surgical conditions of the oral cavity safely and effectively. It equips them with essential skills in tooth extractions, minor surgical procedures, infection control, and emergency management. Students learn to assess complex cases, understand surgical anatomy, and apply appropriate patient-management strategies. This training builds confidence, enhances decision-making, and ensures graduates can recognize conditions requiring specialist referral. By gaining practical and theoretical competence, future dentists are better prepared to provide safe, comprehensive care and handle surgical situations encountered in general dental practice.

S.no	Learning Objectives: At the end of the module, students should be able to:	Teaching Strategies	Assessment Tool
1.	Recall indications and contraindications of local anesthesia, general anesthesia and sedation	IL	BCQ
2.	Identify the role of conscious sedation in the field of Oral and Maxillofacial Surgery	IL	BCQ
3.	Enlist the complications associated with local and general anesthesia	IL	BCQ
4.	Recall Infiltration and Block techniques of Local anesthesia	IL/SGD/CR	OSCE
5.	Recall principles of flap design and incision	IL	BCQ/SEQ
6.	Recall the principles of suturing, types of sutures, advantages and disadvantages	IL/SGD	BCQ
7.	Interpret various hematological and radiological investigations	IL	BCQ
8.	List the instruments used in Oral & Maxillofacial surgery	IL/CR	BCQ/OSCE

9.	Take the history of patient at the chair side with relevant information, evaluation, assessment, diagnosis and treatment plan	IL/CR	SEQ/OSCE
10.	Identify and state the preventive measures for medical emergencies in Dental Office.	IL/CBL	BCQ/SEQ/CP
11.	Discuss the management of medical emergencies in dentistry	IL/CBL	BCQ/SEQ/CP
12.	Recall importance of sterilization and disinfection in Oral Surgery	IL	BCQ
13.	Tell the hazards of Cross-infection	IL	BCQ
14.	Apply personal barriers for prevention of cross infection	IL	BCQ
15.	Describe the principles of Exodontia	IL	BCQ/SEQ
16.	Identify complete armamentarium used in Oral and Maxillofacial Surgery and its dynamic	IL/CR	BCQ/OSCE
17.	Assess patient requiring Exodontia independently	IL/CR	BCQ
18.	Differentiate between simple and complex exodontia	IL	BCQ
19.	Recall the classification systems of Impacted Mandibular and Maxillary 3rd molar and maxillary canine	IL	SEQ
20.	Identify the complications of removal of Impacted teeth along with its indications and contraindications	IL	SEQ
21.	Enlist the dentoalveolar injuries and its management	IL	BCQ
22.	Identify the indications of Pre-prosthetic surgery and its role	IL	BCQ
23.	Describe Ridge augmentation and reduction (alveoloplasty) procedures	IL	BCQ
24.	Enumerate pre-prosthetic procedures commonly performed in maxilla and mandible	IL	BCQ/OSCE
25.	Know the principles of Endodontic surgery and relate periodontal consideration for oral surgery procedures	IL	BCQ
26.	Enumerate the indications of Endodontic Surgery	IL	BCQ
27.	Classify orofacial pain	IL/CBL	BCQ/SEQ
28.	Enumerate the causes of oro-facial pain	IL	BCQ
29	Formulate differential diagnosis of pain in the oral and maxillofacial region and devise management plan accordingly	IL/CBL	OSCE
30	Odontogenic Infection	IL	BCQ
31	Differentiate between abscess and cellulitis	IL/CR	BCQ/SEQ
32	Compare both specific and non-specific infections involving facial spaces	IL	BCQ/CQ
33	Enumerate the principles of management of Odontogenic Infection	IL	SEQ

34	Identify complex odontogenic infections	IL/CBL	BCQ/SEQ
35	State the management of Ludwig's angina	IL/CBL	SEQ
36	Identify potential spaces for spread of infection	IL	BCQ/CQ
37	Recall the importance of antibiotic in managing Oral infections	IL	BCQ
38	Discuss the treatment options with the patient like incision and drainage augmented with antibiotic therapy and follow ups	IL/SGD	BCQ
39	Evaluate clinical, imaging and laboratory findings associated with Oral & Maxillofacial pathology including mucosal and malignant lesions	IL	BCQ/CQ
40	Apply diagnostic and therapeutic options for the management of Oral infections and pathology	IL/SGD	OSCE
41	Diseases of Maxillary Sinus		
42	Identify Maxillary antrum diseases on the basis of clinical and radiographic findings.	IL	BCQ
43	Investigate maxillary antrum diseases via periapical and panoramic radiographs	IL	BCQ
44	Enlist management and complications of maxillary sinus that may occur during dentoalveolar surgical procedures like Oroantral Communication and Oroantral Fistula	IL/CR	BCQ
45	Salivary Gland Disorders		
46	Recall the anatomy of major salivary glands	IL	BCQ
47	Classify disorders of Salivary gland	IL	BCQ
48	Enumerate diagnostic tools used for detection of Salivary gland diseases	IL	BCQ/SEQ
49	Recall the diseases of Salivary Glands which comprises of sialolithiases, Mucocele, Ranula, Sialadenitis, Nectrotizing Sialometaplasia, Sjogren syndrome to develop differential diagnosis with treatment options	IL/CBL	BCQ/CQ
50	Identify the tumors of salivary glands both Benign and Malignant along with means of investigation, diagnosis and treatment plan	IL	BCQ/SEQ
51	Cyst and Tumors of the Jaw		
52	Define & classify cysts and tumors of the head and neck region.	IL	SEQ
53	Develop differential diagnosis for Oral & Maxillofacial pathology	IL	SEQ/OSCE
54	Enlist clinical, radiographic and laboratory investigations of various oral diseases along with oral manifestations of systemic diseases.	IL	SEQ
55	Enlist the histological and radiographic features of different cysts and tumors	IL	BCQ
56	Formulate differential diagnosis and devise management plan for removal of cysts and tumors	IL/CBL	BCQ/SEQ

	OPERATIVE/ OMFS / ORTHODONTICS/RADIOLOGY		
1	Dental Radiology		
2	Define Radiograph	IL/CR	BCQ
3	Enumerate various radiographs used in Dentistry	IL/CR	OSCE
4	Define & distinguish terminologies used in Dental radiology	IL/CR	BCQ
5	Use the terms radiopaque and radiolucent correctly	IL/CR	OSCE
6	Explain the principles of Imaging	IL	BCQ/CQ
7	Enumerate the components of X-ray units and X-ray tube	IL/CR	BCQ/CQ
8	Describe the factors influencing the size, shape and quality of the X-ray beam	IL/CR	BCQ/CQ
9	Differentiate between normal anatomical structures and artifacts	IL/CR	OSCE/CQ
10	Identify the basic components of Digital Imaging system	IL/CR	BCQ/CQ
11	Describe the Imaging principles and special terminologies associated with cone beam CT Imaging	IL/CR	BCQ
12	Enlist the advantages and disadvantages of cone beam CT & identify different axis	IL/CR	BCQ
13	Draw a flow chart showing sequence of steps involved in producing a radiograph from exposure to X-rays to mounting	CR	BCQ
14	Identify various intra-oral and extra-oral radiographic techniques used in OMFS, along with its use	IL/CR	BCQ/OSCE
15	Enlist the indications of different radiographs	IL	BCQ/OSCE
16	Identify the dental and skeletal structures in different radiographs	IL	OSCE
17	Identify the side effects of this diagnostic modality	IL	BCQ/CQ
18	Apply Principle of ALARA	IL/CR	BCQ
19	Demonstrate and apply positioning technique of periapical radiograph	CR	BCQ
20	Compare paralleling and bisecting angle technique	IL/CR	BCQ
21	Discuss indications of occlusal radiograph	IL	BCQ
22	Perform technique of occlusal radiograph	IL	BCQ
23	Demonstrate bitewing radiograph technique	CR	OSCE
24	Apply SLOB rule	IL	BCQ
25	Understand advantages of OPG	IL	BCQ
	OMFS		
26	Malignant Disorders		

27	Enumerate the potentially malignant disorders of the oral cavity along with its diagnosis and management	IL/CR	BCQ/OSCE
28	Recall and describe diagnostic and therapeutic treatment options for Oral & Maxillofacial pathology including biopsy techniques, surgery, chemotherapy and radiation.	IL/CR	BCQ
29	Learn to manage patients in Dental OPDs, undergoing radiation	IL	BCQ
30	Interpret the biopsy report and manage the patient accordingly	IL	SEQ
31	Maxillofacial Trauma		
32	Describe the technique and significance of Basic Life support and Advanced trauma life support in Head and Neck Trauma	IL	SEQ
33	Record history of the patient with trauma and examine clinically by carrying out investigations	IL/CR	SEQ/CP
34	Learn the basic principles of diagnosis and management of Dentoalveolar injuries.	IL	BCQ/SEQ
35	Examine and interpret types of facial fractures following first line of treatment keeping in consideration the complications that might occur	IL	BCQ/SEQ
36	Describe maxillofacial injuries in children and elderly	IL	BCQ
37	Investigate, diagnose and devise management of Mandibular fractures, Zygomatic complex fractures, Orbital trauma, midfacial injuries, Nasal, Naso-orbitoethmoidal and frontal sinus injuries	IL	SEQ
	OMFS / ORTHODONTICS		
1.	Enlist various Dentofacial deformities and syndromes of Orofacial complex	IL/CBL	BCQ/CP
2.	Describe basics of orthognathic surgery and its significance in correcting Dentofacial deformities	IL	BCQ/SEQ
3.	Enlist various orthognathic procedures	IL	BCQ
4.	Formulate treatment plan for management in patients with Oro-facial Cleft	IL/CBL	BCQ/SEQ
	OMFS		
5.	Recall the principles of reconstruction of various jaw deformities	IL	BCQ
6.	Temporomandibular Joint Disorders		
7.	Recall basic anatomy and physiology of the Temporomandibular Joint and the pathologies related to it, which may be both congenital and developmental.	IL	BCQ
8.	Evaluate TMJ pain and dysfunction by thorough history, physical examination, and radiographic assessment.	IL/CBL	BCQ/OSCE
9.	Classify Temporomandibular Joint Disorders	IL	SEQ
10.	Develop differential diagnosis for Temporomandibular joint disorders/diseases	IL/CBL	SEQ/CP

11.	Plan treatment options for TMJ diseases, non-surgical and surgical management	IL/CBL	SEQ
12.	Learn the basics of laser, gene and immunotherapy	IL	BCQ
13.	Forensic Dentistry		
14.	Define Forensic Dentistry.	IL	BCQ/CQ
15.	Predict the importance of dentistry in forensic.	IL	CQ
16.	Outline the significance of age, gender and ethnic determination for personal identification.	IL	CQ
17.	Analyze role of forensic dentistry in Mass disaster, Bite marks, Chelioscopy and Rugoscopy.	IL	CQ
18.	Interpret the role of DNA in primary and permanent dentition.	IL	CQ
19.	Ethics in Dentistry		
20.	Outline the significance of ethics in Dentistry.	IL	BCQ
21.	Enumerate the ethical principles that must be taken into consideration for practicing dentistry.	IL/SGD	BCQ
22.	Explain the terms, values and concepts that are often used in health care.	IL/SGD	BCQ
23.	Describe the difference between a problem and an ethical dilemma	IL/SGD	BCQ
24.	Analyze the role of autonomy in Ethics.	IL	BCQ
25.	Choose the principles or values which are present and important in clinical scenarios	IL	BCQ
26.	Determine the role of informed consent in clinical practice of Dentistry	IL/CR	BCQ

	MODULE: I-ORTHODONTICS	
	Terminal Objectives	▪ Demonstrate appropriate basic knowledge of medical and dental sciences. ▪ Evaluate the use of laboratory tests and imaging studies and interpret the results to arrive at clinical decision-making by critical thinking. ▪ Recognize patients with special care and perform dental emergencies, having good communication skills. ▪ Engage in research activity aimed at improving the quality of health care, including behavior modification of individuals and the community for a quality life ▪ Elicit professional skills while providing patient-centered care by a relevant and comprehensive physical and dental examination. ▪ Commit to lifelong learning to keep up to date with

		developments in dental practice and trends in disease at the population level by strong leadership and management skills. ▪ To exhibit ethical patient-centered care based on integrity, humility, social accountability and high ethical values of this sacred profession
	Rationale	Teaching Orthodontics in the final year of BDS helps students understand the diagnosis, prevention, and management of malocclusions, which are essential for comprehensive patient care. It enables future dentists to identify growth abnormalities, plan basic interceptive treatments, and make timely referrals for advanced care. Students learn to assess facial aesthetics, occlusion, and functional issues, improving their ability to provide holistic dental evaluations. Orthodontic training also enhances communication skills, as dentists must explain treatment options clearly to patients. By gaining foundational orthodontic knowledge, graduates are better prepared to support long-term oral health and collaborate effectively within multidisciplinary dental teams.

S. No	Learning Objectives: At the end of the module, students should be able to:	Teaching strategy	Assessment tool
1.	Identify the different orthodontic terms	IL	OSCE
2.	Use the terms in the diagnosis and problem list of a case	IL/ CR	CQ /OSCE
3.	Relate which types of malocclusions are treatable with Orthodontic treatment	IL/ CBL/ CR	SEQ/OSCE
4.	Recall the normal anatomical structures of the head and face	IL	CQ
5.	Quote the importance of studying growth	IL	SEQ
6.	Quote different types of bone growth	IL	SEQ / BCQ
7.	State the reasons for different types of bone growth	IL	SEQ / BCQ
8.	Quote what are growth fields, sites and centers	IL	SEQ / BCQ
9.	List differences between the growth sites and centers	IL	SEQ / BCQ
10.	List areas which are fields, sites and centers	IL	BCQ
11.	Recall and present how the growth occurs in different areas of head and face	IL/CP	SEQ
12.	List out the different theories regarding how growth takes place	IL	SEQ
13.	Identify the theory that explains the growth process that is taking place in the jaw	IL	SEQ
14.	Quote what type of growth occurs in the maxilla and mandible	IL	SEQ
15.	Predict the changes that would occur in maxilla and mandible at different chronological ages	IL / CR	OSCE
16.	Identify changes in width, length and height of jaws during growth	IL	SEQ/ BCQ/ OSCE
17.	State the normal growth rotations that occur in jaws	IL / CBL	OSCE
18.	Recognize the abnormal growth rotations that occur in jaws	CBL	OSCE
19.	Identify the type of growth rotation that occurs in a particular patient	CR / CBL	OSCE

20.	State how occlusion develops	IL / CR	CQ
21.	Identify the physiologic spaces that occur in an arch during deciduous and mixed dentition	IL/ CR	OSCE/ BCQ
22.	Recognize the importance of the physiologic spaces that occur in an arch during deciduous and mixed dentition	IL	OSCE / BCQ
23.	Measure and calculate the physiologic spaces during mixed dentition for diagnosis	CR	OSCE
24.	Enlist various diagnostic aids before starting orthodontic treatment	IL /CR	OSCE/ SEQ
25.	Discuss the importance of the diagnostic aids for the treatment planning	IL	CQ
26.	Differentiate between the diagnosis and problem list of a case	IL/ CR	OSCE
27.	Formulate the problem list of the patient before the treatment	CR/ CBL	OSCE
28.	Execute problem problem-oriented approach for diagnosis and treatment planning	CR / CBL	OSCE
29.	List the treatment options for a particular patient based on the problem list and diagnosis	CBL /CR	OSCE /SEQ
30.	Design a comprehensive list of patient's pathological and developmental problems, maximizing the benefit to the patient	CR	OSCE
31.	Recognize what is esthetics, and describe the importance of achieving esthetics at the end of treatment	IL	OSCE /BCQ
32.	Recite the terms micro, mini and macro esthetics	IL / CR	OSCE
33.	Identify the problems with micro mini and macro esthetics in a patient	CR /CBL	OSCE
1.	Enlist various diagnostic aides before starting orthodontic treatment	IL /CR	OSCE/ SEQ
2.	Discuss the importance of the diagnostic aides for the treatment planning	IL	CQ
3.	Differentiate between diagnosis and problem list of a case	IL/ CR	OSCE
4.	Formulate the problem list of the patient before the treatment	CR/ CBL	OSCE
5.	execute problem oriented approach for diagnosis and treatment planning	CR / CBL	OSCE
6.	List the treatment options for a particular patient based on the problem list and diagnosis	CBL /CR	OSCE /SEQ
7.	Design a comprehensive list of patient's pathological and developmental problems, maximizing the benefit to the patient	CR	OSCE
8.	Recognize what is esthetics, and describe the importance of achieving esthetics at the end of treatment	IL	OSCE /BCQ
9.	Recite the terms micro, mini and macro esthetics	IL / CR	OSCE
10.	Identify the problems with micro mini and macro esthetics in a patient	CR /CBL	OSCE
ORTHODONTICS / OPERATIVE			
11.	Define what is golden proportion	IL /CBL/ CR	OSCE

12.	Identify if the golden proportion is achieved in an occlusion at the end of treatment	CR/CBL	OSCE
ORTHODONTICS			
13.	Quote terminologies that will be used during examinations, problem list making and while carrying out the treatment	IL /CR	OSCE
14.	Recognize various terms used to describe malocclusion, so as to have a better understanding of the condition when the problems regarding it are being discussed	IL /CR	OSCE
15.	Recognize the importance of various classifications	IL	CQ
16.	Recognize the short comings of various classifications	IL	CQ
17.	Relate medical problems with resulting malocclusions	IL /CP	OSCE/ SEQ
18.	Indicate what protocols will change in Orthodontic treatment while dealing with medically compromised patients	IL / CBL	OSCE
19.	Relate the syndromes that lead to malocclusions	CP	SEQ /OSCE
20.	Determine the etiological factors for a certain malocclusion	IL	SEQ / OSCE
21.	Recognize the impact of hereditary influences on a malocclusion	IL	BCQ
22.	comprehend how various environmental factors lead to a certain malocclusion	IL	BCQ /OSCE
23.	Recall the normal anatomy and physiology of dentition and surrounding structures	IL	CQ
24.	Write the theories on how tooth eruption will occur	IL	SEQ
25.	Summarize the basic biological process that occurs in bone due to the forces applied to teeth for Orthodontic tooth movement	IL	SEQ
26.	Define what is optimum force, and understand its importance	IL	OSCE
27.	Quote and write the optimum number of forces that can be applied for tooth movement	IL	OSCE
28.	Write and quote the side effects that can occur if the Orthodontic force is less or exceeds the normal limits	IL	SEQ/ BCQ
29.	Quote the importance of different force durations on tooth movements during orthodontic treatment	IL	SEQ/ BCQ
30.	Define what is anchorage	IL	OSCE
31.	Quote and identify the importance of anchorage while carrying out orthodontic tooth movement	IL /CBL	OSCE/BCQ
32.	Discuss and predict how anchorage can be increased in a case	IL/ CBL	OSCE
33.	Discuss and write the effects on treatment if anchorage is not maintained	IL	CQ
34.	Enlist different materials used for orthodontic treatment and discuss their properties	IL	SEQ

35.	Discuss the properties of each material used in Orthodontic treatment	IL	SEQ/BCQ
36.	Identify which wire should be used at which stage of treatment	IL	OSCE
37.	Quote and discuss the properties of an ideal wire	IL	SEQ /BCQ
38.	Differentiate between banding and bonding	IL	OSCE
39.	Quote and enlist the indications of banding	IL	OSCE /BCQ
40.	Identify the conditions when banding is preferred over bonding	IL	BCQ/ OSCE
41.	Quote the importance of correct bonding in a orthodontic case	IL	OSCE
42.	Quote the three order bends given in a wire	IL	OSCE
43.	Discuss the concept of straight wire appliance	IL	CQ
44.	Quote the importance of straight wire appliance	IL	CQ
	ORTHODONTICS		
77.	Define preventive and interceptive treatment with regards to Orthodontics	IL	OSCE
78.	Differentiate between preventive and interceptive	IL	OSCE/ BCQ
79.	Enlist the treatment options that come under preventive and interceptive treatment	IL	OSCE/ BCQ
80.	discuss how the habits can influence development of malocclusion	IL	OSCE/ BCQ
81.	Recognize the importance of monitoring or controlling environmental factors for prevention of malocclusion	IL	OSCE
82.	Recall various spaces that should naturally be present in a dentition	IL / CBL	OSCE/ BCQ
83.	Discuss the importance of various spaces naturally present in a deciduous dentition	IL / CBL/ CR	OSCE/ BCQ
84.	Recognize the cases which are more liable to have crowding later in life	IL/ CR	OSCE/ BCQ
85.	Enlist the appliances which can maintain arch space to adjust the permanent dentition	IL	OSCE
86.	Identify methods used to re-create spaces in the arch to adjust teeth	IL	CQ
87.	Enlist the situations when extractions become necessary	IL	BCQ/ SEQ
88.	Enlist different methods by which space can be gained in an arch	IL	BCQ/ SEQ

89.	Identify the various removable appliances and their parts	CR	OSCE	
90.	Enlist the indications of removable appliances	CR	OSCE	
91.	Identify active components of a removable appliance	CR	OSCE	
92.	Fabricate various components of a removable appliance	CR	OSCE	
93.	Fabricate removable appliances	CR	End rotation	
94.	Define what is functional jaw orthopedics	IL	OSCE	
95.	Discuss the importance of functional jaw orthopedics as a treatment modality	IL	OSCE/ BCQ	
96.	Enlist the appliances used for functional jaw orthopedics	IL	CQ/ BCQ	
97.	Enlist different treatment options that are now available for the patients who come for orthodontic treatment	IL	OSCE	
98.	Discuss the importance of a step wise approach in providing orthodontic treatment to patient	IL	CQ/ OSCE	
99.	Enlist methods to manage eruption problems, space problems, and crowded arches.	IL/ CR	OSCE/ BCQ	
100.	Discuss options available for treating eruption problems	IL/ CR	OSCE	
101.	Identify the problems in occlusion at the end of treatment	IL / CR	OSCE	
102.	Define relapse	IL	OSCE	
103.	Quote causes of relapse	IL	OSCE/ BCQ	
104.	Discuss importance of retention at the end of Orthodontic treatment	IL	OSCE/ BCQ	
105.	Quote different methods that can be utilized to prevent, or minimize relapse at the end of Orthodontic treatment	IL	OSCE/ BCQ	
106.	Enlist the conditions in which the retention methods would have to be varied and find its reason	IL	OSCE	
107.	Quote the conditions which would need longer retention time	IL	OSCE/ BCQ	
108.	learn about the condition in which fixed retention would be provided	IL	OSCE/ BCQ	
109.	Write and quote the basic retention protocol	IL	BCQ	
110.	**Dentofacial anomalies**			
111.	Recognize the factors that cause clefting in a fetus	IL	BCQ/SEQ	
112.	Describe the preventive mechanisms	IL	BCQ	
113.	Identify dental treatments that can be provided to patients of cleft lip and palate	IL/CBL	SEQ/OSCE	

ACADEMIC SCHEDULES WEEKLY SCHEDULE OF MODULE IV PEDIATRIC DENTISTRY			
Week no.	**Lecturer 1**	**Lecturer 2**	**Lecturer 3**
W/1	Classification of Dental trauma **LO (32-33)**	Non- Pharmacological Behavior management **LO (1)**	History & examination of traumatic injuries **LO (34-35)**
W/2	Dental trauma of primary dentition **LO (36)**	Pharmacological Behaviour management **LO (2)**	Local anesthesia **LO (3)**
W/3	Sequelae of traumatic injuries **LO (37)**	Inherited anomalies of dentine **LO (73-74)** Inherited anomalies of enamel **LO (68-69**	Complications in perma-nent dentition **LO (38)**
W/4	Dental trauma in permanent dentition **LO (39)**	Assessment of caries risk factors **LO (4-6)**	Management of trauma in permanent dentition **LO (40)**
W/5	Class Test **LO (32-40)**	Detection & Diagnosis of dental caries **LO (7-8)**	Pulp therapy procedures **LO (41)**
W/6	Tooth luxations injuries **LO (42-44)** Avulsion injuries **LO (46)**	Prevention of dental caries **LO (9-13)**	Intrusion injuries **LO (45)** Splinting **LO (47-48)**
W/7	Molar-incisal hypomineralization **LO (70-71)** Internal Resorption **LO (55-59)**	Fluoride Therapy & fissure sealant **LO (14-16)** Restorative options for primary teeth **LO (17)**	External Resorption **LO (49-54)** Abnormalities of tooth size **LO (60-67)**
W/8	**Theory Examination** **OSCE & Viva Examination**		

MODULE:V- COURSE CONTENT OF (PROSTHODONTICS) MODULE
FIXED PROSTHODONTICS

S #	Lecture topic	Learning outcomes At the end of each topic, a final year student should be able to:	Mode Of Teaching	Assessment Method
1	**Principles of Fixed Prosthodontics**	Define the following terms: - Fixed prosthodontics - Crown - Bridge - Partial veneer crown - Full veneer crown - Retainers - Connectors - Pontics - Abutment Discuss the Indications and contraindications for fixed partial dentures. Perform the following examination of patient: - General Examination (gait, complexion and personality, cosmetic index, mental attitude of patient) - Extra Oral examination (facial features, facial form, facial profile, lower facial height, muscle tone, complexion, lip competency) - TMJ examination - Neuromuscular examination - Intra Oral Examination (Hard and soft tissues, saliva) - Radiographic examination (crown to root ratio, periapical pathology, retained residual roots, thickness of mucosa,bone support and quality, root configuration of abutment teeth) - Cast Examination (lingual and palatal surfaces of all teeth) Formulate a treatment plan based on following adjunctive care - Elective endodontic procedure, - Crown lengthening procedure, - Restorations, - Scaling and root planning.	IL	MCQs, SEQs

		Discuss the following treatment options: - Full veneer Crown, - Bridge, - Partial Veneer crown (Three quarter, seventh-eight, Proximal half crown, Reverse three quarter crown).		
2	**All metal Crowns**	Describe the principles of tooth preparation Discuss the indications, contraindications, advantages and disadvantages of these crowns	IL, SGD, Lab demo	MCQs, SEQs
3	**Metal Ceramic Crowns**	Describe the principles of tooth preparation Discuss the indications, contraindications, advantages and disadvantages of these crowns Discuss the materials available for these restorations	IL, SGD, Lab demo	MCQs, SEQs
4	**All Ceramic Crowns**	Describe the principles of tooth preparation Discuss the indications, contraindications, advantages and disadvantages of these crowns Discuss the materials available for these restorations	IL, SGD, Lab demo	MCQs, SEQs
5	**Tissue health for Crowns**	Discuss the following: -conservation of tooth structure -avoidance of over contour -supragingival margin -harmonious occlusion -protection against fracture	IL	MCQs, SEQs
6	**Trial of bridge /crown**	Discuss the following -proximal contact -marginal integrity -stability -occlusion	IL, SGD	MCQs, SEQs
7	**Luting agents**	Discuss the types composition, properties, merits and demerits of materials used for cementation	IL	MCQs, SEQs
8	**Principles of tooth preparation (mechanical and esthetic considerations)**	Discuss the following: -Retention form -Resistance form -deformation -minimal display of metal -maximum thickness of porcelain -porcelain occlusal surfaces	IL	MCQs, SEQs

		-subgingival margins		
9	**Restorations of endodontically treated tooth**	Discuss the following: -tooth structure -resistance -support -dowel core	IL	MCQs, SEQs
10	**provisional restorations**	Discuss the biological, mechanical and esthetic considerations for temporization.	IL, SGD	MCQs, SEQs
11	**Classification and types of Bridges**	Classify fixed partial dentures. Discuss the following types of fixed partial dentures - Conventional bridges - Minimum preparation bridges - Fixed – fixed bridge - Fixed – moveable bridge - Cantilever bridge - Spring cantilever bridge	IL	MCQs, SEQs
12	**Components of Bridge**	Define the following: - Connector, - Pontic, - Retainer, - Abutment.	IL, SGD	MCQs, SEQs
13	**Abutment selection considerations**	Discuss criteria for selection of abutments: - Alignment of abutment teeth and retention - Appearance and condition of abutment teeth - Location, condition and position of tooth - Root configuration and support, - Crown root ratio - Periodontal ligament area - Assessment of pulpal health Discuss various types of abutments: - Healthy/ideal abutments - Cantilever abutments - Pier abutments - Tilted abutments - Extensively damaged abutments	IL	MCQs, SEQs
14	**Resin bonded bridge**	Discuss the indications, contraindications, advantages and disadvantages of different types of resin bonded bridges: - Rochette bridge, - Maryland bridge, - Cast mesh fixed partial dentures, - Virginia bridge.	IL	MCQs, SEQs

15	**Fiber reinforced bridge**	Discuss the following: -material used -classification -contraindication -indication -advantage -tooth preparation -fabrication technique	IL	MCQs, SEQs
16	**Complaints of Fixed prosthesis**	Discuss the following: -diagnosis -causes -solition	IL	MCQs, SEQs
17	**Occlusion including TMD**	Discuss the following: -introduction -etiology -pathogenesis -diagnosis -management	IL	MCQs, SEQs

CLINICAL SUPERVISION SCHEDULE OF (PROSTHODONTICS) MODULE
FIXED PROSTHODONTICS

WEEK 1- ORIENTATION		
Day	**Task**	**Name of Facilitator**
1	Orientation regarding OPD tasks, student armamentarium, terminologies	Dr. Atif Jawad
2	Demonstration on history taking and clinical examination, diagnosis, treatment planning	Dr. Paras Talpur
3	Practice	All faculty
4	Primary Impression taking and Cast formation	Dr. Uzma Bashir
5	Practice	All faculty
WEEK 2 – TRAY FABRICATION		
Day	**Task Sterilization demo half group/ week**	**Name of Facilitator**
1	Special tray fabrication and special trimming	Dr. Oan Muhammad
2	Practice	All faculty
3	Final impression technique	Dr. Champa
4	Practice	All faculty
5	Occlusal rims fabrication	Dr. Shagufta
WEEK 3: JAW RELATIONSHIP AND ARTICULATION		
Day	**Task**	**Name of Facilitator**
1	Jaw relationship and articulation	Dr. Paras Talpur
2	Practice	All faculty
3	Anterior Teeth setup	Dr. Uzma Bashir
4	Practice	All faculty
5	Posterior teeth setup	Dr. Uzma Bashir

WEEK 4 – DENTURE TRIAL		
Day	**Task**	**Name of Facilitator**
1	Practice	All faculty
2	Denture trial	Dr. Oan Muhammad
3	Flasking and Dewaxing	Dr. Champa
4	Curing and polishing	Dr. Shagufta
5	Insertion and post-insertion instrustions	Dr. Paras Talpur
WEEK 5 – CROWN PREPARATION		
Day	**Task**	**Name of Facilitator**
1	Follow-up	Dr. Oan Muhammad
2	Crown-posterior tooth preparation	Dr. Champa
3	Practice	All faculty
4	Crown-anterior tooth preparation	Dr. Shagufta
5	Practice	All faculty
WEEK 6 - FIXED PROSTHESIS		
Day	**Task**	**Name of Facilitator**
1	Crown- trial and cementaion procedure	Dr. Paras Talpur
2	Crown-retraction cord placement and impression techniques	Dr. Oan Muhammad
3	Practice	All faculty
4	Crown-restoration of endodontically treated teeth	Dr. Champa
5	Crown-temporary or provisional restorations	Dr. Shagufta
WEEK 7: FIXED PARTIAL DENTURE		
Day	**Task**	**Name of Facilitator**
1	Practice	All faculty

2	Fixed Partial Dentures	Dr. Paras Talpur
3	Implant	Dr. Oan Muhammad
4	TMD, occlusion and maxillofacial prosthesis	Dr. Atif Jawad
5	Practice	All faculty
WEEK 8: ASSESSMENT AND PRESENTATION		
Day	**Task**	**Name of Facilitator**
1	Practice	All faculty
2	Completion of work and signing of logbooks	All faculty
3	Assessment	All faculty
4	Presentation	All faculty
5	Presentation	All faculty

CLINICAL SUPERVISION SCHEDULE OF OPERATIVE MODULE

WEEK 1- ORIENTATION		
Day	**Task**	**Name of Facilitator**
1	Orientation regarding OPD tasks and student armamentarium Demonstration on instruments, infection control and sterilization	Dr.Asad Tareen
2	Demonstration on history taking, clinical examination, diagnosis and treatment planning, caries detection and diagnosis, caries risk assessment and radiographic interpretation of caries	Dr.Shuja Aslam
3	Practice	Dr.Priyanka
4	Practice	Dr.Asma
5	Completion and signing of the task	Dr.Shuja Aslam
WEEK 2 – APPLICATION OF RUBBER DAM		
Day	**Task Sterilization demo half group/ week**	**Name of Facilitator**
1	Demonstration on isolation(rubber dam application) and matrix band application	Dr. Shuja Aslam
2	Practice	Dr.Asma
3	Demonstration on amalgam restorations(caviy preparation,lining,placement of amalgam,cuspal coverage and pin retained restorations and repair and replacement of old amalgam restorations	Dr.Shuja Aslam
4	Practice	Dr. Saima
5	Completion and signing of the task	Dr. Shuja Aslam
WEEK 3: POSTERIOR RESTORATION		
Day	**Task**	**Name of Facilitator**
1	Demonstration on anterior and posterior resin composite restorations(cavity preparation, placement of composite including isolation, etching, bonding, finishing and polishing, direct composite veneers and closure of midline diastema and restorations of class V lesions(sandwich technique)	Dr. Shuja Aslam
2	Practice	Dr.Asma
3	Demonstration on pit and fissure sealants, fluoride application and bleaching	Dr.Shuja Aslam

4	Practice	Dr. Saima
5	Completion and signing of the task	Dr. Shuja Aslam
WEEK 4 – INLAY ONLAY PREPARATION		
Day	**Task**	**Name of Facilitator**
1	Demonstration on inlay and onlay preparation	Dr.Shuja Aslam
2	Clinical implementation on patients	Dr. Priyanka
3	Clinical implementation on patients	Dr. Asma
4	Clinical implementation on patients	Dr.Saima
5	Posting test	Dr. Shuja Aslam
WEEK 5 – ACCESS CAVITY PREPARATION		
Day	**Task**	**Name of Facilitator**
1	Demonstration on access cavity preparation, working length determination and cleaning and shaping	Dr.Asad Tareen
2	Practice on extracted teeth	Dr. Saima
3	Demonstration on obturation	Dr. Shuja Aslam
4	Practice on extracted teeth	Dr.Asma
5	Completion and signing of the task	Dr. Shuja Aslam
WEEK 6 – PATIENT EVALUATION		
Day	**Task**	**Name of Facilitator**
1	Demonstration on Patient evaluation :history taking and oral examination, diagnosis and treatment planning Performing and interpretation of investigations(pulp testing, percussion, palpation, mobility test, sinus tracing)	Dr. Shuja Aslam
2	Practice	Dr. Saima
3	Reading radiograph and interpretation Case selection	Dr. Shuja Aslam
4	Practice	Dr. Asma

5	Completion and signing of the task	Dr. Shuja Aslam
WEEK 7: POST INSERTION		
Day	**Task**	**Name of Facilitator**
1	Demonstration on post insertion	Dr.Shuja Aslam
2	Performing endodontic on extracted teeth and patients	All teachers
3	Performing endodontic on extracted teeth and patients	All teachers
4	Performing endodontic on extracted teeth and patients	All teachers
5	Performing endodontic on extracted teeth and patients	All teachers
WEEK 8: PSYCHOMOTOR AND ASSESSMENT		
Day	**Task**	**Name of Facilitator**
1	Performing endodontic on patients	Dr.Saima
2	Performing endodontic on patients	Dr. Asma
3	Completion and signing of logbooks	Dr. Shuja Aslam and Dr.Asad Tareen
4	Presentations	Dr. Asad Tareen
5	Posting test	Dr. Shuja Aslam and Dr. Asad Tareen

LEARNING RESOURCES

The learning resources for the educational contents of BDS program are available for the students which assist learners to achieve the outcomes and by focusing on educational content. Ina addition; the names of the books for each subject as a learning resources is available with the educational content of the same subject.

Following learning resources can be used by the undergraduates;

- Books
- Evidence based articles from journals
- Digital library to search the material for self-directed learning
- Video Tapes
- Displays
- Models
- Phantom Heads
- Printed Notes
- Case based scenarios'
- Community Visits

Recommended Books Final YEAR BDS			
Oral and Maxillofacial Surgery	**Prosthodontics**	**Operative Dentistry**	**Orthodontics**
5. An Introduction of Oral & Maxillofacial Surgery David Mitchel 6. An Outline of Oral Surgery part I & Part II Killey, Seaward & Kay 7. Killey's Fractures of Middle Third of Facial Skeleton. 8. Killey's	**Books:** 1. McKracken's Removable Partial Prosthodontics by Alan B Carr, Glen P McGivney and David T Brown. 11th Edition. 2. Stewart's Clinical Removable Prosthodontics by Rodney D Phoenix, David R Cagna, Charles F DeFreest. 4th Edition.	3. Joseph R Evans, John H Wilke. Atlas of Operative Dentistry: Preclinical and clinical procedures. Quintessence books Publishing Co. 4. Richard L Kahn, Pinkerton RJ, Kagihara L 5. Fundamentals of Preclinical Operative Dentistry. www.bookdepository.co.uk 6. The Art & Science of Operative Dentistry by Sturdurant. 7. Pickardards Manual	1. Contemporary Orthodontics, by William R. Profit (5th Edition) 2. Hand Book of Orthodontics, by Robert-E-Moyers (4th Edition) 3. Essentials of facial growth by Donald H Enlow (2nd Edition)

Fracture of the Mandible 9. Oral & Maxillofacial Surgery Laskin 10. Oral & Maxillofacial Surgery Kruger 11. Medical Problems in Dentistry Scully & Cawson 12. Text book of Oral & Maxillofacial Surgery S.M Balaji 13. Fundamentals of Orthognathic Surgery Malcolm Harris 14. Oral & Maxillofacial Surgery John Peddler	3. Prosthodontic Treatment for Edentulous Patients by Zarb, Hobkirk, Eckert and Jacob. 13th Edition. 4. Contemporary Fixed Prosthodontics by Rosenstiel, Land and Fujimoto. 4th Edition. 5. Essentials of Complete Denture Prosthodontics by Sheldon Winkler. 2nd Edition **Reference Books for Laboratory Procedures:** 1. Dental Laboratory Procedures. Complete Dentures. Morrow, Rudd, Eissmann. Vol 01, 1980. 2. Dental Laboratory Procedures. Fixed Partial Dentures. Eissmann, Rudd, Morrow. Vol 02, 1980. **Notes and handouts** (for topics not available in the above mentioned books	of Operative Dentistry by EAM Kidd. 2. Fundamentals of Operative Dentistry by Schwartz 3. Dental Restorative Materials – Craig 4. Textbook of Operative Dentistry by Vimal K Sikri 5. Harty's Endodontic in clinical practice by T.R.Pittford 6. Pathways of pulp by Stephen Cohen 7. Endodontics Principals and Practice by Torabinejad	

MUHAMMAD DENTAL COLLEGE

MIRPURKHAS

Contact Hours - Final Year BDS - 2025

Subject	Operative Dentistry				Paediatric Dentistry				Prosthodontics				Oral Surgery				Orthodontics			
Week	Lec	SDL	Tut	OPD	Lec	SDL	Tut	OPD	Lec	SDL	Tut	OPD	Lec	SDL	Tut	OPD	Lec	SDL	Tut	OPD
1	1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7		
2	1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7		
3	1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7		
4	1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7		
5	1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7		
6	1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7		
7	1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7		
8	1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7		
9	1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7		
10	1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7		
11	1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7		
12	1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7		
13	1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7		
14	1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7		
15	1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7		
16	1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7			1.5	0.7		
17	1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7		
18	1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7		
19	1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7		
20	1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7		
21	1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7		
22	1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7		
23	1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7		
24	1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7			1.5	0.7		
25	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7		
26	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7		
27	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7		
28	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7		
29	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7		
30	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7		
31	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7		
32	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5	1.5	0.7		
33	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5
34	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5
35	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5
36	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5
37	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5
38	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5
39	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5
40	1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7			1.5	0.7	5	17.5
Total	60	28	40	140	60	28	40	140	60	28	40	140	60	28	40	140	60	28	40	140
Hours	268				268				268				268				268			
Grand Total	1,340																			

Prepared By: Dr Salf ur Rehman (Final Year COORDINATOR-MDC

Checked by : Dr Kiran Fatima –Department of Dental Education-MDC

Prepared on: 30.1.2025