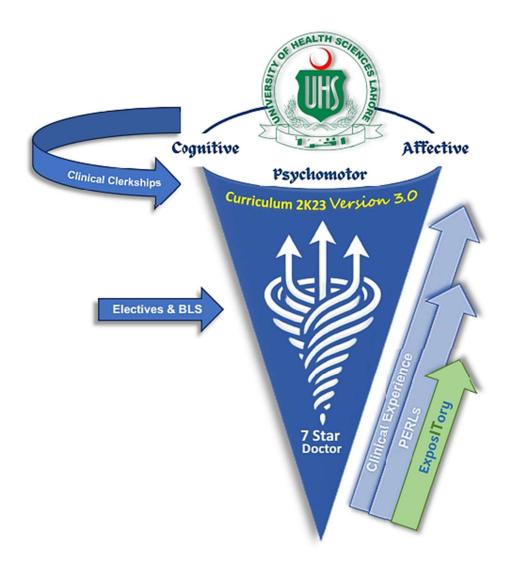


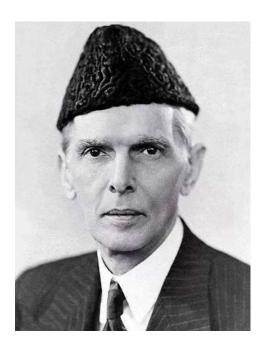


Modular Integrated Curriculum 2K23

version 3.0







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

Quaid e Azam Muhammad Ali Jinnah

Islamia College Lahore 1945





GOVERNOR PUNJAB

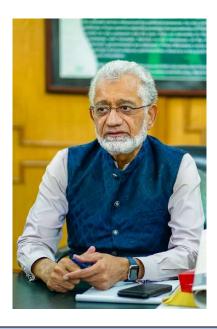
MESSAGE

The progressive step taken by the University of Health Sciences Lahore (UHS) to bring forth an integrated undergraduate curriculum for medical students is a much-needed and futuristic move. Curriculum 2K23 by UHS will prove to be a historical milestone for the healthcare academia, faculty of the medical colleges, and specifically for the students in translating theory into practice and in becoming educational leaders of global standards.

The curricular document is concise and systemized to embrace our rich professional heritage, to contextualize local practices, conform to international standards, and incorporate the existing educational and societal needs. The development and implementation of this modular integrated curriculum, proves that the UHS strives to serve as a platform for providing innovative thinking, global vision, and social responsibility through contemporary instructional methodologies and excellence in terms of standards of medical and healthcare education. Punjab, being the largest province of Pakistan, holds a unique position in terms of producing the maximum number of doctors who serve as the healthcare workforce for the nation as well as globally.

I envision our young doctors and students to be able to transform into research-oriented healthcare leaders with a holistic perspective in the education of today's world while developing values, attitudes, and skills to face the challenges of an interconnected world. In addition, this integration shall foster empathy in these graduates where they would be able to recognize, accept and internalize the paradigms of humanism, equality, and professional ethics.

I believe and wish that the newly introduced curriculum will contribute in achieving all these attributes and competencies for the benefit of our nation.



University of Health Sciences Lahore has a history to constantly reinvent and evolve for the benefit of its affiliated learners, upkeep of its standards and to lead the institutional strides as an internationally ranked university. The currently introduced 'Curriculum 2K23' is yet another landmark for the greater good of the public health and an outreach to the future healthcare planning. I believe that by adopting the new curriculum all the beneficiaries and learners will be able to put the theory to professional action and excel globally in areas of research, public service, sustainable healthcare solutions and equitable healthcare services. A curriculum is always as good as the professionals adopting it. The dynamicity of a curricular document can only be achieved through the conjoint efforts of the trainers and the trainees. I am confident that these educational efforts based on the integrated curriculum will equip our young doctors for all the global challenges of environment related disease pattern, equity for marginalized, global health solutions and societal service.

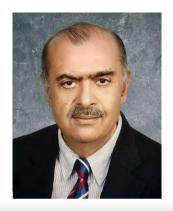
Professor Javed Akram, Tamgha-e-Imtiaz

Minister of Health, Government of Punjab, I congratulate the University of Health Sciences for crafting the second version of the newly implemented. Integrated Modular **Curriculum 2K23**. The newly crafted Modular **Curriculum 2K23** is a comprehensive document with detailed competencies and outcomes that we want to see in our next yield of doctors. The inclusion of stakeholder input has made it a contextualized document and can address the health challenges of the province. Specialized Health Care & Medical Education Department promotes advanced and innovative educational efforts to enhance the quality of medical education. We endorse implementation in the true letter and spirit. Implementation of Curriculum 2K23 version 2.0 will prove to be a positive change for our students. I believe that University of Health Sciences will continue the flow of feedback and address the implementation requirements if any. I wish the University of Health Sciences Lahore and its affiliated institutes the best of luck in their pursuit of educational excellence.

Mr. Ali Jan Khan

Secretary

Specialized Health Care & Medical Education Department Government of Punjab, Lahore.





UNIVERSITY OF HEALTH SCIENCES LAHORE

Khayaban-e-Jamia Punjab, Lahore - 54600, Pakistan. Tel: +92-42-99230396 Fax: +92-42-99231310

MESSAGE

I am thankful to Allah that the vision of structuring a standardized, comprehensive and implementable curriculum, has been fulfilled by the inception of Curriculum 2K23. The new curriculum has the potential to host futuristic educational strategies & methodologies.

University of Health Sciences Lahore commits to global trends and best practices of medical education and Curriculum 2k23 is a historical milestone to this claim. We have categorically made sure that the curriculum should embrace all the elements of cognition, skill acquisition, professionalism, ethics, research, and leadership. Such a comprehensive undertaking necessitated an approach which was 'integrated' and had strong 'clinical relevance' in the early years. We have made sure that the curriculum is designed in a way to address the needs and diversity of all our affiliated medical institutes for implementation. This diverse institutional conformity to the curriculum is the main strength, which will enable even our learners of the peripherally placed medical institutes, to benefit from the learning opportunities. Another strength of Curriculum 2K23 is its broad-based foundation which was laid down by the subject experts, medical educationists and healthcare leaders, representing our affiliate institutes. The collaborative effort and centripetal contributions by the team of dedicated professionals made Curriculum 2K23 possible and it will be implemented in true letter and spirit. I pay these leaders my gratitude for their untiring and selfless contributions towards completion of this curriculum in time.

We are confident that with this modular integrated curriculum, our affiliate institutes will be able to generate a yield of doctors who are equipped with competencies to cope up with professional challenges locally and globally.

Prof Ahsan Waheed Rathore
Vice Chancellor
University of Health Sciences Lahore



University of Health Sciences Lahore, in accordance with its vision, continuously endeavors to offer standardized, structured, and quality education to all its registered students through its affiliated institutes. Keeping all affiliate standards well gauged and educational standards finely calibrated UHS ensures the development of a competent, ethical, and skillful professional. ensures all these parameters meticulously. Curriculum 2K23 has been drafted in accordance with the national and international standards of Basic Medical Education, thus having a futuristic stride and a local context. University of Health Sciences Lahore, being the custodian of the curriculum, will also manage, aid, govern, and dynamically refine the curriculum and its implementation.

We at the University of Health Sciences Lahore remain committed to the educational training, ethical grooming, and competency acquisition of all the registered learners who are the prime asset of UHS.

Prof Nadia Naseem

Pro-Vice Chancellor
University of Health Sciences Lahore



As a member of a well interwoven collaborative nexus of Medical Educationists, I am confident that Departments of Medical Education, of all the affiliated institutes will be able to professionally translate, academically implement and reap the intended benefits of **Curriculum 2K23**. The inculcation of the **Curriculum 2K23** intended outcomes for the future doctors, will keep our fraternities, our research work, our sustainable oriented role, our global healthcare contributions, and our humane potentials, at par with the international requirements.

The process of development included revisiting our practices, contextualizing the global standards, incorporating the existing norms, and onboarding the cognitive leads of the profession and onboarding the cognitive leads of the profession.

Medical Educationists using their professional potential and through the latitude offered in **Curriculum 2K23** can easily steer the educational strategies in accordance to their institutional vision. Levitating the institutional work potential while calibrating the learners process for high order yield, has already been embedded in the curriculum's design by the academic leads. All these have to be utilized for learner's benefit by a meticulous adoption of the curriculum by the healthcare leaders.

Lt. Col. (R) Dr. Khalid Rahim Khan, Tamgha-e-Imtiaz (M)

Director Medical Education & International Linkages University of Health Sciences Lahore

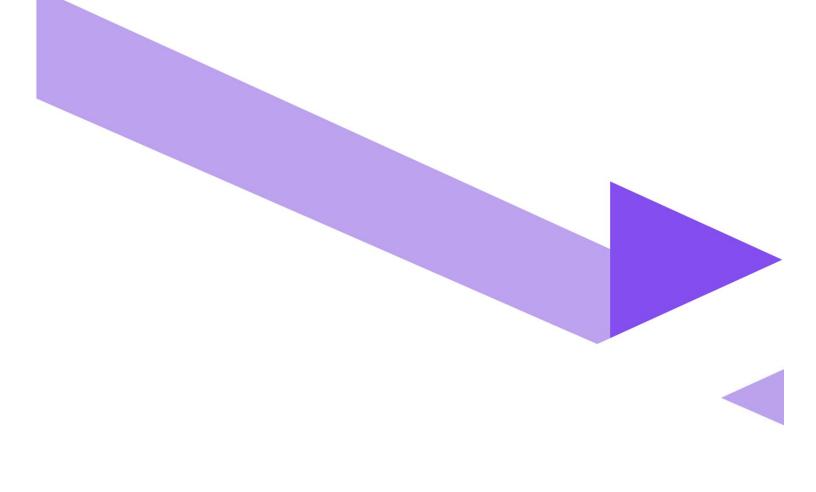


Vision Statement

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

Mission Statement

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





Curriculum 2K23 Version 3.0 Volume-01

| Section | Content | Page No. |
|---------|---|---|
| 1 | Vice Chancellor's message Pro-Vice Chancellor's message Vision & Mission List of Contributors | 9 10 12 17 |
| 2 | Foreword to Curriculum 2K23 version 3.0 | 31 |
| 3 | Curriculum Framework | 39 |
| 4 | Competency Framework | 42 |
| 5 | Preamble List of Abbreviations | 50 74 |
| 6 | Year-1 Modules Block-1 i. Foundation-I ii. Hematopoetic & Lymphatic Block-2 iii. Musculoskeletal & Locomotion-I Block-3 iv. Cardiovascular-I v. Respiratory-I | 84 85 86 123 136 137 170 171 |
| 7 | The Holy Quran Islamiyat Pakistan Studies Civics | 214 223 224 226 |
| 8 | Institutional Implementation Recommendations | 233 |
| 9 | Assessment Policy Table of Specifications | 245 257 |
| 10 | List of Resources Guidelines for 'Institutional Study Guides' | 264 269 |
| 11 | Feedback proforma and process List of Annexures CFRC-I PERLs-I Expository-I Portfolio-I Skill Acquisition Workshops | 274 280 281 341 381 387 424 |



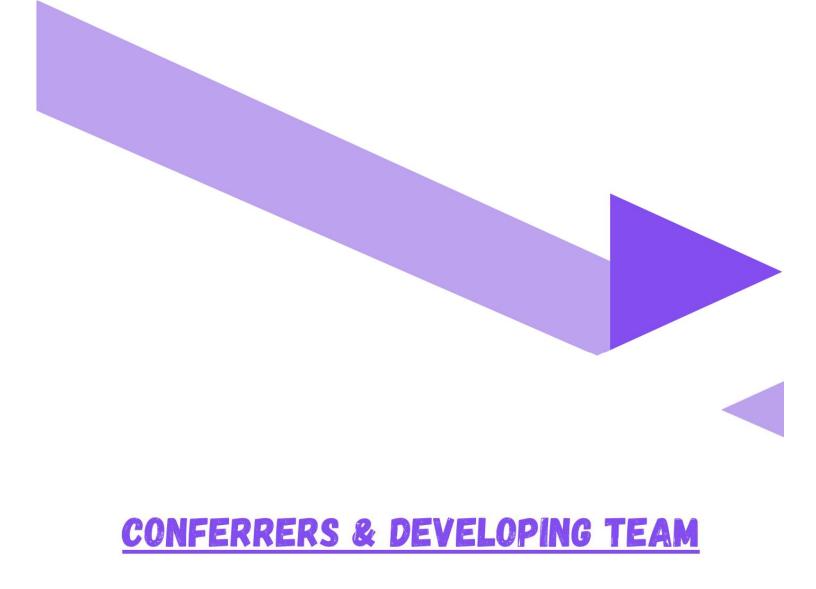
Curriculum 2K23 Version 3.0 Volume-2

| Section | Content | Page No. |
|---------|---|---|
| 1 | Vice Chancellor's message Pro-Vice Chancellor's message Vision & Mission List of Contributors | 9 10 12 17 |
| 2 | Foreword to Curriculum 2K23 version 3.0 | 28 |
| 3 | Curriculum Framework | 36 |
| 4 | Competency Framework | 39 |
| 5 | Preamble List of Abbreviations | 47 70 |
| 6 | Year-2 Modules Block-4 vi. GIT & Nutrition-I vii. Renal-I Block-5 viii. Endocrinology & Reproduction-I ix. Head & Neck, Special Senses Block-6 x. Neurosciences-I xi. Inflammation | 75 76 77 101 117 118 147 167 168 186 |
| 7 | The Holy Quran Islamiyat Pakistan Studies Civics | 202 211 211 214 |
| 8 | Institutional Implementation Recommendations | 221 |
| 9 | Assessment Policy Table of Specifications | 233 245 |
| 10 | 10 List of Resources Guidelines for 'Institutional Study Guides' | |
| 11 | Feedback proforma and process List of Annexures CFRC-II PERLs-II Expository-II Portfolio-II Skill Acquisition Workshops | 262 269 270 334 376 382 420 |

Curriculum 2K23 Version 3.0 Volume-3

| Section | Content | Page No. |
|---------|---|---|
| 1 | Vice Chancellor's message Pro-Vice Chancellor's message Vision & Mission List of Contributors | 6 7 9 14 |
| 2 | Preamble Student Engagement Creating a Conducive Clinical Culture for the students | 30 36 38 |
| 3 | Curriculum Framework | 51 |
| 4 | List of Abbreviations | 54 |
| 5 | Year-3 Modules Block-7 xii. Foundation-II & EBM xiii. General & Clinical Pharmacology xiv. Hematopoetic, Immunity & Transplant xv. Forensic Medicine & Toxicology-I Block-8 xvi. Neoplasia xvii. Infectious Diseases xviii. Musculoskeletal & Locomotion-II xix. Forensic Medicine & Toxicology-II Block-9 xx. Cardiovascuar-II xxi. Respiratory-II xxii. Community Medicine & Family Health-I xxiii. Forensic Medicine & Toxicology-III | 64 65 66 82 92 106 119 120 131 156 181 195 196 212 233 251 |
| 6 | Institutional Implementation Recommendations | 276 |
| 7 | 7 Assessment Policy Table of Specifications 8 List of Resources Guidelines for 'Institutional Study Guides' Feedback proforma and process List of Annexures CFRC-III PERLs-III Expository-III Portfolio-III Skill Acquisition Workshops | |
| 8 | | |
| 9 | | |









| BOARD OF GOVERNORS | | |
|--------------------|---|--|
| 1 | Honourable Justice (Retd.) Shaikh Ahmad Farooq (Chairman) | |
| 2 | Prof. Salima Hashmi | |
| 3 | Ms. Arifa Saboohi | |
| 4 | Capt. (Retd.) Zahid Saeed | |
| 5 | Mr. Naeem Akhtar Shaikh | |
| 6 | Secretary, Government of the Punjab, Specialized Healthcare & Medical Education Department, Lahore | |
| 7 | Secretary, Government of the Punjab, Finance Department, Civil Secretariat, Lahore | |
| 8 | Prof. Ahsan Waheed Rathore Vice Chancellor, University of Health Sciences, Lahore | |
| 9 | Ms. Kiran Fatima Registrar, University of Health Sciences, Lahore | |
| | SYNDICATE MEMBERS | |
| 01 | Prof. Ahsan Waheed Rathore <i>(Chairman)</i> Vice Chancellor, University of Health Sciences, Lahore | |
| 02 | Secretary, Specialized Healthcare & Medical Education Department Government of the Punjab | |
| 03 | Secretary, Finance Department, Government of the Punjab | |
| 04 | Prof. Dr. Khalid Masud Gondal | |
| 05 | Prof. Dr. Nadia Naseem | |
| 06 | Prof. Dr. Sidrah Saleem | |
| 07 | Prof. Samina Kausar | |
| 80 | Prof. Dr. Arshad Cheema | |
| 09 | Dr. Zahid Pervaiz | |

| 10 | Prof. Dr. Maryam Malik |
|----|--|
| 11 | Mr. Muhammad Haider Amin |
| 12 | Prof. Syed Asghar Naqi |
| 13 | Prof. Soufia Farrukh |
| 14 | Ms. Kiran Fatima Registrar, University of Health Sciences, Lahore |

MBBS YEAR/PHASE II CURRUCULUM 2K23

SUBJECT SPECIALISTS

| SOBJECT OF ECIALISTS | | | |
|----------------------|-----------------------------|--|--|
| ANATOMY | | | |
| 01 | Prof. Qurat-ul-ain Amir | | |
| 02 | Prof. Nausheen Raza | | |
| 03 | Prof. Mahjabeen Munira | | |
| 04 | Prof. Muhammad Amin | | |
| 05 | Prof. Muhammad Kamran Ameer | | |
| 06 | Prof. Nabila Kaukab | | |
| 07 | Prof. Aruna Bashir | | |
| 08 | Prof. Mamoona Naheed | | |
| 09 | Prof. Farhana Jafri | | |
| 10 | Prof. Sarah Khalid | | |
| 11 | Dr. Uruj Zehra | | |
| 12 | Dr. Asma Zulfiqar | | |
| 13 | Dr. Nigarish Alam Baig | | |
| 14 | Dr. Aneela Ahsan | | |
| | BIOCHEMISTRY | | |
| 01 | Prof. Zamir Ahmad | | |
| 02 | Prof. Anila Jaleel | | |
| 03 | Prof. Sadia Mehmood | | |
| 04 | Prof. Rubina Bashir | | |
| 05 | Prof. Farah Deeba | | |
| 06 | Prof. Naim Ahmed Nizami | | |

| 07 | Prof. Sobia Imtiaz | |
|--------------------|----------------------------|--|
| 08 | Dr. Saira Saad | |
| 09 | Dr. Asifa Ashraf | |
| 10 | Dr. Ali Talat | |
| 11 | Dr. Anaab Arif | |
| | PHYSIOLOGY | |
| 01 | Prof. Hamid Javed Qureshi | |
| 02 | Prof. Adeela Shahid | |
| 03 | Prof. Abdul Rehman Khokar | |
| 04 | Prof. Uzma Zargham | |
| 05 | Prof. Farah Zulfiqar | |
| 06 | Prof. Dr Sana Sabir | |
| 07 | Dr. Ambreen Khalid | |
| 08 | Dr. Saman Saeed Ansari | |
| 09 | Dr. Tashfeen Ikram | |
| 10 | Dr. Sobia Niaz | |
| 11 | Dr. Imran Aftab | |
| 12 | Dr. Saima Sheikh | |
| 13 | Dr. Jahanzeb | |
| | NEUROSURGERY | |
| 01 | Prof. Manzoor Ahmed | |
| 02 | Prof. Fouzia Sajjad | |
| COMMUNITY MEDICINE | | |
| 01 | Prof. Samina Badar | |
| 02 | Prof. Sumair Anwar | |
| 03 | Prof. Ayesha H Sheikh | |
| 04 | Prof. Khalil Ahmad Shahid | |
| 05 | Dr. Noreen Maqbool Bokhari | |
| PHARMACOLOGY | | |
| 01 | Prof. Saeed Akram Bhatti | |

| 02 | Prof. Maryam Rashid | | |
|-----------|----------------------------|--|--|
| 03 | Prof. Sajida Begum | | |
| 04 | Prof. Muhammad Saeed Anwar | | |
| 05 | Dr. Abdul Mudabbir Rehan | | |
| | MICROBIOLOGY | | |
| 01 | Prof. Sidrah Saleem | | |
| 02 | Dr. Bushra Adeel | | |
| | OPHTHAMOLOGY | | |
| 01 | Dr. Irfan Qayyum Malik | | |
| 02 | Dr. Zain Ali | | |
| | ENT | | |
| 01 | Prof. Faisal Bashir | | |
| 02 | Dr. Ashfaq Hussain Rana | | |
| | MEDICINE | | |
| 01 | Prof. Shahid Sarwar | | |
| 02 | Prof. Muhammad Masood | | |
| 03 | Prof. Sarah Javed Qureshi | | |
| 04 | Dr. Mahreen Farooq | | |
| | OBS. & GYNAE. | | |
| 01 | Prof. Alia Bashir | | |
| 02 | Dr. Noor-i-Kiran | | |
| | BEHAVIORAL SCIENCES | | |
| 01 | Prof. Ayesha Rashid | | |
| 02 | Prof. Faiza Ather | | |
| 03 | Prof. Altaf Qadir | | |
| 04 | Dr. Saqib Rabbani | | |
| PATHOLOGY | | | |
| 01 | Prof. Zafar Iqbal Ghuman | | |
| 02 | Prof. Sadia Sharif | | |
| 03 | Prof. Naila Atif | | |

| 04 | Dr. Raees Abbas Lail | | |
|-----------------|----------------------------------|--|--|
| GENERAL SURGERY | | | |
| 01 | Prof. Ayesha Shaukat | | |
| 02 | Prof. Waris Farooka | | |
| | UROLOGY | | |
| 01 | Prof. Khalid Javed Rabbani | | |
| | CURRICULUM 2K23 REVIEW COMMITTEE | | |
| 01 | Prof. Nadia Naseem | | |
| 02 | Prof. Kahlid Javed Rabbani | | |
| 03 | Prof. Soufia Farrukh | | |
| 04 | Prof. Gulfreen Waheed | | |
| 05 | Prof. Muhammad Saeed | | |
| 06 | Prof. Zamir Ahmad | | |
| 07 | Prof. Aamir Ali Khan | | |
| 80 | Prof. Kamran Khalid | | |
| 09 | Prof. Qurat UI Ain Amir | | |
| 10 | Prof. Adeela Shahid | | |
| | CURRICULUM STEERING COMMITTEE | | |
| 01 | Prof. Abdul Majeed Chaudhry | | |
| 02 | Prof. Musarrat ul Hasnain | | |
| 03 | Prof. Alia Bashir | | |
| 04 | Prof. Waris Farooka | | |
| 05 | Prof. Gulfreen Waheed | | |
| 06 | Prof. Anila Jaleel | | |
| 07 | Prof. Iram Manzoor | | |
| 80 | Prof. Ayesha Humayun | | |
| 09 | Prof. Naureen Waseem | | |
| 10 | Prof. Zia Ul Miraj | | |
| 11 | Prof. Uzma Ahsan | | |
| 12 | Prof. Saima Chaudhry | | |

| 13 | Prof. Sumera Badar Ehsan |
|----|---|
| 14 | Prof. Shahid Sarwar |
| 15 | Prof. Abdur Rehman |
| 16 | Prof. Khalid Mehmood Cheema |
| 17 | Dr. Syed Hassan Shoaib |
| 18 | Dr. Sobia Nawaz |
| 19 | Dr. Noor-I-Kiran Haris |
| 20 | Dr. Syeda Amina Ahmed |
| 21 | Dr. Ayesha Sadiq |
| 22 | Dr. Qurat ul Ain Mehfooz |
| 23 | Dr. Abeer Anjum |
| 24 | Dr. Rafia Minhas |
| 25 | Dr. Sobia Niaz |
| 26 | Dr. Komal Atta |
| 27 | Dr. Amina Ahmed Noor |
| 28 | Dr. Nighat Nadeem |
| 29 | Dr. Fahad Sarfraz |
| 30 | Dr. Sadia Zaheer |
| 31 | Dr. Remsha Mustafa |
| 32 | Dr. Shaista Noor Qureshi |
| | DEPARTMENT OF MEDICAL EDUCATION (UHS) |
| 01 | Lt. Col. (R) Dr. Khalid Rahim Khan TI (M) |
| 02 | Dr. Rahat Abdul Rehman |
| 03 | Dr. Asim Pervaiz |
| 04 | Dr. Fatima Aslam |
| 05 | Dr. Tasleem Akhtar |
| 06 | Dr. Midhat Salman |
| 07 | Dr. Saadia Ijaz |
| 08 | Dr. Rameen |
| 09 | Dr. Muhammad Maaz Arif |
| 10 | Ms. Qurrat ul Ain |

| 11 | Mr. Aiman Shahzad |
|----|---------------------------|
| 12 | Syed Mohsin Raza |
| 13 | Ms. Shehla Noor |
| 14 | Mr. Faisal Imran |
| 15 | Mr. Muhammad Asim Farooqi |
| 16 | Mr. Danish Mohsin |
| 17 | Mr. Mubashar Arshad |
| 18 | Mr. Rashid Ali |

MODULE IN-CHARGE (WORKING GROUP OF MEDICAL EDUCATIONISTS)

| 01 | Foundation - I | Dr. Syed Hasan Shoaib and Prof. Saima Chaudhry |
|----|----------------------------------|---|
| 02 | Hematopoietic & Lymphatic | Prof. Sumera Ehsan and Dr. Fahad Sarfraz |
| 03 | Musculoskeletal & Locomotion - I | Dr. Noor i Kiran and Prof. Musarrat ul Hasnain |
| 04 | Cardiovascular- I | Dr. Noor i Kiran and Dr. Khalid Rahim Khan |
| 05 | Respiratory - I | Dr. Rafia Minhas and Dr. Noor i Kiran |
| 06 | GIT and Nutrition – I | Prof. Shahid Sarwar and Dr. Remsha Mustafa |
| 07 | Renal – I | Dr. Abeer Anjum |
| 08 | Endocrinology and Reproduction-I | Prof. Irum Manzoor and Prof. Alia Bashir |
| 09 | Head & Neck, Special Senses | Dr. Nighat Nadeem |
| 10 | Neurosciences – I | Dr. Komal Atta |
| 11 | Inflamation | Dr. Ayesha Sadiq and Dr. Qurat ul Ain |
| 12 | Quran – I | Prof. Saima Chaudhry |
| 13 | Clinical Skills FRC | Dr. Komal Atta |
| 14 | PERLs and IT | Prof. Saima Chaudhry and Dr. Khalid Rahim |
| 15 | Planners and Timetable | Dr. Abeer Anjum |

CURRICULUM LEADS

Prof. Ahsan Waheed Rathore, Vice Chancellor, UHS

Prof. Nadia Naseem, Pro-Vice Chancellor, UHS

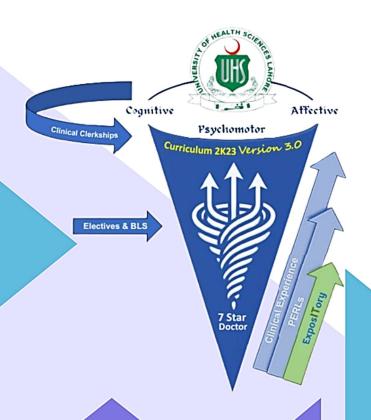
Lt. Col. (R) Dr. Khalid Rahim Khan TI (M), Director Medical Education & International Linkages

| WRITE UP, RESEARCH, EVALUATION & ANALYSIS | |
|---|---------------------|
| 1 | Dr. Rameen |
| 2 | Ms. Shehla Noor |
| 3 | Dr. Mamoona Shabbir |
| 4 | Mr. Faisal Imran |
| 5 | Dr. Hummad Hussain |
| Creative Design Version 3.0 | |
| 1 | Ms. Shehla Noor |





University of Health Sciences Lahore



Foreword to Curriculum 2K23
Version 3.0

Experiential Learning & the Feedback Process

Curriculum 2K23 is a live document. It was developed with the cognitive insight of experienced subject experts and skilled medical educationists, dedicated to the process of designing an integration which is practical and inclusive of all contextual elements.

The implementation process of the **Curriculum 2K23** was backed by two significant elements. The primary being the intensive faculty training at the inception through workshops and written guidelines. Secondly the continuous feedback from all the stakeholders.

Initial faculty development trainings were done across the affiliate colleges by the team of medical educationist who were involved in the principal designing and a reach out with the subject experts at the time of the development. These multiple interactions between the stakeholders not only ensured the comprehensiveness of the document but also guaranteed the validity of the content drafted. The framework of the designing process itself was authentication to the validity of the document.

Second significant aspect that was grounded into the process of development was to ensure a continuous feedback channel. Section 12 of **Curriculum 2K23** had a detailed but easy process of providing feedback regarding any aspect of the curriculum. All potential stakeholders had an easy and free access to the curriculum feedback channel. Over this last year, we have actively sought feedback from every tier of our learner community and engaged with stakeholders to ensure that the curriculum reflects the evolving needs of our students, faculty, and the community disease patterns at large.

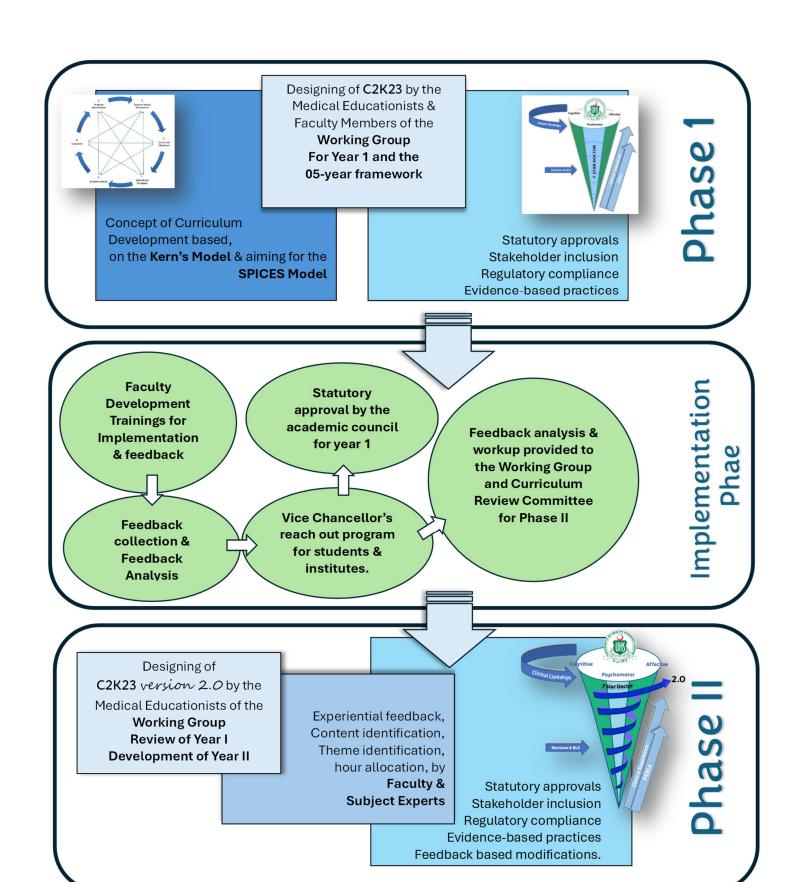
Vice Chancellor, University of Health Sciences Lahore, was meticulous regarding the structure, content, usability, feasibility, interpretation and familiarity by the end-users, the students. He adopted a methodology to himself reach out to the students and have one-on-one feedback. Students were called over from different colleges for meetings in a frank, conducive and informal way also to the university for their candid opinions, possible problems and suggestions for improvement. SPICES model of curriculum development holds 'student-centeredness', as a primary feature, so does Curriculum 2K23. The open channels for feedback have allowed us to hear diverse perspectives, understand concerns, and incorporate valuable insights into the new version of the curriculum.

The department of medical education at the University of Health Sciences Lahore has a dedicated cell for the analysis of feedback received, ensuring timely submission of the results of the block exams and collection of the study guides as well as instructional materials for archiving. After analysis of the feedback received it was further processed in one of the two patterns. If the analysis proved an action requiring an immediate incorporation into the curriculum, then a statutory process for approval by the board of studies and the academic council was started. All other analyzed feedback was categorized, and solutions were

developed through the same set of medical educationists of the 'Working Group'. The feedback and their suggested solutions were put up the review committee, subject experts, working group and the university's senior tier, for further changes and additions.

With all these actions of student centeredness, feedback collection, feedback analysis, continuous stakeholder input and transparent process of approval, the validity and viability of the **Curriculum 2K23** was continuously ensured. The experiential learning in the last one year was primarily for all the stakeholders at different points of development and implementation.

LT. COL.(R) DR. KHALID RAHIM KHAN TI (M) Director Medical Education & International Linkages University of Health Sciences Lahore



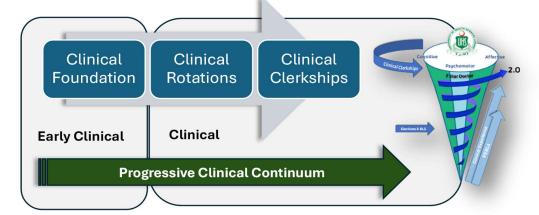
Preamble to Curriculum 2K23 version 2.0

Curriculum 2K23 *version* **2.0** is ready for implementation. As previously this version has also been developed and designed through a structured process for stakeholder inclusion, validation, content identification, impediment rectification, feedback analysis, and contextualization.

Curriculum 2K23 *version* **2.0** has been refined and calibrated from the end user's perspective which is the 'student'. An elaborate effort was made all along the year to extend the openness of feedback to the faculty members who were busy engaging in the challenge of transitioning to a modular integrated practice of education. Our experiential learning has led us to a better concept of contexts for the curricular updates. Building upon the success of our initial year of implementation, this revised curriculum is a testament to our commitment to excellence, adaptability, and continuous improvement in medical education. The process of improvement owes its gratitude to our dedicated subject experts, medical educationists & the curriculum review committee, who played a pivotal role in analyzing and responding to the feedback received. Through meticulous deliberation, we have integrated suggestions that enhance the overall quality and relevance of the curriculum. Few components of pathology section edited.

The Curriculum Review Committee, comprising seasoned professionals, was instrumental in the final drafting of the curriculum. Their expertise and insights have ensured that the curriculum aligns seamlessly with the current trends in medical education and addresses the evolving needs of the healthcare landscape.

In addition to refining existing components, we have introduced new features to further enrich the learning experience for our students. The pre-clinical year competency framework is the standard that the University expects the student to achieve before entering to the clinical rotation years. The first two years also had a clinical orientation through the 'Clinical Foundation' segment of C-FRC. However, this level of sub competencies described in the next section will enable the student to have an enriching experience when s/he enters the rotations for all clinical disciplines in the next year. A significant highlight of this integrated curriculum is the proposed competency framework for the pre-clinical years. This framework is designed to empower students to seamlessly apply their knowledge of basic medical sciences to problem-solving scenarios in clinical years and clerkships. It serves as a bridge that ensures a cohesive transition between foundational knowledge and practical application.



Recognizing the challenge of transitioning the Curriculum 2K23 version 2.0 has been designed to

facilitate continuity and depth in the educational journey.

Simultaneously, the **University of Health Sciences** has undertaken exam reforms to introduce more

standardized and structured assessments. These reforms, complementing the new curriculum, aim to

provide a comprehensive evaluation framework that aligns with the competencies expected from medical

professionals.

To maintain the integrity of individual disciplines, special attention has been given to preserve the identity

of each subject within the integrated framework. This approach guarantees that no discipline is

marginalized or overshadowed by others during the integration process.

Lastly, resource identification is a cardinal aspect of our curriculum development. We aim to align the

understanding of content and assessment requirements among faculty, examiners, paper setters, and,

most importantly, our students. This shared understanding will contribute to a more cohesive and effective

learning environment.

In conclusion, this integrated curriculum stands as a proof to our collective commitment to advancing

medical education. It is the result of collaboration, feedback, and a shared vision for excellence.

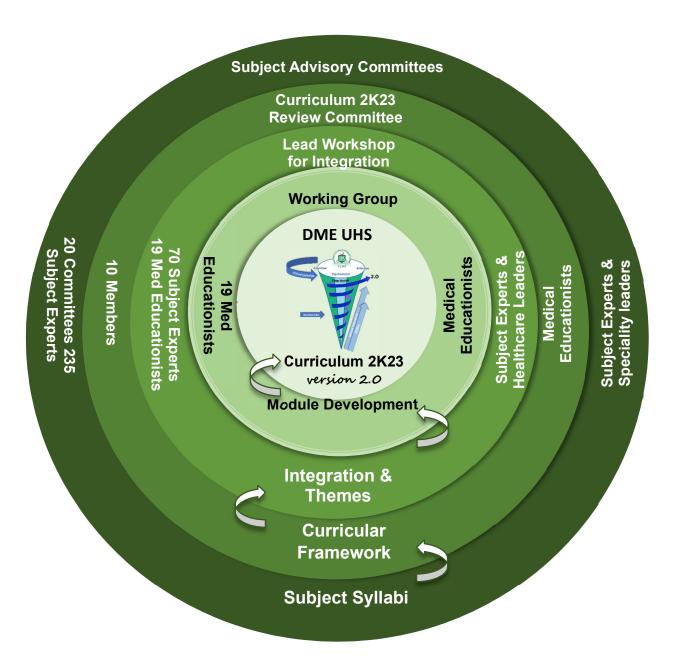
LT. COL.(R) DR. KHALID RAHIM KHAN TI (M)

Director Medical Education & International Linkages

University of Health Sciences Lahore

33

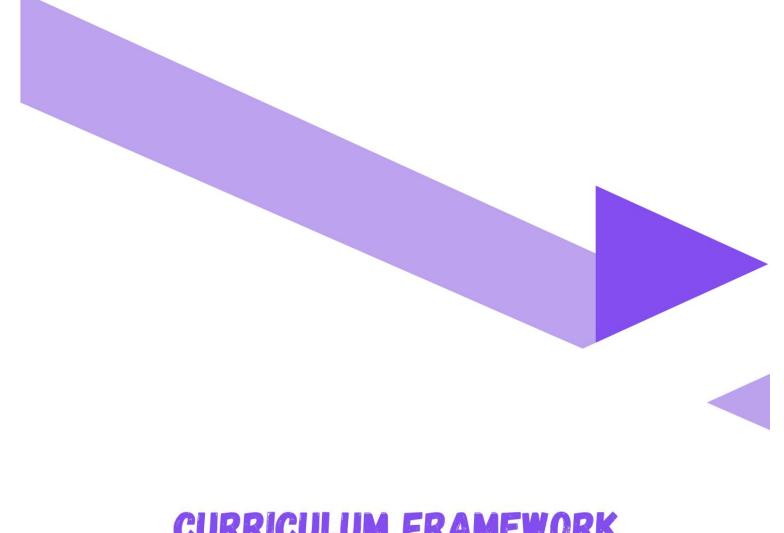
Iterative Model of Curriculum Development by UHS for Phase 2



LT. COL.(R) DR. KHALID RAHIM KHAN TI (M)
Director Medical Education & International Linkages

University of Health Sciences Lahore





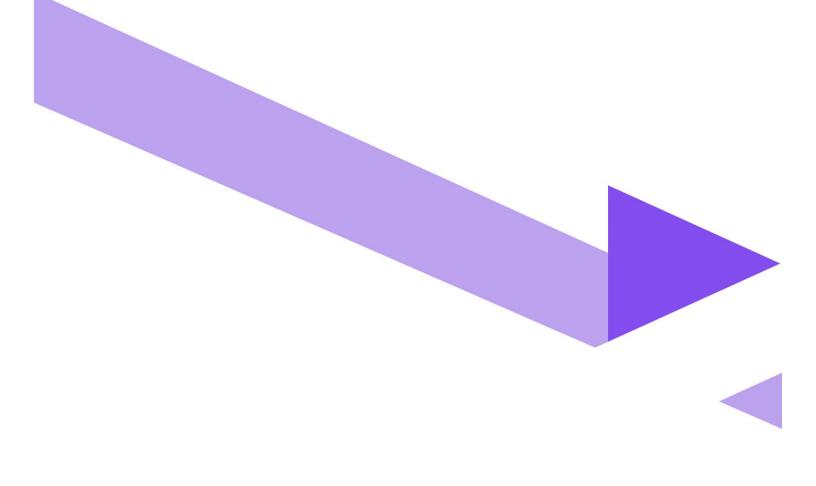
CURRICULUM FRAMEWORK



Framework 2K23 Verz urriculum

Block I Block II Block III FOUNDATION-1 CARDIOVASCULAR-1 MUSCULOSKELETAL **HEMATOPOIETIC &** & LOCOMOTION-1 **RESPIRATORY-1** LYMPHATIC Year-1 ISLAMIYAT, PAKISTAN STUDIES PERLS-1 **EXPOSITORY-1 QURAN-1 CIVICS** C-FRC 1 (CLINICAL-FOUNDATION, ROTATION, CLERKSHIPS) Block VI **Block V** Block IV **NEUROSCIENCES-I ENDOCRINOLOGY & GIT & NUTRITION-I** REPRODUCTION-I INFLAMMATION **RENAL-I HEAD & NECK,** Year-2 **SPECIAL SENSES** ISLAMIYAT. PAKISTAN STUDIES **QURAN-2** PERLS-2 EXPOSITORY-2 CIVICS C-FRC 2 (CLINICAL-FOUNDATION, ROTATION, CLERKSHIPS) Block VII Block IX Block VIII NEOPLASIA CARDIOVASCULAR-2 **FOUNDATION-2 & EBM** Modules GENERAL & CLINICAL PHARMACOLOGY **NFECTIOUS DISEASE RESPIRATORY-2** Year-3 COMMUNITY MEDICINE & FAMILY HEALTH-1 MUSCULOSKELETAL HEMATOPOIETIC & IMMUNITY & TRANSPLANT & LOCOMOTION-2 FORENSIC MEDICINE & TOXICOLOGY-3 **FORENSIC MEDICINE &** FORENSIC MEDICINE & TOXICOLOGY-3 TOXICOLOGY-3 PERLS-3 **EXPOSITORY-3** C-FRC 3 (CLINICAL-FOUNDATION, ROTATION, CLERKSHIPS) **Block XII** Block X Block XI ENDOCRINE & REPRODUCTION 2 COMMUNITY MEDICINE & FAMILY HEALTH 2 **NEUROSCIENCES 2** Year-4 **PSYCHIATRY** MATERNAL & CHILD HEALTH **OPHTHALMOLOGY GIT & NUTRITION 2 RENAL 2 OTORHINOLYRNGOLOGY DERMATOLOGY BEHAVIOURAL SCIENCES** PERLS-4 **EXPOSITORY-4 ELECTIVES BLS WORKSHOPS** C-FRC 4 (CLINICAL-FOUNDATION, ROTATION, CLERKSHIPS) GYNECOLOGY & OBSTETRICS Year-5 PEDIATRICS MEDICINE **SURGERY** C-FRC 5 (CLINICAL-FOUNDATION, ROTATION, CLERKSHIPS)





COMPETENCY FRAMEWORK

EARLY CLINICAL YEARS 1 & 2



Curriculum 2K23 version 2.0 has been purposefully developed and using the expertise of a group of medical educationists from the affiliated colleges, with the input of subject experts & healthcare leaders to have outcomes which are not only locally contextualized but also globally acceptable. With the final professional profile as the foundational underpinning for a framework, the need for precisely defined competencies and outcomes becomes a must.

University of Health Sciences Lahore emphasizing on the knowledge base, attributes, professional behaviours, and skills set that the yield of the doctors which are brought forth into the healthcare landscape of the country possess at the time of graduating from its affiliated colleges.

A competency is a blend of background knowledge, skills, and attitude that enables a professional to perform as a job requirement.

The competency framework defined during the development of **Curriculum 2K23** version 2.0 has further been categorized into the competencies and behavioral descriptors required to enter the clinical segment of the competency continuum and the exit competencies at the end of the 5-year program.

Current edition of **Curriculum 2K23** *version* 2.0 contains the competency framework for the preclinical years. This framework elaborates the competencies, sub competencies and their behavioral descriptors which the student must possess before entering the clinical years. The module and assessments of the C-FRC and the early clinically oriented activities that have commenced in the first two years will help steer the students to achieve these goals.

Competency framework anchors the professional requirements, training benchmarks and societal expectations in a concise manner. The relatable aspect of attainment sets the path for the institutional implementation. The students should be capable of a deeper understanding of the concepts of competencies and what professional requirements do they need to fulfill before every next stage of their educational journey and skill acquisition. The departments of Medical Education should not only endorse these expectations but should also help establish a culture of professing to the community and stakeholders for an upkeep of laid down standards. The professed standards defined by the regulatory authority, community or religious integrity.

The current chapter contains the competency framework for the 'Preclinical' years, only. This may serve as a base guideline framework for the institutional designing for their undergraduate training protocols. The sub competencies and their behavioral descriptors are all aligned to the requirements of the 7-star doctor which has been defined by the national regulatory authority and mentioned verbatim in chapter 5. The same set of sub competencies and their behavioral descriptors will diversify into the attributes, clinical

competencies, and sub competencies for the remainder of the competency framework which will follow in the next and final version.

The current framework scopes the behaviour requirements and attributes to be achieved. However, all the affiliate institutions have the latitude to further define the sub competencies and their behavioral descriptors to be achieved, based on their own institutional core values and ideology.





Core Competencies &
Sub- Competencies
to be achieved before entering
the Clinical Years

| Competency | Sub Competency | Behavioral Descriptors for Early Clinical Years |
|---------------|--|---|
| Skillful | Clinical Reasoning | Demonstrate the ability to apply fundamental scientific knowledge to clinical scenarios, such as patient histories and hypothetical case presentations showcasing the integration of theoretical learning into practical clinical reasoning. Critically assess and evaluate existing medical literature and research to inform decision-making in hypothetical patient scenarios during preclinical case studies. Engage in collaborative problem-solving exercises with peers, actively participating in preclinical problem-based discussions to enhance clinical reasoning skills through dialogue and debate. |
| | Diagnostic reasoning | Apply foundational knowledge from basic sciences to critically evaluate the clinical scenarios, to formulate differential diagnoses during preclinical case discussions. |
| Knowledgeable | Holistic Understanding and Comprehensive Knowledge | Demonstrate a thorough understanding of normal and abnormal structures and functions of the body. Apply comprehensive knowledge in identifying molecular, cellular, biochemical, and physiological mechanisms. Evaluate the impact of growth, development, and aging. Explain the various etiological causes and causative agents for specific injuries, illnesses, and diseases. Identify and analyse biological and social determinants and risk factors of diseases. Recognize and explain patterns of normal and abnormal human behavior |
| | Synthesis of Interdisciplinary Knowledge | Integrate knowledge from various medical disciplines to inform hypothetical clinical decision-making and synthesize information for a comprehensive understanding of hypothetical patient cases. Apply a holistic approach by considering the interconnectedness of biological, social, and psychological factors in theoretical healthcare scenarios, and propose integrated solutions to hypothetical clinical problems using interdisciplinary knowledge. |
| | Evidence Based Practice | Critically assess and evaluate existing medical literature and research to inform decision-making in hypothetical patient scenarios during preclinical case studies. Integrate knowledge from various scientific disciplines to develop comprehensive and evidence-based explanations for medical phenomena encountered in preclinical coursework. |

| Community Health Promoter | Health Tronds Analysis | Critically review scientific literature to stay informed |
|------------------------------|-----------------------------------|--|
| | Health Trends Analysis | about health trends. |
| | Advocacy for Health | |
| | Equity, Promotion, and Prevention | Demonstrate an understanding of community health concerns |
| Critical thinking | Information Retrieval | Seeks information from various academic sources, including textbooks, research articles, and online resources. |
| | Problem solving | Critically assesses experimental data during laboratory sessions, showing attention to detail and an understanding of its relevance to medical concepts. Demonstrates effective identification and analysis of medical issues during case-based and problem based discussions. Applies logical reasoning to propose viable solutions in problem-solving exercises. Displays adaptability in integrating knowledge to address complex medical challenges. Shows proficiency in utilizing evidence-based strategies to resolve clinical puzzles during preclinical training. |
| | Reflective Thinking | Sets specific learning goals, creates plans to achieve them, and reflects on progress regularly. Reflects on problem-solving processes, identifying strategies that were effective and areas for refinement. |
| Professional | Self-directed Learning | Regularly evaluates personal academic progress and adjusts study strategies accordingly. Actively engages in collaborative peer study groups to enhance learning. Demonstrates effective use of technology to manage and organize study materials. |
| | Altruistic and Empathetic: | Displays empathy and understanding in peer, faculty, and staff interactions. |
| | Ethical Practice | Demonstrates self and professional accountability, honesty, and ethical behaviour. Uphold principles of academic integrity in all coursework. Consistently exhibits professional conduct, respecting academic and ethical standards, serving as a positive example for classmates. |
| Scholar | Research Competency | Displays foundational skills in research, including the identification of researchable problems, formulation of clear research questions, and engagement in literature reviews, setting the groundwork for future research endeavors. |

| | Educational Proficiency | Demonstrates consistent high performance in coursework, showcasing a deep understanding of foundational medical sciences during preclinical years. Actively engages in self-directed learning, displaying a strong commitment to mastering educational content and fostering a solid academic foundation in the early years of MBBS. |
|--------------------------|----------------------------|---|
| Leader and Role Model | Healthcare Leadership | Demonstrating effective communication and teamwork skills during PBLs, simulations or practical sessions. Actively seeks collaboration on group projects, fostering teamwork and collective problem-solving skills. |
| | Peer Engagement | Actively seeks opportunities to assist peers in understanding complex medical concepts, displaying a collaborative and supportive attitude that fosters a culture of shared learning and growth. |

Institutional Implementation

Curriculum 2K23 version 2.0 requires to be implemented by all institutions based on their own unique identity but with true letter and spirit.

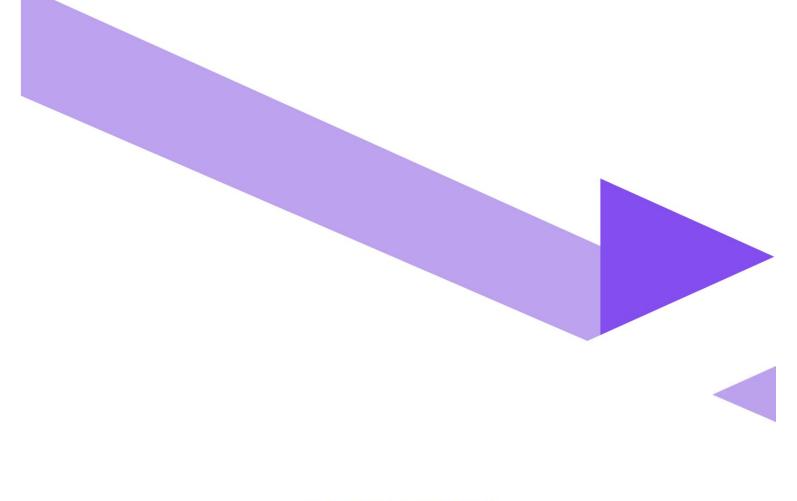
Competency framework should be adopted, translated, and implemented through all the methodologies and integrated into all the educational processes of the institutions.

The pre-clinical competency framework will serve as the main scaffold for developing the clinical competencies and clerkship related attributes. So, the significance of implementing this is foundational for developing a seven-star doctor.

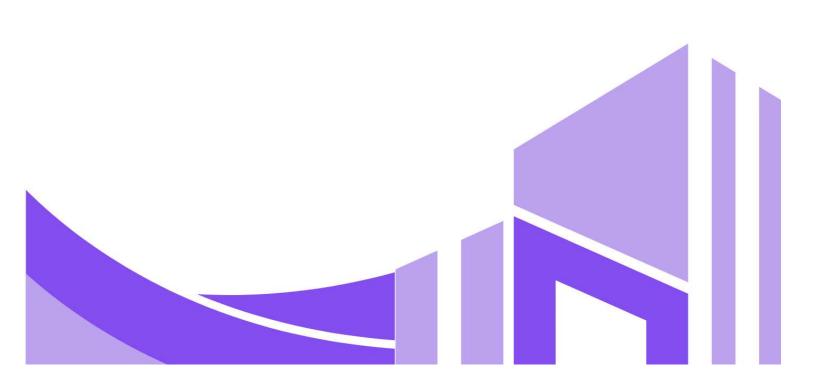
LT. COL.(R) DR. KHALID RAHIM KHAN TI (M)

Director Medical Education & International Linkages University of Health Sciences Lahore





<u>PREAMBLE</u>



Introduction

A curriculum that is responsive to societal changes is necessary for positive development and growth of students. It is thus crucial to continually assess and update the curriculum through program evaluations and revamping to fulfill the goal of creating exceptional education program. The medical field provides an excellent example of the need for continual up gradation of the curriculum as the definition of disease itself has evolved over time. Disease was previously defined as a physical change in organ; however, this understanding has now expanded to include the multifaceted influence of social, psychological, and cultural factors on health.

To achieve the mission of producing a seven-star doctor having the generic competencies of "Skillful, Knowledgeable, Community Health Promoter, Critical Thinker, Professional, Scholar, Leader and Role Model", The **University of Health Sciences Lahore**, is introducing a modular integrated undergraduate curriculum for its constituent and affiliated medical colleges. These competencies are further outlined by various enabling traits specifying knowledge, skills, and attitude.

Our concept and process of curriculum development is grounded in the Kern's model for medical curriculum development.

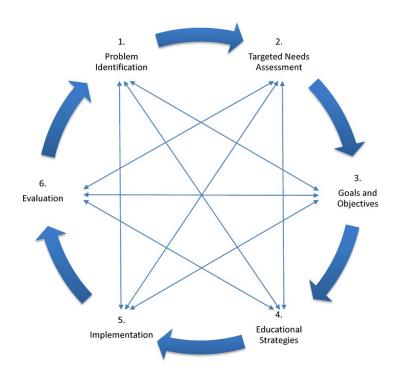


Figure. 1

Kern's Cycle of Medical Curriculum Development

The purpose of integrated modular curriculum is to encourage the students to think as doctors from the day they enter medical school. In vertical integration approach, basic science learning is placed in the context of clinical and professional practice along with behavioral sciences, thus leading to a broader conception of ways to teach and learn medicine. Overlap of content in different subjects hampers the pace of concept development and increases reluctance to learning. This must be curtailed through integrated approach. Readiness of knowledge availability is

another factor which encourages a priority of knowledge acquisition in the formal undergraduate settings. Such calibrations and refinement through an integrated approach prioritizes core concepts and the 'must know' principles for a student.

Role of University of Health Sciences Lahore

University of Health Sciences Lahore is a public sector internationally ranked university with a QS ranking of #651-670. Since its inception in October 2002, it has come a long way in terms of training healthcare professionals, developing educational disciplines and contributing to the healthcare infrastructure of the province. University of Health Sciences Lahore (UHS) is a vibrant, internationally recognized, student-centered, research university with 128 colleges and institutes affiliated and around 106,916 undergraduate and 9157 postgraduate students registered with it.

It was the first dedicated health sciences university established in the province with a vision to bring qualitative and quantitative revolution in medical education and research through evolution. Almost all the public and private medical and dental colleges of the Punjab province are affiliated with UHS.

The University is focused on delivering high-quality instruction in Basic Medical Sciences, revitalizing the essential fields of Nursing and Allied Health Sciences, pioneering courses in Medical Education, Human Genetics, Behavioral Sciences, and fostering indigenous research activities through its state-of-the-art laboratories and the Research and Development center. It is one of the five main degree awarding institutes of the country and the Degrees awarded are recognized by the HEC & PMDC.

University of Health Sciences Lahore (UHS) bears the onus of the structured accredited training, and skill acquisition of the students for MBBS in the province. A constant upkeep in terms of the content identification, structured framework of training, enlisting tangible resources and inculcation of newer methodologies for faculty trainings is undertaken.

University of Health Sciences Lahore (UHS) being the degree awarding institute ensures that the learning outcomes are achieved by respective medical colleges before the students are assessed by exit exams. The clarity of assessment policy aligned with the program outcomes endorses the transparency of the assessment and structured training of the graduates.

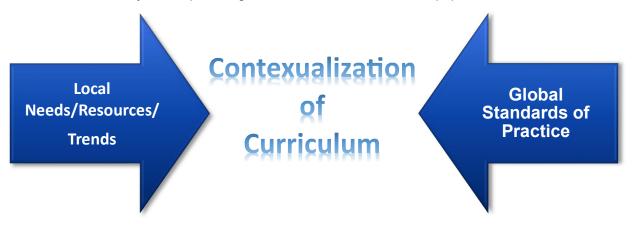
University of Health Sciences Lahore (UHS) endorses, patronizes, guides, and monitors all educational standards for the benefit of the principal stakeholder and the main beneficiary of the entire process which is the 'student'.

Rationale & Need for Contextualization

University of Health Sciences Lahore is a dynamic institution having a vision for conforming to any global health standards and is ever evolving for any newer innovative methodologies. Since its inception in 2002 the University of Health Sciences Lahore has catered for the affiliation protocols, faculty development and institutional practices.

Contextualization in the curriculum refers to the process of integrating the local needs and global standards into the curriculum. It ensures that the curriculum is relevant to the needs of the local community, while also meeting the global standards.

In the context of health professionals, contextualization is essential as it helps students to be better prepared for the real world, where they will be providing healthcare services to diverse populations.



Content identification, contextualization, and validation at the time of curriculum development requires consideration of the local needs and global standards simultaneously, by the relevant leaders and experts. To achieve this, University of Health Sciences Lahore involved the subject experts and medical educationists. The university plans to have an input from all the local stakeholders. This will help to ensure that the curriculum meets the currently required needs.

Why Contextualization is Required for Pakistan Where Old Discipline-Based Curriculum is Used?

In Pakistan, where an old discipline-based curriculum is used, contextualization is required to ensure that the curriculum is relevant to the needs of the local community. The need for contextualization in curriculum development in Pakistan is evident due to the country's unique healthcare challenges such as the high burden of infectious diseases, malnutrition, and maternal and child mortality, in addition to the socioeconomic factors. The high burden of communicable and non-communicable diseases, limited healthcare resources, and cultural and linguistic diversity require a tailored approach to medical education.

How Contextualization of Curriculum Will Affect the Performance of Graduates?

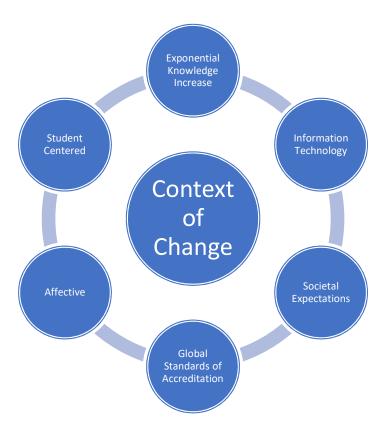
Contextualization of the curriculum is likely to have a positive impact on the performance of graduates. By integrating basic and clinical subjects, by having early clinical orientation, by developing an understanding of the context of learning with the practical approach the graduates will be better prepared to address the health challenges in their local communities. This will improve their competence, confidence, and ability to provide high-quality healthcare services to diverse populations.

Context Facets of Curriculum 2K23

University of Health Sciences Lahore believes in the globally accepted best practices for any formal undertaking of development. All the processes of syllabi identification, thematic structure, content validation and contextualization of curricula a structured process was designed by the Department of Medical Education UHS. The scaffolding principle of development remained the incorporation of the existing teaching and learning practices merged with the global recommendations for change.

A few perspectives for the context of change were:

- Exponential increase in the course content has been identified over the past few years. This increased
 volume of knowledge base is due to educational advancements, technological enhancements, and scientific
 discoveries, which have made their way into the mainstream body of work. This increase in the required
 knowledge base requires prioritization, expunging of redundant concepts, and modern modes of information
 transfer.
- Societal expectations from the healthcare workers are always in an evolving mode. The patient satisfaction and health system responsiveness ideally should be equally poised. Paradigms like the societal needs, healthcare access, equity of resources and systems awareness are the undercurrents that steer the healthcare systems. These elements evolve and redefine constantly thus setting the pace and specifics for the social accountability for the healthcare workforce. These elements need to be formally addressed in the curriculum for the professional trainings, social grooming, and sense of accountability of the graduates.
- Post pandemic world has transformed to a newer level of educational and meetups paradigms. With the
 advent of hybrid learning, online monitoring, and blended courses the methodologies need to shelter the
 possibility, to blend methodologies for a hybrid framework if required. Such a framework was only possible
 with the advent of the technological advancements.
- As the curriculum was being revamped, evaluated, and drafted it was calibrated against in vogue globally
 accepted standards of Basic Medical Education. Conformity to the national regulatory authorities is a
 mandatory requirement. However, aligning with the international accrediting bodies gives a purposeful
 direction to the curriculum thus ensuring international acceptance and global employability.



- Previously the curriculum was always expanded for the knowledge base and skill acquisition. However now the societal expectations, social awareness, legal bindings, increasing accountability and community interactions required a categorical structured training of the 'affective' domain of the young learners. This perspective was also kept forth while designing a dedicated 'spiral' for the affective training. To ensure the training of this domain and to make it objective-driven the spiral of 'PERLs' will be subjected to assessment also.
- Finally, the most significant underpinning to the success of any curriculum, the 'student-centeredness' was
 grounded into the modus of delivery. Introduction of Problem based learning and the elements like
 'Electives', Self-directed learning sessions and portfolio development, will place the control of learning with
 the students, per se.

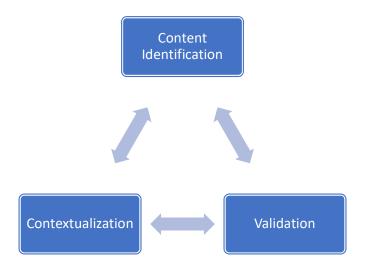
Process of Curriculum Development

With a backdrop for contextualization of curricular elements and a need for developing a newer curriculum while maintaining a connect with the previously established educational and professional practices a clearly demarcated process was designed to have a standardized input by the subject experts. **University of Health Sciences Lahore**, has a claim to immense cognitive richness based on the faculty members and subject experts which represent all the affiliated colleges of UHS. These subject experts and medical educationists were called in sequentially to play the cardinal roles of syllabi identification, thematic listings, hours allocation, defining scope of integration, module nomination, sequencing of content and identification of integrating components. An iterative process of deliberation and decision making was adopted through numerous meetings and workshops to refine all the previously mentioned elements of curriculum.

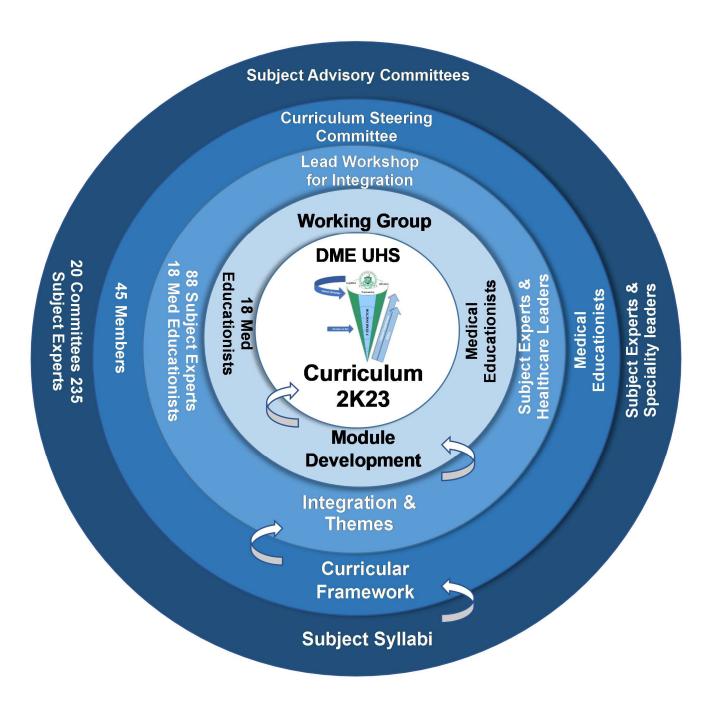
- The initial syllabi identification was undertaken by 20 subject advisory committees all represented by respective subject experts. These subject experts ensured the inclusion of all the essential components of the subject into the respective syllabi, leaving behind any redundant, outdated, or non-contextual element.
 These committees are comprised of more than 233 subject experts.
- As a next step the Curricular Steering committee was called in. The steering committee is comprised of Medical Educationists from all the affiliated medical colleges. A 42 membered committee evaluated and approved the process of finalizing the 05 years framework of a 'Modular Integrated Curriculum' with all its proposed elements, spirals, patterns, modules, and clerkships. They primarily focused on the curricular framework, module identification, module placements, clerkships, and alignment with the assessment methodologies.
- The next step of curricular design and development entailed the theme identifications, placement of elements of syllabi in the respective modular patterns in accordance to the identified themes, defining topics to be covered for each learning objective and allocation of hours for different components. This was done in a continuous activity as a hands-on-development-&-design-workshop. It was carried out by 88 subject experts and 18 medical educationists. The subject experts mostly represented the subject advisory committees. However, all the subject experts were leaders of their own respective specialties and had noteworthy educational experience for their disciplines.
- As a final step a working group all comprising of Lead Medical Educationists and the Department of Medical
 Education finalized the modules with the decided structure, themes, allocation of hours, syllabi content,
 respective topics and recommended clinical relevance.
- The finalized modules, assessment policy and framework have gone through the statutory process of Board of Studies, Academic Council, ASRB and the Syndicate.
- The Curriculum being a live document, any recommendations, additions, or deletions that were recommended throughout the statutory approvals were incorporated in the curriculum guidelines.
- It has also been ensured that a pattern of feedback and curricular evaluations becomes a part of the entire implementation process so that the revamping and time to time additions could be undertaken. This final

maneuver is necessary to guarantee inclusion of any educational element and ensure no redundancy in the delivery of content.

• The entire method of stakeholder inclusion, discipline perspective, medical educationists monitor and leadership participation for the curricular development.



Iterative Model of Curriculum Development by UHS for Phase 1



Challenges to Curriculum Development

The stakeholder and healthcare leader inclusion expunged any conventional challenges for developing curriculum, reluctance to paradigm shift or possible impediments to implementation of the curriculum.

However, there was just one challenge which UHS identified for the process. One challenge which a university with a broad base of affiliated institutes faces is the 'diversity'. University of Health Sciences Lahore has a diverse set of affiliations. This diversity spans in terms of geographical locations of the colleges as well as in terms of tangible and human resources available to different medical colleges. A dichotomy of public/private sector institutional perspectives is yet another factor to be addressed in terms of diversity. However even from the diverse stand points the most challenging was the number of students per institution, which varied from 100 to > 300 in certain colleges. Any curricular revamping or educational reform undertaken or implemented have to cater for the needs of all its affiliated and constituent institutes.

This challenge of 'diversity' was accepted by University of Health Sciences Lahore by endorsing the 'diversity'. By formulating guidelines which are compatible with the institutional needs while addresses the revamp required. The guidelines ensure that conformity to the principal change is plausible and implementable for all the stakeholders. However, a latitude of adoption in terms of modes of information transfer and timetable designing etc. was left for the institutional discretion.

Curriculum 2K23 is a modular integrated outcome-based curriculum. The conformity to its standards and implementation of its learning outcomes is possible for all the affiliated colleges keeping their own institutional identity and college vision aligned. Conformity to the curricular standards and elements will be possible in an explicit, structured and methodical way by any affiliated institute irrespective of its available tangible or human resources.

Scope of Integration

The curricular reforms and program evaluations are a dynamic need for the upkeep of learning, to implement innovations, contextualize educational processes with the societal needs and to keep pace with the advancements in the healthcare systems and technology. **University of Health Sciences Lahore** fully endorses these denominators of change and such a dynamic sustainment is in line with the university's vision.



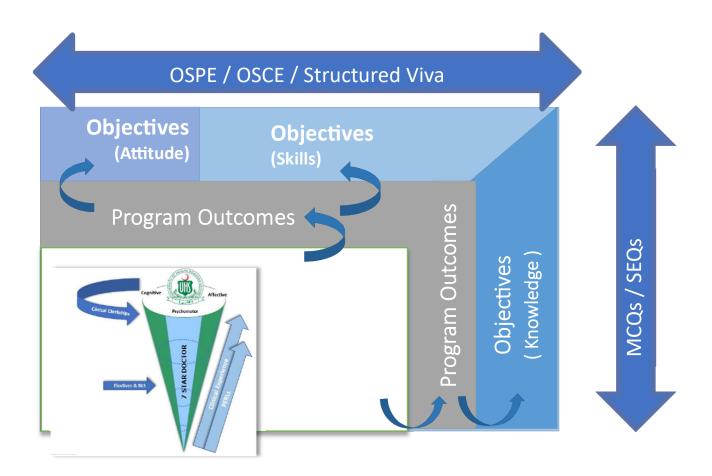
We are living in times when a century old concept based on the Flexner's report for division into pre-clinical and clinical stages has now evolving into newer paradigms of integration across years & integration across disciplines. Meizrow's theory of 'transformative learning' which roots into creating dynamic relationships between teachers, students, and a shared body of knowledge to promote student learning and personal growth, is forming another basis for curricular reforms.

The modular integrated curriculum aligns the MBBS program outcomes with the nationally defined competencies of seven-star

doctors. The program outcomes are at par with the outcomes that the national regulatory authorities have processed till date for the MBBS graduates. Curriculum 2K23 outcomes translate the seven-star competencies to the objectives specific learning outcomes for the sessions. The outcomes are fragmented to objectives representing the three domains of learning and then graduated in spirals and horizontally integrated so as to acquire a professional approach, develop a broad-based practical knowledge, to nurture the learner's epistemic curiosity and to promote higher order thinking.

Another aspect of curricular designing that has been kept forth is to incorporate element of individual learning embedded into the broader practices and collective learning situations. MITs like PBL and small group discussions foster the individual learning tendencies flourishing.

Practicality and applied knowledge require early clinical exposure which has been the foremost perspective while drafting the spiral of C-FRC (Clinical Skills Foundation, Rotation and Clerkships). An early clinical exposure in the first two years despite being limited still augments the curiosity and generates clinical contexts of learning.



Seven Star Competencies

A few salient features that have been incorporated in **Curriculum 2K23** for all the three domains of training, after deliberations and through an iterative process by subject experts, medical educationists and the University lead are as follows:

Horizontal Integration

Cognitive

The framework of **Curriculum 2K23** has 44 modules spanning 05 years. The horizontal integration 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 & Themes

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 discretion does not prohibit adopting any other thematic approach provided that the program outcomes are adequately achieved.

Vertical Integration

Spiral placement of the modules within the framework ensures a revisit of the basic sciences. In the first step the applied / clinical learning objectives orientate 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 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 wards, 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.



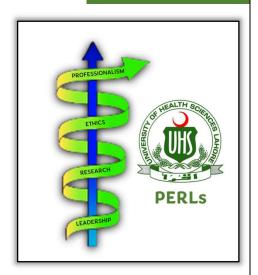
The subsequent two years the spiral will move on to Clinical Skills -

Rotations. The rotations in different wards will be based on foundational developmental already commenced in yesteryears. 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 and family medicine will also be broadening the element of systems thinking and diversity of practice for a healthcare leader of tomorrow.

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 C-FRC 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 elements like advocacy, equity or resources and healthcare access, a formal training is a must. The categorical approach for this training has been achieved



by rolling in the assessment of the competencies acquired along with development of portfolios. PERLs will run throughout the year via portfolio development. The portfolio development itself is a

methodology which ensures student centered learning. The method of self-reflection which is integral for portfolio development places the learner in the right spot to steer his/her own learning needs.

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 Forensic department and 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.

Type of evidence, activities to be performed, learning situation for the acquirement of the competencies, for the portfolio should be defined and enlisted by the academic council along with the help of the department of medical education. A 'mentoring platform' can flaunt the spirit of affective learning through the PERLs spiral. So, it is recommended that a mentorship program should be developed at the respective institutes.

Other Curricular Elements

The framework of **Curriculum 2K23** has certain other newer elements. These elements define our local context, our existing educational practices and conformity to evidence relating best international practices. Some will be commencing from the first year, however, rest will be a part of the following years. A few of these are:

- Quran
- Clinical Entrepreneurship
- Family Medicine
- Minimal Service Delivery Standards
- Electives
- Basic Life support

The purpose of developing a medical curriculum is to produce competent, empathetic, and efficient healthcare practitioners who can provide quality care to the sick. To achieve this goal, a modular integrated curriculum has been created that aligns the MBBS program outcomes with the seven-star doctor competencies defined nationally.

STANDARDS FOR A SEVEN STAR DOCTOR

The expected generic competencies in a medical graduate are as follows:

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

A 'seven-star doctor' Pakistani medical graduate should be able to demonstrate various traits as detailed under each competency. These attributes are the bare minimum requirements.

The program outcomes are at par with the outcomes that the national regulatory authorities have processed till date for the MBBS graduates. **Curriculum 2K23** outcomes translate these Sevenstar competencies to the objectives specific learning outcomes for the sessions.

According to national regulatory authority a Pakistani medical graduate who has attained the status of a 'seven-star doctor' is expected to demonstrate a variety of attributes within each competency. These qualities are considered essential and must be exhibited by the individual professionally and personally.

1. SKILLFUL (CLINICAL, COGNITIVE AND PATIENT CARE SKILLS)

Competent medical graduates require sound clinical skills grounded in knowledge of patient-centered care. They should be able to demonstrate that they can:

- a. Take a focused history and identify the patient's risk factors with appreciation of the biopsycho-social model taking into consideration the environment, ethnicity, race, religion, gender, age, sexual orientation, occupation, and cultural practices.
- b. Perform physical and psychological examinations in order to identify specific problems and differentiate those from others and non-conformity to anatomical or physiological configurations.

- c. Formulate a provisional diagnosis with justification, and two to three most likely differential diagnoses.
- d. Order appropriate investigations and interpret their reports to either confirm the diagnosis or differentiate from others.
- e. Perform various common procedures ensuring infection control in giving injections (I/M, I/V, S/C, I/D), managing infusion lines and blood transfusion, providing first aid, basic life support (including cardiopulmonary resuscitation), nebulization, wound care and dressings, oxygen therapy, taking swabs and smears, recording ECG, performing peak flow spirometry, blood sugar testing by glucometer, proctoscopy, urinary catheterization, urinalysis, and simple skin suturing.
- f. Debate the advantages, disadvantages, indications, contra-indications, limitations, and complications of the current treatment modalities, justifying the use of each by best available evidence.
- g. Formulate management plans in partnership with patients ensuring their safety by:
- h. Diagnosing and managing common health problems independently.
- i. Using cost-effective best evidence patient-safe approaches, reporting adverse drug reactions and drug interactions.
- j. Recognizing alternate medicine as an option with its effect on health.
- k. Incorporating patients' concerns, expectations & understanding, determining the extent to which the patients wish to be involved in decision-making, and respecting the decisions and rights of the patients.
- I. Recognizing, stabilizing (first aid and basic life support), investigating, and managing the patient as necessary (Transport, Triage, Neglect, Abuse).
- m. Being readily accessible when on duty.
- n. Alleviating pain and distress, including end-of-life care.
- o. Recognizing and working within the limits of own competence, making use of available resources, and taking advice from colleagues where appropriate, following the consultation process.
- p. Advice and counsel the patient and their family members for appropriate health promotion, rehabilitation and support, prevention of risk factors for family members including genetic counseling, immediate treatment and medications, complication, and prognosis, using simple terms and lay man language.
- q. Educate the patient regarding the health problem, available choices, management plan, self-care, and use of prescribed drugs and equipment.

- r. Recognize and take into consideration issues of equality, equity and diversity, and that opportunities are missed if not perceived to be useful by others.
- s. Describe and debate the reasons for the success or failures of various approaches to increase prevention and to decrease social inequities.
- t. Manage time and prioritize tasks and use of resources.
- u. Ensure patient safety always including strict infection control practices.

2. KNOWLEDGEABLE (SCIENTIFIC KNOWLEDGE FOR GOOD MEDICAL PRACTICE)

This embodies knowledge of basic medical and clinical sciences required for the practice of medicine.

A medical graduate should be able to:

a. Differentiate between:

- Normal and abnormal structure and functions of the body, to recognize and identify abnormalities in body structure in the context of different diseases.

Normal and abnormal molecular, cellular, biochemical, and physiological and pathophysiological mechanisms and processes (physical and mental) that maintain and derange homeostasis, in health and disease.

- Normal and abnormal human behavior and relate the abnormality to its psychopathological and pathophysiological basis.
- Effects of growth, development and ageing upon the individual, family, and community in the human life cycle.
- Biological and social determinants and risk factors of disease,
- Various etiological cause(s) and causative agents for specific injuries, illnesses, and diseases.
- Available therapeutic options to select the most appropriate treatment modality or drug(s) for common diseases based on pharmaco-dynamics and/or efficacy.

Other relevant biochemical, pharmacological, surgical, psychological, social interventions in acute and chronic illness, rehabilitation and end-of-life care and recognizing the role of religious and cultural interventions in such situations.

b. Relate:

- The effects and interactions of physical, emotional, and social environments to health and disease of humans.
- The natural history of acute and chronic, communicable, and non-communicable diseases with respective etiologic agents and effect of appropriate interventions on the progress of disease

c. Apply:

- Evidence-based medicine concepts to provide best possible cost-effective care.

d. Ensure:

Compliance with the legal system as it impacts health care and regulations.

Patient safety guidelines.

3. COMMUNITY HEALTH PROMOTER (KNOWLEDGE OF POPULATION HEALTH AND HEALTHCARE SYSTEMS)

To deal with problems of population-based primary health care, including health promotion and disease prevention with special emphasis on vulnerable populations, medical graduates require knowledge of population health and healthcare systems. The graduates should understand their role and be able to take appropriate action for protecting and promoting the health of populations. They should be able to:

- a. Understand their role and be able to take appropriate action for protecting and promoting thehealth of their community.
- **b.** Relate effects of lifestyles, genetic, demographic, environmental, social, cultural, economic, and psychological **determinants of health** and their impact on the community.
- c. Take appropriate action for infectious, non-communicable disease and injury prevention, and in protecting, maintaining, and promoting the health of individuals, families, and communities.
- d. Evaluate national and global trends in morbidity and mortality of diseases and injuries of social significance, the impact of migration and environmental factors on health and the role of national and international health organizations on health status.
- e. Work as an effective member of the healthcare team and demonstrate acceptance of the roles and responsibilities of other health and health related personnel in providing health care to individuals, populations, and communities.
- f. Adopt a multidisciplinary approach for health promoting interventions which require

shared responsibility and partnerships of the health care professions with the population served as well as inter-sectoral collaboration.

g. Apply the basics of health systems including policies, organizations, financing, costcontainmentmeasures of rising healthcare costs, and principles of effective management to the care of populations, families, and individuals.

Promote and implement mechanisms that **support equity** in access to healthcare and its quality.

4. CRITICAL THINKER (PROBLEM SOLVING AND REFLECTIVE PRACTICE)

The ability to critically evaluate existing knowledge, technology, and information, and to be able to reflecton it, is necessary for solving problems. Medical and dental graduates should be able to demonstrate:

- a. Use of information obtained and correlated from different sources.
- b. Critical data evaluation (interpret, analyze, synthesize, evaluate to form decisions)
- c. Dealing effectively with complexity, uncertainty, and probability in medical decisionmaking, reflecting on the latest evidence and its application to health issues.
- d. Regular reflection on their practice and standards of medical practice.
- **e. Initiating, participating in, or adapting to change as required**, to ensure that the profession and the patients benefit.
- f. Flexibility and a problem-solving approach
- g. Commitment to quality assurance and monitoring by participating in chart audits and reportingcritical incidents to improve medical practice and decrease risk to self, patients and the public.
- h. Raising concerns about public risk and patient safety.

5. PROFESSIONAL (BEHAVIOR AND PROFESSIONALISM)

Competent medical graduates require professional values, attitudes and behaviors that embody good medical practice i.e., life-long learning, altruism, empathy, cultural and religious sensitivity, honesty, accountability, probity, ethics, communication skills, and working in teams. Medical graduates should be cognizant of the PMC competencies. Graduates should be role models of their code of conduct, professionalism, and values, on and off duty, throughout their lives, and thus lead by example, to justify the trust reposed in them by the public. Their behavior must enhance public trust in theprofession.

i. Life-long Self-directed Learner

Medical graduates must continually acquire new scientific knowledge and skills to maintain competence and incorporate it into their day-to-day medical practice. For life-long learning, they should demonstrate a desire for continuing medical education during their professional life through personal development activities to continuously acquiring and using new knowledge and technologies. Medical graduates should be able to:

- a. Demonstrate continuous learning based on regular self-assessment.
- **b. Seek peer feedback**. This also includes a continuous undertaking of self-directed study and credited, continuous medical education activities up to re-licensure and recertification.
- **c. Manage information effectively** to use it for efficient and effective self-learning, medical problem solving and decision-making:
 - Accurately document and maintain records of their practice for better patient care and foranalysis and improvement.
 - Retrieve patient-specific information from a clinical data system.
 - Using information and communication technology based on its value and limitations.
 - Search, collect, organize, and interpret health and biomedical information from credibledatabases and sources.
 - Match patient information to evidence available in literature to form judgments for diagnostic, therapeutic, preventive or prognostic decisions and for surveillance and monitoring of health status.
- d. Provide evidence of continuing career advancement by pursuing further training in specific fields or continuing professional development (CPD) by attending CPD programs in their primary discipline or as a professional. This evidence may be collated by maintaining professional development portfolios.
- **e. Function effectively as a mentor and a trainer** in order to appraise, assess, teach, and provide.
 - feedback to themselves, peers, colleagues, and students.
- f. Respond positively to appraisals and feedback.

ii. Altruistic and Empathetic

Medical graduates should be able to demonstrate professional values of empathy, altruism and culturalsensitivity in arranging or coordinating the best possible care with:

- Appropriate demeanor and dress code.
- Responsibility, compassion, empathy, honesty, and integrity.
- Tolerance for diversity.
- Caring attitude towards patients and health problems.
- Put patients first and the patient's needs before their own.
- Have patient safety as a top priority.
- Culturally sensitive and respectful of all religious beliefs.

Special sensitivity towards vulnerable populations.

iii. Ethical

Medical graduates should be able to demonstrate professional values of self and professional accountability, honesty, probity, and ethics.

- **a. Without discrimination** on the basis of age, gender, religion or beliefs, color, race, ethnic or national origin, culture, disability, disease, lifestyle, marital or parental status, sexual orientationand social or economic status.
 - b. Strive for constant improvement of self and health delivery systems.
 - c. Respect the views and interests of the patient and patient's family.
 - **d. Uphold principles** of patient autonomy, beneficence, non-maleficence, justice, confidentiality and informed consent.
 - e. Use moral reasoning in decision-making while dealing with conflicts amongst ethical, legaland professional issues including those raised by economic constraints, commercialization of healthcare, and scientific advances.

Being accountable for regulation of self and the profession, through audits and performance reviews, in setting up one's practice and in dealing with pharmaceutical and other commercial enterprises.

iv. Collaborator

The medical graduate should be able to demonstrate skills of teamwork to best serve the interests of thepatient, profession and institution by:

- a. Working as an effective team member, understanding the importance of each role.
- **b.** Demonstrating collegiality and respect for juniors, peers, seniors and the healthcare team.
- c. Continuously assessing themselves and others in their roles and acting accordingly.
- d. Sharing information and handing over care appropriately.

Focusing on a collegial but problem-solving approach.

v. <u>Communicator</u>

The medical graduates should be able to demonstrate:

- **a. Non-Verbal communication skills**, including active listening, empathy and a caring attitude; and demonstrating considerate and sensitive manners while dealing with patients and their families, nurses, other health professionals, community, the general public and the media.
- **b. Verbal communication skills**, clearly expressing themselves in layman's language; counselling patients sensitively and effectively, providing information in a manner which ensuresthat patients and families have understood the full information, so that they make educated decisions when consenting to any procedure or therapy; clear, effective and sensitive communication for breaking bad news, dealing with an angry or violent patient, difficult circumstances and vulnerable patients; presentation skills.
- **c. Written and electronic communication skills**, with well-organized, legible, accurate, complete and concise documentation of prescriptions, medical records, procedural and progressnotes, discharge summaries and referral letters including all important information and fulfilling medico legal requirements.
- d. Confidentiality, and balance confidentiality with public risk.

Dissemination of information and research findings to improve health care.

6. SCHOLAR & RESEARCHER

The medical graduates are expected to demonstrate constructive criticism, a spirit of enquiry, creativity and a research-oriented attitude. The graduates should be able to:

- a. Identify a researchable problem and critically review the literature
- b. Phrase succinct research questions and formulate hypotheses
- **c. Identify** the appropriate research design(s) in epidemiology and analytical tests in biostatistics to answer the research question.
- d. Collect, analyze, and evaluate data, and present results.
- e. Demonstrate ethics in conducting research and in ownership of intellectual property.

7.LEADER AND ROLE MODEL

The medical graduates are expected to demonstrate exemplary conduct and leadership potential in:

- **a.** Advancing healthcare.
- **b.** Enhancing medical education.
- **c.** Initiating, participating in and adapting to change, using scientific evidence and approaches.
- **d.** Enhancing the trust of the public in the medical and dental profession by being exceptional rolemodels at work and when away.
- e. Accepting leadership roles if required.
- **f.** Providing leadership in issues concerning society.

LT. COL.(R) DR. KHALID RAHIM KHAN TI (M)

Director Medical Education & International Linkages University of Health Sciences Lahore





LIST OF ABBREVIATIONS **Abbreviations** Subjects Α Anatomy **ABG** arterial blood gas Aging Ag AKI acute kidney injury ALT alanine transaminase AMP Adenosine monophosphate ANS Autonomic Nervous System AST aspartate aminotransferase ΑV Atrioventricular В Biochemistry BhS **Behavioral Sciences** С Civics CBC Complete Blood Count C-FRC Clinical-Foundation Rotation Clerkship CK Creatine kinase CM Community Medicine CNS Central Nervous System CO Carbon monoxide CO2 Carbon dioxide COPD Chronic obstructive pulmonary disease COX cyclooxygenase CPR Cardio pulmonary Resuscitation CT Computed tomography CV Cardiovascular CVA cerebral vascular accident DALY Disability-Adjusted Life Year **DCMLS** Dorsal column medial lemniscus system DLC differential Leukocyte Count DNA Deoxy Ribonucleic Acid **ECF** Extra Cellular Fluid ECG Electrocardiography ECP Emergency contraceptive pills EEG Electroencephalogram

| EnR | Endocrinology & Reproduction |
|-------|-----------------------------------|
| ENT | Ear Nose Throat |
| ER | Emergency Room |
| F | Foundation |
| FEV1 | Forced Expiratory Volume 1 |
| FM | Forensic Medicine |
| FVC | Forced Vital Capacity |
| GFR | Glomerular Filtration Rate |
| GIT | Gastrointestinal tract |
| GMP | guanosine monophosphate |
| GO | Gynecology and Obstetrics |
| GTO | Golgi Tendon Organ |
| HCL | Hydrochloric acid |
| H & E | Hematoxylin and eosin |
| HL | Hematopoietic & Lymphatic |
| HMP | Hexose Monophosphate |
| HNSS | Head & Neck and Special Senses |
| ICF | Intra Cellular Fluid |
| IL | Interleukin |
| IN | Inflammation |
| INR | International Normalized Ratio |
| IUD | Intrauterine device |
| IUGR | Intra Uterine Growth Restriction |
| JVP | Jugular Venous Pulse |
| LDH | Lactate Dehydrogenase |
| M | Medicine |
| MALT | Mucosa Associated Lymphoid Tissue |
| MCH | Mean Corpuscular Volume |
| MCV | Mean Corpuscular Volume |
| MRI | Magnetic resonance imaging |
| MS | Musculoskeletal |
| MSD | Musculoskeletal disorders |
| NEAA | non-essential amino acids |
| NMJ | Neuro Muscular Junction |
| NS | Neurosciences |
| 0 | Ophthalmology |

| Or | Orientation | |
|-------|---|--|
| Р | Physiology | |
| Pa | Pathology | |
| PAF | Platelet activating factor | |
| PBL | Problem Based Learning | |
| PCR | Polymerase Chain Reaction | |
| PDGF | Platelet derived growth factor | |
| Pe | Pediatrics | |
| PEM | Protein Energy Malnutrition | |
| PERLs | Professionalism, Ethics, Research, Leadership | |
| Ph | Pharmacology | |
| PNS | Peripheral Nervous System | |
| Psy | Psychiatry | |
| PVC | Premature Ventricular Contraction | |
| QALY | Quality-Adjusted Life Year | |
| QI | Quran and Islamiyat | |
| R | Renal | |
| Ra | Radiology | |
| RBCs | Red Blood cells | |
| RDA | Recommended Dietary Allowance | |
| Re | Respiratory | |
| RFLP | Restriction Fragment Length Polymorphism | |
| RMP | Resting Membrane Potential | |
| RNA | Ribonucleic Acid | |
| S | Surgery | |
| SA | Sinoatrial | |
| TCA | Tricarboxylic acid cycle | |
| TNF | Tumor Necrotic Factor | |
| USG | Ultrasonography | |
| UTI | Urinary Tract Infections | |
| WBCs | White Blood Cells | |
| | | |

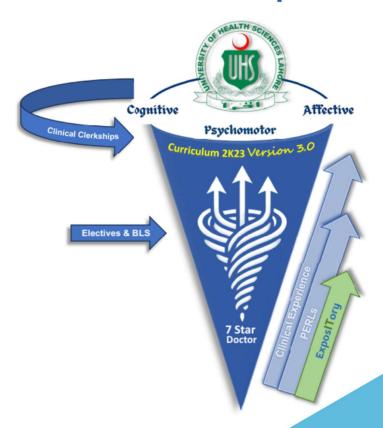




Modular Integrated Curriculum 2K23

Year-2

Reviewed & updated



Version 3.0

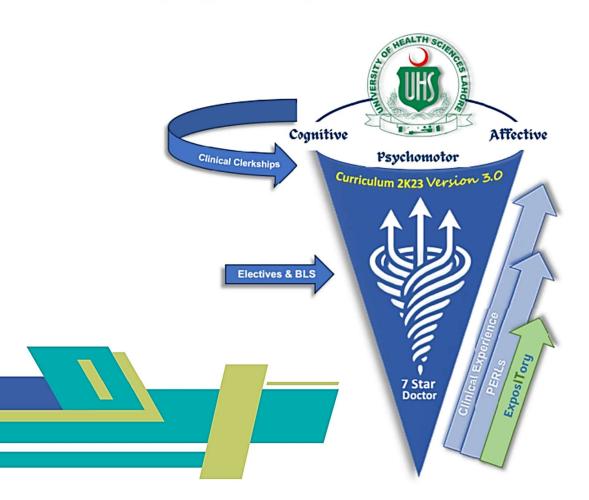
VOL:02

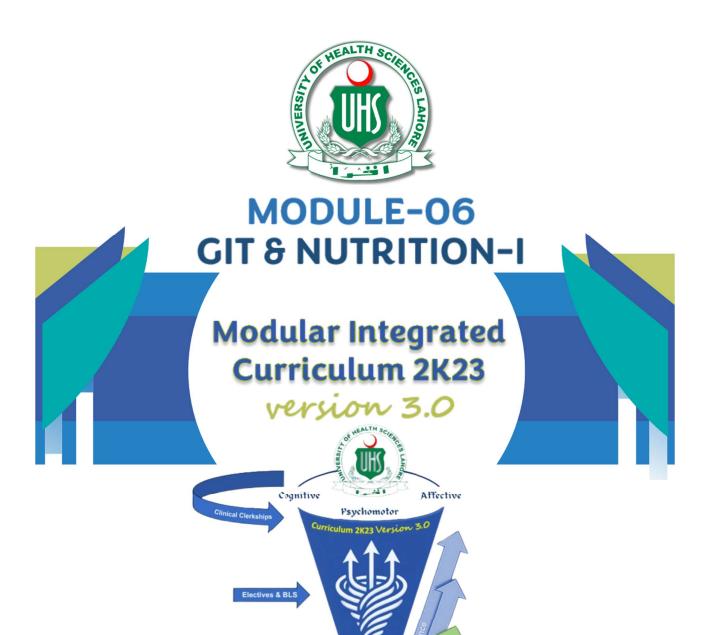


Modular Integrated Curriculum 2K23

version 3.0

BLOCK-04





MODULE RATIONALE

Gastrointestinal system is an integral part of human body which is primarily related to consumption, digestion and assimilation of food to provide nutrition and calories on regular basis to human body which are essential for basic functioning of each organ of human beings.

We will study in detail regarding different parts of gastrointestinal system, their functional, embryological and histological anatomy, physiological and biochemical aspects of its functioning. Students will also be briefly introduced to clinical and pathological aspects, pharmacological interventions and preventive measures of common diseases related to the system.

We have assigned six (6) weeks in academic calendar of 2nd year curriculum of MBBS to Gastrointestinal Module. We have divided our module into eight (8) themes. For every theme, anatomy, physiology, biochemistry, pathology, pharmacology, community medicine, behavioral sciences, general medicine and surgery will need to plan for integrated teaching of students for better comprehension and understanding of subject. We have outlined learning outcomes for each discipline along with allocated time to be taught.

MODULE OUTCOMES

- To describe gross and microscopic anatomy of different parts of gastrointestinal system and associated organs
- To describe the embryological development of different parts of gastrointestinal system and associated organs
- To describe the functional anatomy and physiology of different parts of gastrointestinal system and associated organs
- To describe the motility, secretary and digestive function of gastrointestinal system
- To describe the biochemical aspects of carbohydrate metabolism
- To discuss pathological aspect and management of gastrointestinal related diseases
- To discuss the pharmacological treatment of diarrhea
- To discuss the psychosocial impact of gastrointestinal diseases in society
- To discuss the preventive measures related to gastrointestinal diseases
- To comprehend concept of balanced diet and malnutrition

THEMES

• Oral cavity & Esophagus (O &E)

- Walls of Abdomen & Peritoneum
- Stomach
- Small intestine
- Large intestine (Cecum, Appendix, Colon, Rectum & Anal Canal)
- Liver & Biliary tree
- Pancreas & Spleen
- Nutrition

CLINICAL RELEVANCE

- Diseases of oral cavity, esophagus and stomach
- Diseases of small and large intestine
- Diseases of hepatobiliary system
- Diseases related to malnutrition

IMPLEMENTATION TORS

- The time calculation for completion of modules and blocks 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.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the Second professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



| NORMAL STRUCTURE | | | |
|------------------|---|------------------|----------------------------------|
| THEORY | | | |
| CODE | GROSS ANATOMY | TOTAL HO | URS = 35 |
| CODE | SPECIFIC LEARNING OUTCOMES | DISCIPLINE | ТОРІС |
| GIT-A-001 | Describe the gross anatomical features of oral cavity with its neurovascular supply and lymphatic drainage Discuss the location, anatomical features, relations and vascular supply of tonsils: nasopharyngeal, palatine and lingual. Discuss the skeletal framework of hard palate with its neurovascular supply and lymphatic drainage Describe the gross anatomical features of soft palate with its neurovascular supply and lymphatic drainage Describe the attachments, nerve supply and actions of muscles of soft palate Describe the structure of tongue with attachments of muscles, blood supply, nerve supply and lymphatic drainage Discuss the anatomical basis of injury to hypoglossal nerve Describe anatomical features, relations and neurovascular supply of parotid gland and its duct, mentioning the structures entering and exiting the gland. Discuss the clinical correlates of parotid gland: parotiditis, Mumps, Frey's syndrome, parotid duct injury and parotid tumor surgery with its complications. Describe the Waldeyer's ring. Describe anatomical features, relations and neurovascular supply of submandibular and sublingual glands with their ducts. Name the parts of pharynx giving their extent, anatomical features, structure, neurovascular supply and Lymphatic drainage | Human Anatomy | Oral Cavity and Oropharynx |

| | Name the pharyngeal constrictor muscles defining their | | |
|-----------|---|---------|-----------------|
| | attachments, innervation and structure traversing the gaps | | |
| | between adjacent muscles. | | |
| | Describe the planes and quadrants of abdomen | | |
| | Draw and label the cutaneous innervation and | | |
| | dermatomes of anterior abdominal wall and anterolateral | | |
| | Abdominal wall and describe the clinical correlates | | |
| | (Abdominal pain, Muscle rigidity, Referred pain, anterior | | |
| | abdominal nerve block) | | |
| | Describe the fascia of anterior abdominal wall with its | | |
| | clinical significance | | |
| | | | |
| | Describe anterolateral Abdominal wall arteries, Veins and | | |
| | Lymphatics and related clinical correlates—Caput | | |
| | Medusae | | |
| | Describe the attachments, nerve supply and actions of | | Anterior |
| | muscles of anterior abdominal wall | Human | |
| | Identify the muscles of anterolateral abdominal wall on | | |
| | anatomical model and/or cadaver | | |
| GIT-A-002 | Describe the extent, formation and contents of rectus | Anatomy | Abdomen Wall |
| | sheath | | , ra |
| | Give the formation and extent of inguinal ligament | | |
| | Describe the formation of superficial and deep inguinal | | |
| | rings and conjoint tendon | | |
| | Locate the position of superficial and deep inguinal rings | | |
| | on simulated subject or Cadaver | | |
| | Describe the extent, boundaries and contents of inguinal | | |
| | canal | | |
| | Define the following hernias: umbilical, epigastric, | | |
| | incisional, Spigelian, lumbar, femoral, internal and inguinal | | |
| | Differentiate between direct and indirect inguinal hernias | | |
| | Describe the location of abdominal surgical incisions | | |
| | Mark the abdominal incisions on simulated patient/ subject | | |
| | and explain their anatomical basis | | |
| | List the structures and coverings of spermatic cord | | |
| | | | |

| | Trace the horizontal and vertical peritoneal reflections | | |
|-----------|---|---------|---------------|
| | Describe the relationship of viscera to the peritoneum | | |
| | Describe the gross anatomical features of the following: | | |
| | 1. Mesentery | | |
| | 2. Omentum | | |
| | Peritoneal ligaments | | |
| | Peritoneal fold | | |
| | 5. Peritoneal sac, | | |
| GIT-A-004 | 6. Recesses, | | Peritoneum |
| | 7. Spaces and | | |
| | 8. Gutters | Human | |
| | Describe the nerve supply of Peritoneum | Anatomy | |
| | Describe the anatomical basis and manifestations of the | | |
| | following: | | |
| | Peritonitis and ascites | | |
| | Peritoneal adhesions (and adhesiostomy) | | |
| | Abdominal paracentesis | | |
| | Describe the extent of esophagus, its constrictions, | | |
| | neurovascular supply and lymphatic drainage | | |
| GIT-A-005 | | | Esophagus |
| | Discuss the anatomical basis of esophageal varices, | | |
| | achalasia and Gastro Esophageal Reflux Disease (GERD) | | |
| | Describe the location, position, parts, external and internal | | |
| | structure, relations, vascular and nerve supply and | | |
| | lymphatic drainage of stomach | | |
| | Draw and label a diagram illustrating the lymphatic | | |
| GIT-A-006 | drainage of Stomach | Human | Stomach |
| 01171000 | Describe the clinical presentation and the anatomical basis | Anatomy | O to magn |
| | and manifestations of the following conditions: | | |
| | Carcinoma of stomach and peptic ulcers | | |
| | Identify and demonstrate the parts, external and internal | | |
| | features of stomach on anatomical model and cadaver | | |
| | Describe the location, position, parts, relations, | Human | Small & Large |
| GIT-A-007 | neurovascular supply and lymphatic drainage of | Anatomy | Intestine |
| | duodenum, Jejunum & Ileum (Small Intestine) | | |

| | Describe the anatomical basis and manifestations of the | | |
|-----------|--|------------------|----------------|
| | following conditions: | | |
| | 1. Duodenal Ulcers | | |
| | Ileal diverticulum | | |
| | 3. Diverticulosis | | |
| | Large bowel cancer | | |
| | 5. Appendicitis | | |
| | 6. Volvulus | | |
| | 7. Intussusception | | |
| | Demonstrate the various positions of appendix | | |
| | Identify and demonstrate the Parts and external features | | |
| | of small and large intestines on anatomical model and | | |
| | cadaver | | |
| | Describe the origin, course, branches (tributaries in case | | |
| | of veins) and distribution of the blood vessels of GIT | | |
| | Describe the formation, tributaries and drainage of hepatic- | Human Anatomy | Liver |
| | portal vein | | |
| | Discuss the sites and vessels contributing in portosystemic | | |
| | anastomosis | | |
| GIT-A-008 | Describe the clinical picture and anatomical basis for the | | |
| | blockage of porto-systemic anastomosis | | |
| | Identify the blood vessels supplying GIT on anatomical | | |
| | model and cadaver | | |
| | Describe location, lobes, important relations, peritoneal | | |
| | ligaments, blood supply, lymphatic drainage, nerve supply, | Human Anatomy | Liver |
| | related clinical correlates of liver and subphrenic spaces. | Anatomy | |
| | Describe components of Biliary tree- hepatic duct and bile | | |
| | duct | | |
| 017 4 000 | Describe relations, functions, blood supply, lymphatic | Human | 5 6 . |
| GIT-A-009 | drainage and nerve supply of Gallbladder | Anatomy | Biliary System |
| | Describe related clinical correlates- gall stones, biliary | | |
| | colic, cholecystectomy, gallbladder gangrene | | |
| | Describe the location, surfaces, peritoneal reflections, | | |
| GIT-A-010 | relations, neurovascular supply and lymphatic drainage of | Human Anatomy | Pancreas |
| | pancreas | Anatomy | |
| | | | |

| | Describe the anatomical basis and manifestations of | | |
|------------|---|----------------------------|---|
| | pancreatitis and pancreatic cancer | | |
| | Identify the parts of the pancreas | | |
| | Describe the location, surfaces, peritoneal reflections, | | |
| | relations, neurovascular supply and lymphatic drainage of | | |
| | spleen | | |
| | Describe the anatomical basis and manifestations of | Human | |
| GIT-A-011 | splenic trauma and splenomegaly | Anatomy | Spleen |
| | Identify the borders, surfaces and Impressions of spleen | | |
| | Demonstrate the correct anatomical positioning of spleen | | |
| | Describe the gross anatomical features, peritoneal | | |
| | relations, blood supply, nerve supply and lymphatic | | |
| | drainage of cecum ascending and descending colon, | Human Anatomy | Sigmoid Colon, Rectum & Anal Canal |
| GIT-A-012 | sigmoid colon, rectum and anal canal | | |
| | Describe the anatomical basis for Sigmoidoscopy, rectal | | |
| | prolapse, rectal examination, rectal cancer and | | |
| | hemorrhoids | | |
| | Outline the anatomical basis and surgical treatment plan | | |
| | for the following diseases: | | |
| | 1. Esophageal Injuries | Human | |
| GIT-A-013 | 2. Gastric Carcinoma | Anatomy | Surgical |
| 011-71-010 | Intestinal Obstruction | integrated with Surgery | Intervention |
| | Pancreatic Carcinoma | Surgery | |
| | 5. Obstructive Jaundice | | |
| | 6. Gall Stones | | |
| | Describe the fascia of posterior abdominal wall with its | | |
| | clinical significance | | |
| | | | Destados |
| GIT-A-014 | Describe anterolateral Abdominal wall arteries, Veins and | Human | Posterior Abdomen |
| | Lymphatics and related clinical correlates | Anatomy | Wall |
| | Describe the attachments, nerve supply and actions of | | |
| | muscles of posterior abdominal wall | | |
| <u>L</u> | | | 1 |

| CODE | EMBRYOLOGY & POST-NATAL DEVELOPMENT | TOTAL HO | URS = 08 |
|-----------|---|------------|-------------|
| | SPECIFIC LEARNING OUTCOMES | DISCIPLINE | TOPIC |
| GIT-A-015 | Describe the development of tongue | | |
| | Describe the embryological basis of tongue tie | Embryology | Oral Cavity |
| | Describe the development of palate | | |
| | Describe the embryological basis of various facial clefts | | |
| | Identify the parts of the developing tongue and palate | | |
| | Describe the formation and divisions of gut tube | | |
| | Describe the development of mesenteries | | |
| | Describe the development of esophagus | | |
| | Describe the embryological basis of esophageal atresia | | |
| | and/or tracheoesophageal fistula | | |
| | Describe the development and rotation of stomach | | |
| GIT-A-016 | Describe the embryological basis of pyloric stenosis | Embryology | Foregut |
| | Describe the development of duodenum, liver and gall | | |
| | bladder | | |
| | Describe the embryological basis of intrahepatic and | | |
| | extrahepatic biliary atresia | | |
| | Describe the development of pancreas | | |
| | Describe the embryological basis of annular pancreas | | |
| | Describe the development of midgut especially mentioning | | |
| | physiological herniation, rotation, retraction of herniated | | |
| | loops and mesenteries of the intestinal loops | | |
| | Describe the embryological basis of the following | | |
| | 1. mobile cecum | | |
| | 2. volvulus | | |
| GIT-A-017 | 3. retro colic hernia | Embryology | Midgut |
| | 4. Omphalocele | | |
| | 5. gastroschisis | | |
| | Describe the embryological basis of Meckel's diverticulum | | |
| | Describe the embryological basis of; | | |
| | Gut rotation defects | | |
| | 2. Gut atresia and stenosis | | |

| | Describe the development of hindgut | | |
|-----------|--|------------|----------------------------|
| | Describe the embryological basis of; | | |
| | Rectourethral and rectovaginal fistulas | | |
| | Recto anal fistulas and atresia | | |
| GIT-A-018 | 5. Imperforate anus | Embryology | Hindgut |
| | 6. Congenital megacolon | | |
| , | Identify the parts of the developing foregut, midgut and | | |
| | hindgut originating from the endoderm | | |
| CODE | MICROSCOPIC ANATOMY (HISTOLOGY & PATHOLOGY) | TOTAL HO | URS = 07 |
| | SPECIFIC LEARNING OUTCOMES | DISCIPLINE | TOPIC |
| | Describe the light microscopic structure of; | | |
| | 1. Lips | | |
| | Tongue including lingual papillae and taste buds | | |
| | 3. Oral Cavity (Cheeks, Teeth gums, hard & Soft | | |
| | palate) | | |
| | Describe the histological structure of parotid, | | |
| | submandibular and sublingual glands. | | |
| | Compare and contrast the histological structures of | | |
| | parotid, submandibular and sublingual glands. | | |
| GIT-A-019 | Describe the serous and mucous acini and give | Histology | Oral Cavity & Esophagus |
| | histological differences between the two. | | |
| | | | |
| | Describe the structure and location of serous demilunes. | | |
| | Describe histology of oropharynx | | |
| | Relate the characteristics of various layers of GIT with their | | |
| | function | | |
| | Describe the light microscopic structure of esophagus | | |
| | Tabulate the histological differences between different | | |
| | parts of esophagus | | |
| | Describe the histological changes associated with reflux esophagitis and Barrett's esophagus | | |
| GIT-A-020 | Describe the light microscopic structure of stomach | Histology | Stomach |

| | Describe the role of parietal cells in pernicious anemia | | |
|-----------|--|-----------|--------------------|
| | Describe the light microscopic structure of | | |
| | 1. Duodenum | | |
| | 2. Jejunum | | |
| GIT-A-021 | 3. Ileum | Histology | Small Intestine |
| | Discuss the histological basis of celiac disease | | |
| | Discuss the histological basis of Crohn's disease | | |
| | Describe the light microscopic structure of | | |
| GIT-A-022 | 1. Colon | | |
| | 2. Appendix | Histology | Large Intestine |
| | 3. Rectum | | mesune |
| | Define colorectal cancer, anal abscess, hemorrhoids | | |

PRACTI**L**AL

| CODE | HISTOLOGY | TOTAL HOURS = 12 | |
|-----------|--|------------------------|----------------------------------|
| 332 | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC |
| GIT-A-023 | Identify, draw and label the histological sections of Tongue and Lips and enumerate points of identification | Histology Practical | Oral Cavity |
| GIT-A-024 | Identify, draw and label the histological sections of Salivary glands (Submandibular, Sublingual and Parotid) | Histology Practical | Salivary Gland |
| GIT-A-025 | Identify, draw and label the histological structure of the esophagus and enumerate points of identification Identify, draw and label the histological structure of stomach and enumerate points of identification | Histology Practical | Upper GIT |
| GIT-A-026 | Identify, draw and label the histological structure of small intestine (Duodenum, Jejunum, and Ileum) and enumerate points of identification | Histology Practical | Small Intestine |
| GIT-A-027 | Identify, draw and label the histological structure of large intestine and enumerate points of identification | Histology Practical | Large Intestine |
| GIT-A-028 | Identify, draw and label the histological sections of Gall bladder, liver and enumerate points of identification | Histology Practical | Organs associated with GIT |

| pancreas and enumerate points of identification | Practical | associated with GIT |
|---|------------------------|---|
| Identify, draw and label the histological sections of Palatine tonsil, appendix, peyer's patches and enumerate points of identification | Histology Practical | Lymphatic tissue associated with GIT |

NORMAL FUNCTION

THEORY

| CODE | MEDICAL PHYSIOLOGY | TOTAL HOURS = 20 | |
|-----------|--|-----------------------|---|
| | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС |
| | Classify the components of enteric nervous system | | |
| | Discuss the location and significance of myenteric plexus | | |
| | Describe the Meissner's plexus | | |
| | Differentiate between myenteric and Meissner's plexuses | | |
| | Explain the mechanism of developing slow wave | | |
| · | Explain the mechanism of developing spike potential | | |
| | Enlist the factors that depolarize & hyperpolarize the GIT | | |
| | membrane | | General Principles of GIT Function - Motility, Nervous Control & Blood Flow |
| | Enlist the excitatory & inhibitory neurotransmitters of | Medical Physiology | |
| | enteric nervous system | | |
| GIT-P-001 | Explain the role of sympathetic & parasympathetic nervous | | |
| | system in controlling GIT function. | | |
| | Enlist the gastrointestinal reflexes & explain the functions | | |
| | of these reflexes | | |
| | Enlist the hormones acting on GIT, their stimuli, site of | | |
| | release and actions | | |
| | Enumerate different types of movements that occur in GIT | | |
| | Discuss the functions and control of GIT movements | | |
| | Discuss the effect of gut activity and metabolic factors on | - | |
| | GIT blood flow / Splanchnic circulation | | |
| | Explain the nervous control of GIT blood flow / Splanchnic circulation | | |
| GIT-P-002 | Trace the reflex arc of mastication | | Oral Cavity & |

| | Explain the process and importance of chewing reflex | | Esophagus |
|-----------|---|--|-----------|
| | Enlist the stages of swallowing | Medical | |
| | Describe the mechanism of voluntary stage of swallowing | Physiology | |
| | Trace the reflex arc of involuntary stage of swallowing | | |
| | Enlist the steps involved in involuntary stage of swallowing | Medical Physiology | |
| | Explain the effect of swallowing on respiration | Medical Physiology | |
| | Discuss the mechanism of esophageal stage of swallowing | Medical | |
| | Enlist causes of dysphagia | Physiology Medical Physiology integrates with Surgery | |
| | Explain the types and role of different peristalsis originating in esophagus | Medical Physiology | |
| | Discuss the role of Lower Esophageal Sphincter (Gastroesophageal) | Medical Physiology | |
| | Discuss the pathophysiology of achalasia & Megaesophagus | Medical Physiology | |
| | Enlist the features and treatment of achalasia Explain storage function of stomach | Medical Physiology Medical Physiology | |
| | Describe the basic electrical rhythm of stomach wall | Medical Physiology | |
| GIT-P-003 | Explain the role of pyloric pump and pyloric sphincter in gastric emptying | Medical Physiology | |
| | Explain the factors that promote Stomach Emptying | Medical Physiology | |
| | Discuss the duodenal (nervous & hormonal) factors that inhibit Stomach emptying | Medical Physiology | 01 |
| | Enlist the factors that initiate enterogastric inhibitory reflexes | Medical Physiology | Stomach |
| | Enumerate the causes, features, and pathophysiology of gastritis | Medical Physiology integrates with Medicine | |
| | Explain the physiological basis of each feature of gastritis | Medical Physiology integrates with | |

| | | Medicine | |
|-----------|---|----------------------------|--------------------|
| | Recommend treatment of gastritis | | |
| | Enumerate the causes, features, and pathophysiology of | Medical | |
| | peptic ulcer | Physiology integrates with | |
| | Explain the physiological basis of each feature of peptic | Medicine | |
| | ulcer | | |
| | Enumerate and explain the secretions and movements of | | |
| | small intestine | Medical | |
| | Explain the term "peristaltic rush" | Physiology | |
| GIT-P-004 | Explain the functions of ileocecal valve and sphincter | | Small Intestine |
| | Enumerate the types of intestinal sprue | Medical | micounio |
| | Enlist the features of intestinal sprue | Physiology integrates with | |
| | Explain the consequences of sprue on the body | Medicine | |
| | Enumerate the types of movements taking place in colon | Medical Physiology | |
| | Explain the mechanism of developing movements of colon | ye.e.egy | |
| | and their control through Gastrocolic and Duodenocolic | Medical | |
| | Reflexes | Physiology | |
| | Enlist the defecation reflexes | Medical | |
| | Explain the mechanism of defecation reflex | Physiology Medical | Large Intestine |
| | · | Physiology | |
| CIT D 005 | Trace the reflex arc of defecation | Medical Physiology | |
| GIT-P-005 | Name the other autonomic reflexes that affect bowel | Medical | |
| | activity | Physiology | |
| | | Medical | |
| | Explain the pathophysiology of constipation | Physiology integrates with | |
| | | Medicine | |
| | Discuss the causes of diarrhea | | |
| | | Medical | |
| | Describe the cause of Hirschsprung's disease integrate | Physiology | |
| | with Medicine | | |
| | Explain the functions of liver | Medical Physiology | |
| GIT-P-006 | Differentiate between liver and gall bladder bile and the | Medical | Liver |
| | hormones acting on them | Physiology | |
| | | | |

| | Enumerate the causes and composition of developing gall stones | Medical Physiology Integrate with | |
|-----------|--|-----------------------------------|---|
| | Explain function and secretions of pancreas | Surgery Medical Physiology | |
| GIT-P-007 | Enlist the causes and pathophysiology of acute and chronic pancreatitis | Integrate with Medicine | Pancreas |
| | Enumerate the features of acute pancreatitis and explain the physiological basis of each feature of pancreatitis | Integrate with Medicine | |
| | Describe the stages of vomiting act | Medical Physiology | |
| GIT-P-008 | Trace the reflex arc of vomiting | Medical Physiology | Vomiting Reflex |
| · | Explain the role of chemoreceptor trigger zone for initiation of vomiting by drugs or by motion sickness | Medical Physiology | Nellex |
| | Define Acute Diarrhea | Integrated with | Acute & |
| GIT-P-009 | Define Chronic Diarrhea | Medicine Gastroenterology | Chronic Diarrhea |
| | Enlist various causes for acute and chronic diarrhea | Guouroomorology | Diaiillea |
| CODE | BIOCHEMISTRY | TOTAL HO | URS = 40 |
| | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC |
| | Give the composition and importance of saliva and related | | |
| | clinical disorder (xerostomia) | | |
| | Give the composition and importance of gastric juice with | | |
| | special reference to mechanism of HCl secretion and | | Biochemistry of GIT |
| | related clinical disorders (achlorhydria, gastric ulcer | | /GIT secretions & digestion and absorption of dietary carbohydrates |
| GIT-B-001 | Give the composition and importance of pancreatic juice, | Biochemistry | |
| | bile and succus entericus and related clinical disorders | | |
| | (pancreatitis, cystic fibrosis, cholelithiasis). | | |
| | Describe digestion and absorption of dietary | | |
| | carbohydrates along with inherited and acquired disorders (lactose intolerance, sucrase-isomaltase deficiency). | | |
| | (lactose intolerance, sucrase-isomaliase deliciency). | | Carbohydrate |
| GIT-B-002 | Elaborate key features of various transport systems for entry of glucose into cells. | Biochemistry | metabolism/ Entry of glucose into |

| | Enlist the hormones that play important roles in regulating | | |
|-----------|--|--------------|--|
| GIT-B-003 | carbohydrate metabolism. | Biochemistry | Carbohydrate metabolism/ Hormonal |
| | Elaborate the metabolic effects of these hormones. | | |
| | Infer the consequences of deficiency and excess of these | | control of BSL |
| | hormones | | |
| | Describe the glycolytic pathway along with its regulation | | |
| | and significance. | | |
| | Compare key features of aerobic and anaerobic glycolysis. | | |
| | Calculate the number of ATP produced during aerobic and | | Carbohydrate |
| GIT-B-004 | anaerobic glycolysis. | Biochemistry | metabolism/ Glycolysis |
| | Explain hemolytic anemia in subjects with pyruvate kinase | | Ciycolysis |
| | deficiency based on your biochemical knowledge. | | |
| | Clearly differentiate between substrate level | | |
| | phosphorylation and oxidative phosphorylation. | | |
| | Discuss the metabolic fates of pyruvate. | | |
| | Describe the transport of pyruvate from cytosol to | Biochemistry | Carbohydrate metabolism/ Metabolic fates of pyruvate |
| | mitochondria. | | |
| GIT-B-005 | Elaborate the reaction catalyzed by pyruvate | | |
| | dehydrogenase complex (PDH) along with regulation and | | |
| | significance. | | |
| | Enlist inherited and acquired causes of lactic acidosis and | | |
| | give biochemical explanation for lactic acidosis in each | | |
| | condition. | | |
| GIT-B-006 | Describe the TCA cycle along with regulation & significance. Calculate the energy yield of TCA | Biochemistry | Carbohydrate metabolism/ Kreb's Cycle |
| GIT-B-007 | Define gluconeogenesis and enumerate | | |
| | gluconeogenic substrates (precursors) | | |
| | Delineate the reactions involved in synthesis of glucose | Biochemistry | Carbohydrate |
| | from various gluconeogenic substrates. | | metabolism/ Gluconeogenesis |
| | Elaborate the regulation and importance of | | 2 22 22 23 25 25 25 25 25 25 25 25 25 25 25 25 25 |
| | gluconeogenesis. | | |
| | | | <u> </u> |

| | Explain the significance of Cori cycle and glucosealanine | | |
|-----------|---|--------------|---|
| | cycle | | |
| | Illustrate the reactions of glycogenesis, glycogenolysis | | Carbohydrate |
| | along with their regulation and significance | | metabolism/ |
| GIT-B-008 | Enlist various types of glycogen storage diseases (GSDs) | Biochemistry | Glycogen metabolism |
| | Infer the key biochemical and clinical features of various | | metabolioni |
| | GSDs from the respective enzyme deficiencies. | | |
| | Describe the reactions and regulation of Hexose Mono | | |
| | Phosphate Pathway (HMP). | | |
| | Discuss the importance of HMP shunt | | Carbohydrate metabolism/ |
| GIT-B-009 | Explain hemolytic anemia in subjects suffering from G6PD | Biochemistry | HMP Hexose |
| | deficiency. | | Monophosphat e Pathway |
| | Diagnose G6PD (glucose-6-phosphate dehydrogenase) | | e Pathway |
| | deficiency based on given data. | | |
| GIT-B-010 | Describe the reactions, regulation, and biomedical importance of uronic acid pathway and sorbitol pathway | Biochemistry | Carbohydrate metabolism/ Uronic acid pathway & sorbitol pathway |
| | Outline the reactions involved in ethanol metabolism. | Biochemistry | Carbohydrate metabolism/ Ethanol metabolism |
| GIT-B-011 | Explain how ethanol consumption causes hypoglycemia | | |
| | and fatty liver. | | |
| | Diagrammatically illustrate the organization of electron | | Respiratory chain & oxidative phosphorylation /ETC |
| | transport chain (ETC) depicting the flow of electrons | Biochemistry | |
| GIT-B-012 | Enlist the components of complex I, II, III, and IV | | |
| | Enumerate clinically important inhibitors of electron | | |
| | transport chain and mention their site of action. | | |
| | Elaborate the structure of ATP synthase (complex V). | | |
| GIT-B-013 | Explain how the free energy generated by the transport of | | |
| | electrons by ETC is used to produce ATP from ADP + Pi | Biochemistry | Respiratory |
| | (i.e. chemiosmotic hypothesis) | | chain & oxidative |
| | Elaborate the effect of oligomycin and uncouplers on ATP | | phosphorylation |
| | production. | | /ATP synthesis |
| | Describe the effect of arsenic poisoning on carbohydrate | | - |
| | · | | |

| shuttle for the transfer of reducing equivalents from cytosol into the mitochondria. Define and classify nutrients into macro and micronutrients. Elaborate the concept and importance of Balanced Diet Enlist the components of balanced diet and elaborate the importance of each component. Delineate special nutritional requirements during pregnancy, lactation, growth, and old age. Suggest dietary advice for patients suffering from diabetes mellitus, hypertension, obesity, renal disease, lactose intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids. Enlist causes and types of Protein Energy Malnutrition (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Elaborate the effect of variou | | Elaborate the glycerol 3-P shuttle and malate-aspartate | | |
|--|-----------|---|-----------------------------------|-------------------|
| Define and classify nutrients into macro and micronutrients. GIT-B-014 Elaborate the concept and importance of Balanced Diet Enlist the components of balanced diet and elaborate the importance of each component. Delineate special nutritional requirements during pregnancy, lactation, growth, and old age. Suggest dietary advice for patients suffering from diabetes mellitus, hypertension, obesity, renal disease, lactose intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids. Enlist causes and types of Protein Energy Malnutrition (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Fightigate with community Medicine/Pediatrics Nutrition/PEM Nutrition/Caloric requirements Nutrition/ Caloric requirements Nutrition/ Nutrition/Caloric requirements | | shuttle for the transfer of reducing equivalents from cytosol | | |
| Micronutrients. Elaborate the concept and importance of Balanced Diet | | into the mitochondria. | | |
| Elaborate the concept and importance of Balanced Diet Enlist the components of balanced diet and elaborate the importance of each component. Delineate special nutritional requirements during pregnancy, lactation, growth, and old age. Suggest dietary advice for patients suffering from diabetes mellitus, hypertension, obesity, renal disease, lactose intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids. Enlist causes and types of Protein Energy Malnutrition (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the components of balanced diet and elaborate the importance of balance diet and elaborate the importance during pregnancy, lactation, prequirements during pregnance, lactore with Community Medicine Nutrition/ PEM Nutrition/ Caloric requirements Paice pregnancy, lactation, prequirements during pregnance, lactore with Community Medicine Nutrition/ PEM Nutrition/ Caloric requirements Nutrition/ Caloric requirements | | , | | |
| Enlist the components of balanced diet and elaborate the importance of each component. Delineate special nutritional requirements during pregnancy, lactation, growth, and old age. Suggest dietary advice for patients suffering from diabetes mellitus, hypertension, obesity, renal disease, lactose intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids. Enlist causes and types of Protein Energy Malnutrition (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) CIT-B-018 | GIT-B-014 | Elaborate the concept and importance of Balanced Diet | Biochemistry | |
| Delineate special nutritional requirements during pregnancy, lactation, growth, and old age. Suggest dietary advice for patients suffering from diabetes mellitus, hypertension, obesity, renal disease, lactose intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids. Enlist causes and types of Protein Energy Malnutrition (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Figure Pediatrics Nutrition/ Special nutrition/ Special nutrition/ Medicine Pediatrics Nutrition/ PEM Nutrition/ Caloric requirements Nutrition/ Caloric requirements Pediatrics Nutrition/ Caloric requirements Nutrition/ Caloric requirements | , | Enlist the components of balanced diet and elaborate the | , | |
| pregnancy, lactation, growth, and old age. Suggest dietary advice for patients suffering from diabetes mellitus, hypertension, obesity, renal disease, lactose intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids. Enlist causes and types of Protein Energy Malnutrition (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Biochemistry Nutrition/ Special nutrition/ Medicine Integrate with community Medicine/ Pediatrics Nutrition/ PEM Nutrition/ Caloric requirements Nutrition/ Caloric requirements Nutrition/ Caloric requirements | | importance of each component. | | |
| Suggest dietary advice for patients suffering from diabetes mellitus, hypertension, obesity, renal disease, lactose intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids. Enlist causes and types of Protein Energy Malnutrition (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Biochemistry Integrate with Community Medicine Integrate with Community Medicine Nutrition/ PEM Nutrition/ Caloric requirements Nutrition/ Caloric requirements Nutrition/ Caloric requirements Nutrition/ Nutrition/ Caloric requirements Nutrition/ Caloric requirements | | Delineate special nutritional requirements during | | |
| GIT-B-015 Suggest dietary advice for patients suffering from diabetes mellitus, hypertension, obesity, renal disease, lactose intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids. Enlist causes and types of Protein Energy Malnutrition (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Riochemistry Integrate with Community Medicine Nutrition/ Nutrition/ PEM Potational requirements Special nutritional requirements Nutrition/ Community Medicine Nutrition/ PEM Potational requirements Nutrition/ Caloric requirements Nutrition/ Nutrition/ Nutrition/ Nutrition/ Nutrition/ Nutrition/ Nutrition/ | | pregnancy, lactation, growth, and old age. | | NI CHE L |
| mellitus, hypertension, obesity, renal disease, lactose intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids. Enlist causes and types of Protein Energy Malnutrition (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Elaborate the effect of various physiological and Elaborate the effect of various physiological and Biochemistry Nutrition/ | OIT D 045 | Suggest dietary advice for patients suffering from diabetes | • | |
| Intolerance, gluten enteropathy, hypercholesterolemia, and hemorrhoids. Enlist causes and types of Protein Energy Malnutrition (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Flaborate the effect of various physiological and Biochemistry Nutrition/ Nutrition/ Nutrition/ PEM Nutrition/ Richemistry Nutrition/ Nutrition/ Nutrition/ Richemistry Nutrition/ Nutrition/ Nutrition/ Richemistry | G11-B-015 | mellitus, hypertension, obesity, renal disease, lactose | • | |
| Enlist causes and types of Protein Energy Malnutrition (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Biochemistry Nutrition/ PEM Nutrition/ PEM Nutrition/ PEM Nutrition/ PEM Nutrition/ Caloric requirements | | intolerance, gluten enteropathy, hypercholesterolemia, | | requirements |
| GIT-B-016 (PEM). Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Integrate with community Medicine/Pediatrics Nutrition/PEM Nutrition/Caloric requirements Nutrition/ Caloric requirements | | and hemorrhoids. | | |
| GIT-B-016 Differentiate between Kwashiorkor and Marasmus based on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Elaborate the effect of various physiological and Biochemistry Integrate with community Medicine/Pediatrics Nutrition/PEM Nutrition/ | | Enlist causes and types of Protein Energy Malnutrition | community Medicine/ | 1 |
| Oithe given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Elaborate the effect of various physiological and Elaborate the effect of various physiological and Biochemistry Community Medicine/Pediatrics Nutrition/PEM Nutrition/ | | (PEM). | | |
| on the given data Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Flaborate the effect of various physiological and Biochemistry Nutrition/ Nutrition/ Nutrition/ Nutrition/ | CIT D 046 | Differentiate between Kwashiorkor and Marasmus based | | |
| Enlist symptoms and signs Outline treatment strategies Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Biochemistry Nutrition/ Nutrition/ | G11-B-016 | on the given data | | |
| Define energy balance. Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) GIT-B-018 Elaborate the effect of various physiological and Biochemistry Nutrition/ Nutrition/ Nutrition/ | | Enlist symptoms and signs | | |
| Compare the energy content of macro nutrients and alcohol. Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Biochemistry Nutrition/ Nutrition/ Nutrition/ | | Outline treatment strategies | | |
| GIT-B-017 Caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Biochemistry Nutrition/ Caloric requirements | | Define energy balance. | | |
| GIT-B-017 Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Biochemistry Nutrition/ | | Compare the energy content of macro nutrients and | | |
| Suggest a simple method for estimation of caloric requirements of sedentary adults, moderately active adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Biochemistry | OIT D 047 | alcohol. | Biochemistry | Caloric |
| adults, and very active adults Define basal metabolic rate (BMR) Elaborate the effect of various physiological and Biochemistry Nutrition/ | GII-B-017 | Suggest a simple method for estimation of caloric | | |
| Define basal metabolic rate (BMR) GIT-B-018 Elaborate the effect of various physiological and Biochemistry Nutrition/ | | requirements of sedentary adults, moderately active | | |
| GIT-B-018 Elaborate the effect of various physiological and Biochemistry Nutrition/ | | adults, and very active adults | | |
| GH-B-018 Elaborate the effect of various brivstological and Biochemistry | GIT-B-018 | Define basal metabolic rate (BMR) | | N. C. |
| | | Elaborate the effect of various physiological and | Biochemistry | Nutrition/ BMR |
| pathological factors on BMR. | | pathological factors on BMR. | | |
| Define body mass index (BMI). | | Define body mass index (BMI). | Integrate with community Medicine | No strait: / |
| Categorize individuals into underweight, normal, RMI & | CIT D 040 | Categorize individuals into underweight, normal, | | |
| | 011-0-019 | overweight, obese, and morbidly obese based on theirs | | |
| BMI values. | | BMI values. | | |

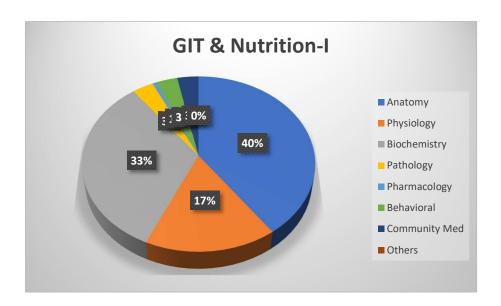
| | Elaborate the role of genetic, environmental, and | | |
|-----------|--|---|--------------|
| | behavioral factors in determining body weight. | | |
| | Clearly differentiate between upper body obesity and lower | | |
| | body obesity. | | |
| | Enlist health risks associated with obesity. | | |
| CIT D 000 | Define Marasmus and Kwashiorkor | Integrated with Pediatrics | |
| GIT-B-020 | Define Malnutrition Identify various causes of malnutrition Identify the risk factors of malnutrition Outline treatment strategies | Integrated with Medicine Gastroenterolo gy | Malnutrition |

PRACTI**&**AL

| CODE | BIOCHEMISTRY | TOTAL HOURS = 11+06 | |
|------------|---|---------------------------|---|
| | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС |
| GIT-B-021 | Estimate blood glucose level by glucose oxidase method and interpret the results Determine blood glucose level by glucometer and interpret the result. Interpret the graphs related to GCT and GTT Determine urine glucose by dipstick method and by chemical method and interpret the result. Estimate serum amylase and interpret the result. | Biochemistry Practical | Estimations of blood/urine analytes |
| GIT-B-022 | Calculate BMI of given subject and interpret the results. | | Interpretation of results |
| GIT-B-023 | Demonstrate Cranial nerve V, IX & X testing | Physiology | Cranial nerve |
| AGING | | | |
| CODE | THEORY | TOTAL HOURS = 01 | |
| | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC |
| GIT-CM-001 | Identify causes and risk factors for malnutrition in elderly | | |

| | Outline treatment strategies | Community Medicine | Preventive Medicine in Geriatrics | |
|-----------------------------|---|-----------------------|---|--|
| | PATHOPHYSIOLOGY AND PHARMACOTHERA | PEUTICS | | |
| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL HO | URS = 05 | |
| CODE | or bon to beautiful observes | DISCIPLINE | ТОРІС | |
| GIT-Ph-001 | Classify anti diarrheal drugs and describe the pharmacokinetics, mechanism of action, pharmacological effects, uses and adverse effects | Pharmacology | Anti Diarrheal Drugs | |
| GIT-Pa-001 | Define gastritis. Enlist the types of gastritis Describe the morphological features of gastritis | Pathology | Gastritis | |
| GIT-Pa-002 | Describe the salient feature of peptic ulcer disease Discuss the role of H. Pylori in causing peptic ulcer disease | Pathology | Peptic Ulcer | |
| GIT-Pa-003 | Enumerate common infectious agents of diarrheal diseases Discuss pathogenesis and clinical features of common pathogens | Microbiology | Infectious agents causing Diarrhea | |
| | PRACTI È AL | | | |
| CODE | PATHOLOGY | TOTAL HOURS = 01 | | |
| | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС | |
| GIT-Pa-004 | Describe salient features of acute & chronic gastritis | Pathology | Gastritis | |
| DISEASE PREVENTION & IMPACT | | | | |
| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL HOURS = 09 | | |
| | | DISCIPLINE | ТОРІС | |
| GIT-BhS- 001 | Identify health related behaviors and apply principles of learning to modify eating and addictive patterns | Behavioral | Health related behaviors | |
| GIT-BhS- 002 | Discuss health belief model and its application in managing common presentations related to gastro-intestinal system | Sciences | Health related believes | |

| | Explain the transtheoretical model of changing behaviors | | |
|-----------------|--|-----------------------|--|
| | to modify the diseases pattern | | |
| GIT-BhS- 003 | Describe motivational interviewing and outline a management plan to help the individuals with obesity and diabetes to lose weight | | Management of Obesity |
| GIT-BhS- 004 | Describe and distinguish Medically Un described Symptoms (MUS) Describe the association of psychosocial factors with MUS Outline the principles of management plan according to biopsychosocial model Describe role of Cognitive Behavioral Therapy (CBT) | | Medically Un described Symptoms |
| GIT-BhS- 005 | To identify effect on mental development of nutritional deficiencies | | Role of nutritional deficiencies in mental development |
| GIT-CM- 001 | Describe prevention and control of polio, viral hepatitis A, cholera, typhoid and food poisoning Describe prevention and control of amoebiasis, ascariasis, hook worm infestation | | Epidemiology of communicable diseases (Intestinal infection) |
| GIT-CM- 002 | Describe the advice to be given for breast feeding, weaning and childhood Discuss risk factors, prevention and management of protein energy malnutrition (PEM) | Community Medicine | Preventive medicine in pediatrics |
| GIT-CM- 003 | Describe balanced diet for adult and obesity Plot and interpret growth chart for children under 5 years of age Describe prevention and control of deficiency of Vitamin A and D | | Nutrition & Health |



| Module Weeks | Recommended Minimum Hours |
|--------------|------------------------------|
| 06 | 155 |







Modular Integrated
Curriculum 2K23

version 3.0



MODULE RATIONALE

The renal module for second-year MBBS (Bachelor of Medicine, Bachelor of Surgery) students is a crucial component of the medical curriculum. This module is designed to provide students with a comprehensive understanding of the structure, function, and pathology of the kidneys, as well as the principles of renal physiology and the clinical management of and electrolyte balance, acid-base balance, and blood pressure. Understanding renal physiology is essential for comprehending various disease renal disorders. Here are some key rationales for including a renal module in the curriculum:

MODULE OUTCOMES

- Discuss the gross and microscopic anatomy of kidney and urinary system.
- Explain the embryological development of kidney and urinary tract
- Explain common developmental abnormalities of renal system
- Identify role of renal system in maintaining blood pressure and acid base balance
- Enlist functions of kidney and pathologies related to them.
- Explain method of electrolyte balance and pathologies related to it.
- Highlight pathologies related to kidneys and their distinctive clinical features
- Interpret investigations done to diagnose abnormal structural and functional presentations.

THEMES

- Kidney
- Ureter
- Bladder
- Acid/base balance

CLINICAL RELEVANCE

- Protein in urine.
- Kidney stones.
- Kidney pain.
- Blood in urine (hematuria)
- Kidney infection.
- Acute kidney injury (AKI)
- Kidney cancer.
- Dialysis
- Control of blood pressure

IMPLEMENTATION TORS

- The time calculation for completion of modules and blocks 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.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the Second professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



NORMAL STRUCTURE

THEORY

| 6005 | GROSS ANATOMY | TOTAL HOURS = 14 | |
|----------|--|--------------------------|-------------------|
| CODE | SPECIFIC LEARNING OUTCOMES | DISCIPLINE | TOPIC |
| | Describe gross features and facial coverings of | | |
| | kidneys. | | |
| | Compare and contrast the relations of right and left | | |
| | kidneys. | | |
| R-A-001 | Describe blood supply, lymphatics and nerve supply | Human Anatomy | Kidney |
| | of kidney | , | |
| | Discuss the clinical aspects of kidneys | | |
| | Demonstrate the surface marking and radiographic | | |
| | anatomy of kidney. Identify the side of kidney | | |
| | Compare and contrast the relations of right and left | | |
| | ureter | | Ureter |
| R-A-002 | Give the constrictions of ureter | Human Anatomy | |
| 1171.002 | Describe the blood supply nerve supply and | | |
| | lymphatics of ureter | | |
| | Identify the ureter. | | |
| | Describe the gross anatomical features, relations, | | |
| | surfaces, blood supply, nerve supply and lymphatics | | Urinary bladder |
| R-A-003 | of urinary bladder | Human | |
| 1474-000 | Give the clinical corelates of urinary bladder | Anatomy | |
| | Identify the gross features and surfaces of urinary | | |
| | bladder | | |
| R-A-004 | Interpret basic urological signs/symptoms & | | Sign/symptom/in |
| R-A-004 | investigations. | Integrate with | vestigations |
| R-A-005 | Describe the etiology, and management of urinary | urology | 11 |
| | retention. | | Urinary retention |
| R-A-006 | Identify and describe the various | Integrate with Radiology | |
| | anatomic landmarks of the renal system on | | radiograph |
| | radiographs. | radiology | |
| R-A-007 | Describe the parts of urethra. | Human Anatomy | Urethra |

| CODE | EMBRYOLOGY & POST-NATAL DEVELOPMENT | TOTAL HOURS = 05 | | |
|--------------------|--|------------------|-------------------------------|--|
| | SPECIFIC LEARNING OUTCOMES | DISCIPLINE | ТОРІС | |
| R-A-008 | Describe development of intermediate mesoderm and its derivatives | Embryology | Development of urinary system | |
| | Describe the development of pronephros, mesonephros and metanephros | Embryology | | |
| | Describe positional changes during descent of kidney with correlation to its blood supply | Embryology | | |
| | Describe the development of urinary bladder and urethra | Embryology | | |
| | List and describe the common congenital anomalies of kidney, urinary bladder and urethra. | Embryology | | |
| CODE | MICROSCOPIC STRUCTURE | TOTAL HOURS = 04 | | |
| | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС | |
| R-A-009 | Describe the histological, structural organization and functions of kidney with clinicals. | Histology | Structure of kidney | |
| R-A-010 | Describe the light and ultrastructure of Juxtaglomerular apparatus and glomerular filtration barrier | Histology | Juxtaglomerular apparatus | |
| R-A-011 | Describe the histological structure of ureter | Histology | Structure of ureter | |
| R-A-012 | Describe the histological structure of urinary bladder Discuss clinical correlates (Cystitis, Urinary bladder cancer, Urinary Tract Infections (UTIs)) | Histology | Structure of urinary bladder | |
| PRACTI È AL | | | | |
| CODE | HISTOLOGY | TOTAL HOURS = 06 | | |
| | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС | |
| R-A-013 | Identify and draw and label the histological structure of kidney and enumerate points of identification | Practical | Kidney | |

| identification NORMAL FUNCTION | | | | |
|---------------------------------|--|-----------|-----------------|--|
| R-A-015 | Identify, draw and label the histological structure of urinary bladder and enumerate its points of | Practical | Urinary bladder | |
| R-A-014 | Identify, draw and label the histological structure of ureter and enumerate its points of identification | Practical | Ureter | |

| CODE | MEDICAL PHYSIOLOGY | TOTAL HOURS = 36 | |
|---------|---|----------------------------|--|
| | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС |
| R-P-001 | Explain the general organization of the kidney and urinary tract Explain the physiological anatomy of the nephron | Physiology | Physiological anatomy of kedneys |
| R-P-002 | Explain the renal blood supply | | Renal Blood Supply |
| R-P-003 | Discuss the sites and mechanism of action of different diuretics | | Diuretics |
| R-P-004 | Describe major composition of intracellular and extracellular fluids | | Body fluid compartment |
| | Define Hypo and hypernatremia Explain the causes of hypo & hypernatremia and their effects on Composition of body fluid compartments Describe difference between iso-osmotic, hyperosmotic, hypo-osmotic fluids | | |
| R-P-005 | Enumerate causes of Intracellular and extracellular edema Describe safety factors that prevent edema | Integrate with Medicine | Edema |
| R-P-006 | Explain the functions of the kidney | Physiology | Function |
| R-P-007 | Describe the mechanism of micturition and its control Explain the role of higher center on micturition Explain the physiological anatomy and innervation of bladder | | Micturition reflex |
| | Discuss the voluntary control of micturition | | |

| R-P-008 | Explain the causes, pathophysiology, and features of atonic bladder. Discuss the causes, pathophysiology, and features of automatic bladder. Write the causes, pathophysiology, and features of uninhibited neurogenic bladder | Integrate with Pathology | Abnormalities of micturition |
|---------|---|-----------------------------|------------------------------|
| R-P-009 | Enlist the steps of urine formation Explain the physiological anatomy and functions of glomerular capillary membrane Discuss the composition of filtrate Explain the minimal change nephropathy and increase permeability to plasma protein | Physiology | Urine formation |
| R-P-010 | Define Glomerular Filtration Rate (GFR). Describe the determinants of GFR Explain the factors affecting GFR Discuss the hormones and autocoids that affect GFR Explain mechanisms of autoregulation of GFR Enlist the physiological and pathological factors that decrease GFR Explain the effects of angiotensin II blocker on GFR during renal hypoperfusion | Physiology | Glomerular filtration |
| R-P-011 | Enumerate different types of transport along the kidney tubules for reabsorption Explain the reabsorption and secretion along different parts of the Nephron Explain the regulation of tubular reabsorption Discuss the forces / pressure and hormones that determine renal tubular reabsorption Explain the reabsorption of water along different parts of nephron Define obligatory and facultative reabsorption Discuss the characteristics of late distal tubules and cortical collecting ducts | Physiology | Reabsorption |

| | Discuss the characteristics of medullary collecting | | |
|----------|---|----------------|----------------------------|
| | ducts | | |
| R-P-012 | Explain the use of clearance method to quantify | Dhysiology | Clearance |
| | kidney function | Physiology | method |
| | Describe mechanism of re-absorption of sodium | | |
| | along different parts nephrons | | |
| | Define and explain the term Transport maximum for | | |
| R-P-013 | the substances | Physiology | Transport maximum |
| | Define filtered load for the substance | | |
| | Justify the difference of transport maximum and renal | | |
| | threshold of glucose in renal tubules | | |
| | Explain the renal mechanisms for excreting | | |
| | Dilute urine | | |
| | Explain the mechanism for forming a concentrated | | |
| R-P-014 | urine | Dhysialasy | Urine |
| 101-014 | Discuss the role of urea in the process of counter | Physiology | concentration and dilution |
| | current multiplier mechanism | | |
| | Describe the countercurrent exchange in vasa Recta | | |
| | to preserve hyperosmolarity of renal medulla | | |
| | Define and explain the term obligatory urine volume. | | 0.1. |
| R-P-015 | Define and explain free water clearance. | Physiology | Obligatory urine volume |
| | Define Urine specific gravity. | , 0, | |
| | | | Disorders of |
| R-P-016 | Enumerate different abnormalities of urinary | Discosiala ana | urine |
| 11-1-010 | concentrating ability | Physiology | concentrating |
| | Enumerate the types of Diabetes insipidus | | ability |
| | Enlist the features of diabetes insipidus | | |
| R-P-017 | Explain the pathophysiology and treatment of central | Integrate with | Diabetes |
| | diabetes insipidus | Medicine | insipidus |
| | Discuss the pathophysiology of nephrogenic diabetes | | |
| | insipidus | | |
| | Make the flow chart to show the Osmoreceptor- | | Osmoreceptor- |
| R-P-018 | antidiuretic hormone (ADH) feedback mechanism for | Physiology | ADH Feedback |
| | | | l . |

| | regulating extracellular fluid osmolarity in response to | | System |
|----------|---|------------|--|
| | a water deficit. | | |
| | Enlist the factors which increase and decrease the | | |
| | release of ADH | | |
| R-P-019 | Explain the mechanism of thirst | | Thirst |
| | Enumerate the factors that can alter potassium | | |
| | distribution between intracellular and extracellular | | |
| | fluids | | |
| R-P-020 | Discuss the process of secretion of potassium by | | Renal regulation of potassium |
| | renal tubules | | or potassium |
| | Explain the regulation of internal potassium | | |
| | distribution and potassium secretion | | |
| R-P-021 | Explain the control of extracellular fluid osmolarity | Physiology | Control of ECF |
| 1021 | and sodium concentration | | osmolarity |
| | Explain the integration of renal mechanism for control | | Control of ECF |
| R-P-022 | of Extracellular Fluid (ECF) | | |
| 11-1-022 | Explain the importance of pressure natriuresis and | | |
| | diuresis in maintaining body sodium and fluid balance | | |
| | Explain the renal handling of calcium concentration to | | Renal regulation of calcium Renal regulation |
| R-P-023 | regulate plasma calcium concentration | | |
| 111 020 | Enumerate the factors that alter renal calcium | | |
| | Enlist the factors that alter renal phosphate excretion | | of phosphate |
| | Explain the nervous and hormonal factors that | | |
| R-P-024 | increase the effectiveness of renal body fluid | | Renal body fluid feedback control |
| | feedback control | | |
| | Explain the conditions that cause large increase in | | |
| R-P-025 | blood volume and ECF volume | Physiology | ECF and blood |
| | Explain the conditions that cause large increase ECF | | volume |
| | volume but with normal blood volume | | |
| R-P-026 | Explain the renal handling of H ⁺ ion. | | Acid base |
| | Analysis the said bear district. | | balance |
| R-P-027 | Analyze the acid base disturbances on the basis of pH, HCO3 and CO2 | Physiology | Acid base disturbance |

| | Explain the causes and compensation of metabolic acidosis Explain the causes and compensation of metabolic alkalosis Explain the causes and compensation of respiratory acidosis | | |
|---------|--|-------------------------|---------------------------------------|
| | Explain the causes and compensation of respiratory alkalosis Explain the causes and compensation of mixed acid base disorder | | |
| R-P-028 | Define and explain anion gap | Physiology | Anion gap |
| CODE | MEDICAL BIOCHEMISTRY | | OURS = 23 |
| | SPECIFIC LEARNING OBJECTIVES Discuss the synthesis and degradation of purines | DISCIPLINE | TOPIC |
| R-B-001 | (De-Novo and salvage pathway) | Medical Biochemistry | Purine metabolism |
| R-B-002 | Discuss the synthesis and degradation of pyrimidine (De-Novo and salvage pathway) | | Pyrimidine metabolism |
| R-B-003 | Outline the sequence of reactions that converts IMP to AMP and GMP and to their corresponding triphosphates | | Nucleotide metabolism |
| R-B-004 | Discuss the regulation of purine and pyrimidine biosynthesis and degradation | | Regulation of purine and pyrimidine |
| R-B-005 | Interpret the Lesh-Nhyan syndrome. Gout, SCID/ADA on basis of sign symptoms and data | | Purine metabolism disorders |
| R-B-006 | Interpret Orotic aciduria in relevance to nucleotides and urea Differentiate between CPS I and II | Medical Biochemistry | Pyrimidine metabolism disorders |
| R-B-007 | Interpret the role of synthetic analogues of nucleotides in medicine based on sign/symptoms and data e.g Methotrexate, 5 Flurouracil and Allupurinol. Interpret the role of PABA analogs and mycophenolic acid in purine biosynthesis | | Analogues of nucleotides |

| R-B-008 | Discuss the role of Ribonucleotide reductase in Nucleotide metabolism (hydroxyurea) | | Role of Ribonucleotide reductase |
|---------|---|---|--|
| | Define acidosis and alkalosis. | | |
| | Classify acid base disorders. | | |
| | Enlist causes of metabolic acidosis and give its compensation. | | Acid Base |
| R-B-009 | Enlist causes of respiratory acidosis and give its compensation. | Biochemistry/i ntegrate with Medicine | balance imbalance/ Types of acid base disorders |
| | Enlist causes of metabolic alkalosis and give its compensation. | | |
| | Enlist causes of respiratory alkalosis and give its compensation. | | |
| R-B-010 | Interpret disorders metabolic and respiratory disorders of acid base balance on basis of sign, symptoms and arterial blood gas (ABG) findings | Biochemistry | Acid Base balance imbalance/ Tetany in |
| | Give biochemical explanation for tetany associated with alkalosis | | alkalosis |
| | PRACTI È AL | | |
| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL HOU | RS = 02+10=12 |
| | | DISCIPLINE | TOPIC |
| | Perform a complete examination of the urine sample | | |
| R-P-029 | URS-10 (using urine reagent-10) and interpret its report | Physiology Practical | Interpretation of report |
| | Determine the specific gravity of urine | | |
| R-B-011 | Estimate blood urea, creatinine & creatinine clearance and interpret the results. | Biochemistry Practical | Interpretation of results |

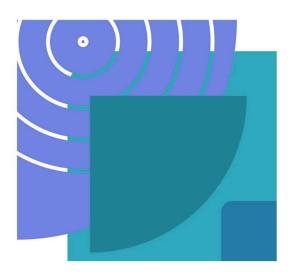
| Determination of proteins in urine by dipstick method and by chemical methods and interpret your results. | |
|---|--|
| Estimate serum uric acid by kit method | |

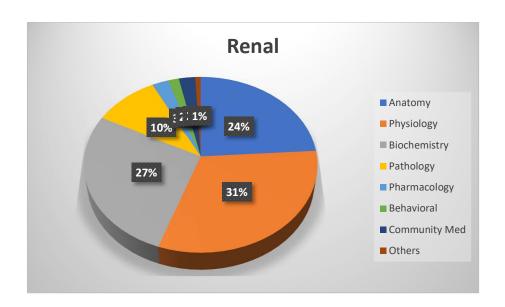
PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS

| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL HOURS = 14 | |
|----------|--|-----------------------------------|-------------------------|
| CODE | SFECIFIC ELARINING OBJECTIVES | DISCIPLINE | ТОРІС |
| | Classify diuretics & carbonic anhydrase inhibitor. MOA, clinical uses, and adverse effects | | |
| R-Ph-001 | Describe Thiazide & loop diuretics their Mechanism of Action, clinical uses, and adverse effects. Describe Potassium sparing and osmotic diuretics their mechanism of action, clinical uses, and adverse effects. | Pharmacology & Therapeutics | Diuretics |
| R-Pa-001 | Discuss the etiology and pathogenesis of different types of stones. | Pathology | Renal Stones |
| R-Pa-002 | Identify the causes, morphological aspect & outcome of hydronephrosis. | | Hydronephrosis |
| R-Pa-003 | Define pyelonephritis and enumerate its types. Describe the morphological features of acute and chronic pyelonephritis | | Pyelonephritis |
| R-Pa-004 | Define acute and chronic cystitis. Describe morphological features of different types of cystitis. | | Cystitis |
| R-Pa-005 | Enlist common causative agents of urinary tract infections and describe pathogenesis and clinical features of common causative agents of UTI. | Microbiology | UTI causative agents |
| R-Pa-006 | Define various presentations of glomerulonephritis. Define nephrotic and nephritic syndrome. List various risk factors and outline management of glomerulonephritis. | Integrate with Medicine | Glomerulonephri tis |

| R-Pa-007 | Define AKI (acute kidney injury) Identify various risk factors and causes for AKI. | | |
|----------|---|---|---|
| R-Pa-007 | ⊟Identify various risk factors and causes for AKI. | | Acute Kidney |
| | | | Injury |
| | Outline management strategies. | | |
| | Define UTI (Urinary Tract Infection) | | |
| R-Pa-008 | Identify various risk factors and causes of UTI. | | Urinary tract |
| | Describe signs and symptoms of UTI. | | infection |
| | Outline management strategies. | | |
| | PRACTI È AL | | |
| CODE | PATHOLOGY | TOTAL H | OURS = 01 |
| | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC |
| | Identify morphological features of acute | | |
| R-Pa-009 | pyelonephritis | Pathology | Pyelonephritis |
| | Identify morphological features of Chronic | | |
| | pyelonephritis | | |
| | DISEASE PREVENTION AND IMPAC | т | |
| | | TOTAL HOURS = 04 | |
| CODE | COECIEIC LEADNING OD IECTIVES | IOIALIN | TOPIC |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | |
| CODE | SPECIFIC LEARNING OBJECTIVES Discuss the significance of quality of life in disease | | |
| CODE | | DISCIPLINE | |
| R-CM-001 | Discuss the significance of quality of life in disease | DISCIPLINE Community | |
| | Discuss the significance of quality of life in disease and treatment settings. | DISCIPLINE | ТОРІС |
| | Discuss the significance of quality of life in disease and treatment settings. Measures of health status. Disability-Adjusted Life | Community Medicine and | ТОРІС |
| | Discuss the significance of quality of life in disease and treatment settings. Measures of health status. Disability-Adjusted Life Year (DALY) and Quality-Adjusted Life Year (QALY) | Community Medicine and | TOPIC Quality of life |
| | Discuss the significance of quality of life in disease and treatment settings. Measures of health status. Disability-Adjusted Life Year (DALY) and Quality-Adjusted Life Year (QALY) Life expectancy. | Community Medicine and | TOPIC Quality of life Dementia, uremic |
| | Discuss the significance of quality of life in disease and treatment settings. Measures of health status. Disability-Adjusted Life Year (DALY) and Quality-Adjusted Life Year (QALY) Life expectancy. To identify the behavioral abnormalities caused by | Community Medicine and | Dementia, uremic encephalopathy, delusion, |
| R-CM-001 | Discuss the significance of quality of life in disease and treatment settings. Measures of health status. Disability-Adjusted Life Year (DALY) and Quality-Adjusted Life Year (QALY) Life expectancy. To identify the behavioral abnormalities caused by renal function. | Community Medicine and Public Health Behavioral | TOPIC Quality of life Dementia, uremic encephalopathy, |
| R-CM-001 | Discuss the significance of quality of life in disease and treatment settings. Measures of health status. Disability-Adjusted Life Year (DALY) and Quality-Adjusted Life Year (QALY) Life expectancy. To identify the behavioral abnormalities caused by renal function. To identify the cognitive abnormality. | Community Medicine and Public Health Behavioral | Dementia, uremic encephalopathy, delusion, muscle paralysis |
| R-CM-001 | Discuss the significance of quality of life in disease and treatment settings. Measures of health status. Disability-Adjusted Life Year (DALY) and Quality-Adjusted Life Year (QALY) Life expectancy. To identify the behavioral abnormalities caused by renal function. To identify the cognitive abnormality. To identify the dangers for the patient, his family, and | Community Medicine and Public Health Behavioral | Dementia, uremic encephalopathy, delusion, muscle paralysis & |
| R-CM-001 | Discuss the significance of quality of life in disease and treatment settings. Measures of health status. Disability-Adjusted Life Year (DALY) and Quality-Adjusted Life Year (QALY) Life expectancy. To identify the behavioral abnormalities caused by renal function. To identify the cognitive abnormality. To identify the dangers for the patient, his family, and society. | Community Medicine and Public Health Behavioral Sciences | Dementia, uremic encephalopathy, delusion, muscle paralysis & |

| R-Ag-001 | To define preventive care in diseases related to urinary system(adults). Primary, secondary, and tertiary prevention. | Community | Disease prevention |
|----------|--|-----------|-------------------------|
| R-Ag-002 | Define urinary incontinence. Outline management strategies. | Medicine | Urinary incontinence |





| Module Weeks | Recommended Minimum Hours |
|--------------|------------------------------|
| 04 | 121 |

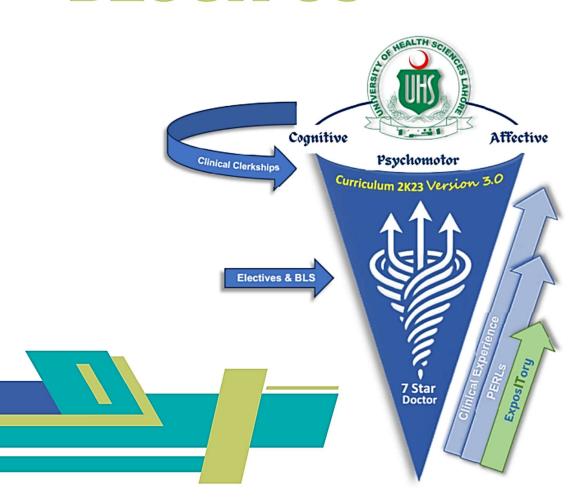




Modular Integrated Curriculum 2K23

version 3.0

BLOCK-05





MODULE RATIONALE

Endocrinal system is a unique system consists of glands which control body systems through its secretions known as hormones. These chemical compounds known as hormones play an integral role in maintaining cell activity and organ functions through biochemical signals. Human reproduction is controlled by hormones released by gonads.

Changes in hormonal levels can affect human fertility.

In this module the anatomy and physiology of the endocrine organs, functional biochemistry of the hormones secreted will be taught in integrated fashion with reference to common disease occurring in Pakistani community.

MODULE OUTCOMES

- Explain Development, structure, hormones and regulation of pituitary gland, thyroid gland, parathyroid gland, endocrine pancreas, adrenal glands, testes and ovaries.
- Describe the etiology, pathophysiology, relevant clinical features and common investigations of disorders of these glands.
- Apply levels of prevention for common endocrinal public health issues in Pakistan.
- Elaborate events in normal pregnancy and principles of genetics.

THEMES

- Introduction to Endocrinology, Mechanism of action, Second messenger, measurements
- Pituitary gland
- Thyroid Gland & Parathyroid Gland
- Adrenal glands
- Pancreatic Hormones
- Reproduction & Genetics

CLINICAL RELEVANCE

- Diabetes
- Hypothyroidism & Hyperthyroidism
- Cushing Syndrome & Addison's disease
- Dysfunctional Uterine Bleeding
- Infertility

IMPLEMENTATION TORS

- The time calculation for completion of modules and blocks 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.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the Second professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



| NORMAL STRUCTURE | | | |
|------------------|---|------------------|-----------------------------------|
| | THEORY | | |
| 6005 | GROSS ANATOMY | TOTAL HOURS = 35 | |
| CODE | SPECIFIC LEARNING OUTCOMES | DISCIPLINE | ТОРІС |
| EnR-A-001 | Describe the location, anatomy blood supply and functions of pituitary gland | Anatomy | Diencephalon (Endocrinology) |
| | Describe the Thyroid, Parathyroid with their type, Relations, blood supply, and nerve supply. | Anatomy | |
| EnR-A-002 | Explain the anatomical basis for surgical removal of the glands of neck with special emphasis on the complications that can be encountered | Anatomy | Thyroid & Parathyroid gland |
| | Identify the Thyroid with their type, relations, blood supply, and nerve supply. | Anatomy | |
| EnR-A-003 | Describe the structure, fascia, coverings, blood and nerve supply of testis | Anatomy | Testis |
| EnR-A-004 | Describe the gross anatomical features and neuro- vasculature of epididymis and vas deferens, Seminal vesicles, Bulbourethral gland | | Accessory Male organs |
| EnR-A-005 | Describe the morphological features and neurovascular supply of prostate. Describe, Draw & Label Lobes of prostate gland Correlate the clinical manifestations of prostate with lobes and/or zones of prostate | Anatomy | Prostate |
| EnR-A-006 | Describe the anatomical basis and manifestations of the following conditions: 1) Hydrocele of spermatic cord and/or testes 2) Hematocele of testes 3) Torsion of the spermatic cord 4) Varicocele Vestigial remnants of embryonic genital duct Describe the anatomical basis of vasectomy, & | Anatomy | Testis clinical conditions |
| | metastasis of cancer of testis and scrotum | Anatomy | |

| | Describe shape, relations blood supply & nerve supply of | Anatomy | |
|-------------|---|------------------|-----------------------------|
| EnR-A-007 | suprarenal gland | Anatomy | Supra-Renal Gland |
| | Explain the anatomical causes of Adrenal Abnormalities | Anatomy | Joinna |
| | Define Bony Pelvis (Girdle) and describe the structures | Anatomy | |
| EnR-A-008 | forming it. | Anatomy | Pelvic Girdle |
| LIIIV-A-000 | Describe the bones and salient anatomical features of | Anatomy | |
| | Bony pelvis (girdle) | Anatomy | |
| | Describe the type, articulations and mechanics of | | |
| | movements {axes and planes} of the following joints: | | |
| F D A 000 | 1) Sacro-Iliac | A 4 | Sacroiliac- |
| EnR-A-009 | 2) Pubic Symphysis | Anatomy | Joint |
| | 3) Lumbosacral | | |
| | 4) Sacrococcygeal | | |
| | List the contents of True and False Pelvis | Anatomy | |
| - | Tabulate the differences between male and female pelvis | Anatomy | Bony Pelvis |
| EnR-A-010 | Describe different types of pelvises | Anatomy | (Girdle) |
| | Describes different diameters of pelvis and their | Anatomy | |
| | application in obstetric practice | (Obs & Gynae) | |
| | Describe the anatomical basis of pelvic fractures and | A 4 | |
| | their consequences | Anatomy | |
| | Describe the topographical anatomy of pelvic walls and | | 5 6 |
| EnR-A-011 | its components | Anatomy | Pelvic Girdle |
| | Describe the mechanics of changes occurring in pelvic | Anatomy | = |
| | ligaments and joint mobility in late pregnancy | (Obs & Gynae) | |
| | Describe the topographical anatomy of pelvic floor. | Anatomy | |
| EnR-A-012 | Describe origin, insertion, nerve supply and actions of | | Pelvic floor |
| | muscle forming pelvic floor | Anatomy | |
| | Tabulate the attachments, innervations and actions of | | Pelvic Muscles |
| EnR-A-013 | muscles forming the pelvic walls and floor | Anatomy | |
| | Describes injury to pelvic floor during child birth and its | Anatomy | Pelvic Girdle |
| EnR-A-014 | complications | (Obs & Gynae) | |
| | Describe the peritoneal reflections in the male and female | Anatamy | Peritoneum |
| EnR-A-015 | pelvis | Anatomy | peritoneal cavity of pelvis |

| EnR-A-016 | Describe the gross anatomical features of Sacrum | Anatomy | Sacrum |
|-----------|---|---------|---------------------------------------|
| EnR-A-017 | Describe the gross anatomical features of pelvic fascia | Anatomy | Pelvic Fascia |
| | Describe the boundaries of pelvic outlet and inlet | Anatomy | |
| EnR-A-018 | Enumerate the structures passing through the pelvic inlet and pelvic outlet | Anatomy | Pelvic Outlet and inlet |
| EnR-A-019 | Tabulate the differences in peritoneal reflections in male and female pelvis | Anatomy | Peritoneal Reflection in Pelvis |
| | Describe the origin, course, branches and distribution of common iliac artery | Anatomy | |
| EnR-A-020 | Describe the origin, course, branches and distribution of external and internal iliac arteries | Anatomy | Pelvic Vessels |
| | Describe the origin, course, tributaries and area of drainage of pelvic veins | Anatomy | |
| EnR-A-021 | Describe the location, afferents and efferent of pelvic lymph nodes | Anatomy | Pelvic Lymph Nodes |
| | Tabulate the origin, course, distribution and anastomosis of arteries of the pelvis | Anatomy | |
| | Describe the origin, root value, course, relations, branches and distribution of Pelvic nerves | Anatomy | |
| EnR-A-022 | Describe the anatomical basis and clinical picture for ligation of internal iliac artery and collateral circulation in pelvis | Anatomy | Pelvic Vessels & Pelvic nerves |
| | Describe the clinical picture and anatomical basis for the injury to pelvic nerves | Anatomy | |
| | Give anatomical justification for pelvic nerve blocks | Anatomy | |
| | Describe the morphological features of urethra (male and female) | Anatomy | |
| EnR-A-023 | Tabulate the parts of the male urethra with their location and salient features | Anatomy | Pelvis |
| | Describe the clinical picture and anatomical justification for Ureteric Caliculi, Cystocele, Suprapubic Cystotomy, Rupture of Bladder | Anatomy | |

| | Describe the clinical picture and anatomical justification | | |
|-----------|---|---------|----------|
| | for Hypertrophy of Prostate | Anatomy | |
| | Describe the gross anatomical features of Ovaries and | | |
| | Fallopian Tubes with their relations, blood supply, nerve | | |
| | supply and lymphatic drainage | | |
| | | | |
| | Describe related clinical conditions: | Α . | |
| | 1) Positions of ovaries | Anatomy | |
| | 2) Cysts of ovaries | | |
| | 3) Ectopic pregnancy | | |
| | 4) Tubal ligation | | |
| | 5) Salpingitis | | |
| | Describe the gross anatomical features, parts, peritoneal | | |
| | ligaments, blood supply, nerve supply & lymphatic & | | |
| | clinical aspects of Uterus and Vagina | | |
| | | | |
| | Describe related clinical conditions | Anatomy | |
| | Prolapse of uterus | | |
| | 2. Vaginal trauma | | |
| | 3. culdocentesis | | |
| | Describe, identify, justify and demonstrate the supports of | | |
| | uterus | Anatomy | |
| | Describe the gross anatomical features of Boundaries & | _ | |
| | divisions of perineum | Anatomy | |
| | Draw and label the boundaries of perineum | Anatomy | |
| | List the contents of perineum | Anatomy | |
| EnR-A-024 | Tabulate the differences between the Male and female | A 4 | |
| | perineum | Anatomy | Perineum |
| | Describe the attachments of the perineal membrane and | Anatomy | |
| | list its relations | Anatomy | |
| | Discuss the formation of Superficial and Deep Perineal | Anatomy | |
| | Pouches | Anatomy | |
| | List the contents of Superficial and Deep Perineal Spaces | Anatomy | |
| 1 | | | |

| | Tabulate the attachments, actions and nerve supply of muscles of perineum | Anatomy | |
|-----------|--|-------------------|----------------|
| | Describe the topographical anatomy and neuro- vasculature of Penis | Anatomy | |
| | Tabulate the muscles forming the perineal body with their attachments and nerve supply | Anatomy | |
| | Describe the clinical presentation and anatomical | | |
| | justification for: | | |
| | 1) Hypospadias | | |
| | 2) Phimosis | | |
| | 3) Circumcision | | |
| EnR-A-025 | 4) Erectile Dysfunction | Anatomy | Pelvis |
| | 5) Internal Hernias | | |
| | 6) Suprapubic Cystotomy | | |
| | 7) Rupture Of Bladder | | |
| | 8) Rectal Examination | | |
| | 9) Disposition Of Uterus | | |
| | Describe the extent, structure, vascular supply, lymphatic | Integrate with | |
| | drainage of Breast (Mammary Glands) | Medicine | |
| F=D A 000 | Demonstrate palpation of breast and define its relation to | Integrate | Mammary |
| EnR-A-026 | the Fibrous septa in Carcinoma of Breast | with Surgery | Gland |
| | Explain the anatomical basis of position adopted for | Integrate | |
| | breast examination and mammography. | with Radiology | |
| CODE | EMBRYOLOGY & POST-NATAL DEVELOPMENT | TOTAL H | OURS = 14 |
| | SPECIFIC LEARNING OUTCOMES | DISCIPLINE | TOPIC |
| | Describe the contributing factors, histogenesis and | Anotomy | |
| | sequence of events of the development of Thyroid gland | Anatomy | Development of |
| E-D 4 007 | Explain the embryological basis of the Thyroglossal Cyst | Anatomy | Thyroid gland |
| EnR-A-027 | Draw a concept map highlighting the development of | Anatomy | |
| | thyroid gland | - | |
| EnR-A-028 | Describe the development of para-thyroid glands | Anatomy | Development |

| | Draw a concept map highlighting the development of para-thyroid gland | Anatomy | Of Parathyroid glands |
|-----------|--|---------|--|
| EnR-A-029 | Anatomically justify the clinical presentation of: 1. Ectopic Parathyroid | Anatomy | Development of Thyroid, |
| | Aberrant Thyroid Describe the development of pituitary gland | | Parathyroid |
| EnR-A-030 | Describe the embryological basis for the congenital anomalies of pituitary development | Anatomy | Development of Pituitary Gland |
| | Describe the contributing factors, histogenesis and the development of adrenal gland | Anatomy | Development |
| EnR-A-031 | Draw a concept map for the development of adrenal gland | Anatomy | Of Adrenal Gland |
| | Describe the embryological basis for the congenital anomalies of adrenal development | Anatomy | |
| EnR-A-032 | Identify the stages in the development of the adrenal gland | Anatomy | Adrenal Gland |
| EnR-A-033 | Describe the indifferent gonads List and describe the Factors influencing the differentiation of gonads Evaluate the role of the factors influencing Sex determination and differentiation | Anatomy | Development of Reproductive system |
| | Describe the Development and descent of testis | Anatomy | |
| EnR-A-034 | Describe the embryological basis and locations of undescended testes | Anatomy | Testis |
| EnR-A-035 | Draw a concept map highlighting the development of testis | Anatomy | |
| | Explain the Development and descent of ovaries | Anatomy | |
| | Draw a concept map highlighting the development of ovaries | Anatomy | Development of Reproductive |
| | Describe the anatomical basis for indifferent gonads, Klinefelter, turner syndromes & androgen insufficiency | Anatomy | system |
| | Describe the Formation of Genital Ducts In different stage (paramesonephric and mesonephric ducts) | Anatomy | |

| clinical anomalies. Describe the development of female genital ducts and glands, Development of uterus & Vagina. Describe related clinical anomalies: 1) Uterus Arcuatus 2) Uterus septus 3) Uterus Bicomis Bicollis 4) Uterus Bicomis Bicollis 5) Uterus Unicomis 6) Atresia of Vagina 7) Double Vagina 8) Imperforate hymen Describe the development of male genital ducts and glands Discuss the Development of male external genitalia Anatomy Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Anatomy genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES DISCIPLINE TOPIC Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Pitulitary Gland Pitulitary Gland Pitulitary Gland Pitulitary Gland | | Development of Mammary gland. Describe related | | |
|--|-----------|--|------------|-----------------|
| glands, Development of uterus & Vagina. Describe related clinical anomalies: 1) Uterus Arcuatus 2) Uterus septus 3) Uterus Bicornis Bicollis 4) Uterus Bicornis Unicollis 5) Uterus Unicornis 6) Atresia of vagina 7) Double vagina 8) Imperforate hymen Describe the development of male genital ducts and glands Discuss the Development of female external genitalia Anatomy Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hemia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis CODE MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Entercendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Pathology Stomach | | clinical anomalies. | | |
| related clinical anomalies: 1) Uterus Arcuatus 2) Uterus septus 3) Uterus Bicornis Bicollis 4) Uterus Bicornis Unicollis 5) Uterus Unicornis 6) Atresia of vagina 7) Double vagina 8) Imperforate hymen Describe the development of male genital ducts and glands Discuss the Development of female external genitalia Anatomy Describe the Development of female external genitalia Anatomy Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis **CODE** **MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14) **Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions **Anatomy** **Anatomy** **Stomach** **Anatomy** **Stomach** **Anatomy** **Stomach** **Anatomy** **Pathology** **Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions** | | Describe the development of female genital ducts and | | |
| 1) Uterus Arcuatus 2) Uterus septus 3) Uterus Bicornis Bicollis 4) Uterus Bicornis Unicollis 5) Uterus Unicornis 6) Atresia of vagina 7) Double vagina 8) Imperforate hymen Describe the development of male genital ducts and glands Discuss the Development of female external genitalia Anatomy Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hemia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis CODE MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy | | glands, Development of uterus & Vagina. Describe | | |
| 2) Uterus septus 3) Uterus Bicornis Bicollis 4) Uterus Bicornis Unicollis 5) Uterus Unicornis 6) Atresia of vagina 7) Double vagina 8) Imperforate hymen Describe the development of male genital ducts and glands Discuss the Development of female external genitalia Anatomy Describe the Development of female external genitalia Anatomy Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Pathology Stomach | | related clinical anomalies: | | |
| 3) Uterus Bicornis Bicollis 4) Uterus Bicornis Unicollis 5) Uterus Unicornis 6) Atresia of vagina 7) Double vagina 8) Imperforate hymen Describe the development of male genital ducts and glands Discuss the Development of female external genitalia Anatomy Describe the Development of female external genitalia Anatomy Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy | | 1) Uterus Arcuatus | | |
| 4) Uterus Bicornis Unicollis 5) Uterus Unicornis 6) Atresia of vagina 7) Double vagina 8) Imperforate hymen Describe the development of male genital ducts and glands Discuss the Development of male external genitalia Describe the Development of female external genitalia Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hemia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY 8 PATHOLOGY) SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach | | 2) Uterus septus | | |
| 5) Uterus Unicornis 6) Atresia of vagina 7) Double vagina 8) Imperforate hymen Describe the development of male genital ducts and glands Discuss the Development of female external genitalia Describe the Development of female external genitalia Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hemia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions | | 3) Uterus Bicornis Bicollis | Anatomy | |
| 6) Atresia of vagina 7) Double vagina 8) Imperforate hymen Describe the development of male genital ducts and glands Discuss the Development of female external genitalia Describe the Development of female external genitalia Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hemia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY 8 PATHOLOGY) SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach | | 4) Uterus Bicornis Unicollis | | |
| 7) Double vagina 8) Imperforate hymen Describe the development of male genital ducts and glands Discuss the Development of male external genitalia Discuss the Development of female external genitalia Anatomy Describe the Development of female external genitalia Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY 8 PATHOLOGY) SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach | | 5) Uterus Unicornis | | |
| 8) Imperforate hymen Describe the development of male genital ducts and glands Discuss the Development of male external genitalia Anatomy Describe the Development of female external genitalia Anatomy Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hemia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES DISCIPLINE TOPIC Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach | | 6) Atresia of vagina | | |
| Describe the development of male genital ducts and glands Discuss the Development of male external genitalia Anatomy Describe the Development of female external genitalia Anatomy Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES DISCIPLINE TOPIC Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach | | 7) Double vagina | | |
| glands Discuss the Development of male external genitalia Describe the Development of female external genitalia Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach | | 8) Imperforate hymen | | |
| Discuss the Development of male external genitalia Discuss the Development of female external genitalia Describe the Development of female external genitalia Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors Pathology EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach | | Describe the development of male genital ducts and | Anatomy | |
| Describe the Development of female external genitalia Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES DISCIPLINE TOPIC Describe the histological basis and manifestation of Gastric Carcinoid Tumors EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach | | glands | Anatomy | |
| Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES DISCIPLINE TOPIC Describe the histological basis and manifestation of Gastric Carcinoid Tumors Pathology EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach | | Discuss the Development of male external genitalia | Anatomy | |
| congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES DISCIPLINE TOPIC Describe the histological basis and manifestation of Gastric Carcinoid Tumors Pathology Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach | | Describe the Development of female external genitalia | Anatomy | |
| genitalia (Hyposidiasis, Epispidiasis) Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach | | Explain the anatomical basis for the Associated | | |
| Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach Anatomy | | congenital anomalies of male and female external | Anatomy | |
| of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach Anatomy | | genitalia (Hyposidiasis, Epispidiasis) | | |
| Ectopic Testis, Congenital Inguinal Hernia, Hydrocele Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Anatomy Anatomy Anatomy Anatomy | | Describe the development of inguinal canal and descent | | |
| Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES DISCIPLINE Describe the histological basis and manifestation of Gastric Carcinoid Tumors EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Anatomy Anatomy Stomach | | of testis and embryological basis for Cryptorchidism, | Anatomy | |
| Describe the embryological basis for the coverings of testis CODE | | Ectopic Testis, Congenital Inguinal Hernia, Hydrocele | | |
| testis Total Hours = 14 | | Klinefelter, turner syndromes & androgen insufficiency | | |
| CODE MICROSCOPIC STRUCTURE (HISTOLOGY & TOTAL HOURS = 14 SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Anatomy | | Describe the embryological basis for the coverings of | Anatomy | |
| CODE SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions TOTAL HOOKS - 14 TOPIC Anatomy/ Pathology Stomach Anatomy | | testis | | |
| SPECIFIC LEARNING OUTCOMES Describe the histological basis and manifestation of Gastric Carcinoid Tumors EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy | | | TOTAL H | OURS = 14 |
| Describe the histological basis and manifestation of Gastric Carcinoid Tumors EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Anatomy | CODE | · | DISCIPLINE | TOPIC |
| Gastric Carcinoid Tumors EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy Anatomy Stomach | | | | |
| EnR-A-036 Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions Anatomy | | | | Ctom b |
| of type, location, hormone produced and Actions Anatomy | EnR-A-036 | | | Siomach |
| EnR-A-037 Describe microscopic structure of Pituitary gland. Anatomy Pituitary Gland | | | Anatomy | |
| | EnR-A-037 | Describe microscopic structure of Pituitary gland. | Anatomy | Pituitary Gland |

| | Classify pituitary gland on the basis of cell type, hormone produced and functions | Anatomy | |
|--------------|---|----------------------|--------------------|
| | Explain the histological basis and manifestation of Pituitary Adenomas | Anatomy | |
| F. D. A. 020 | Describe the light microscopic structure of Adrenal Gland | Anatomy | Adrenal Gland |
| EnR-A-038 | Explain the histological basis and manifestation of Addison disease | Anatomy | |
| | Describe the light microscopic structure of endocrine pancreas | Anatomy | |
| | Classify the pancreatic islets on the basis of cell type, hormone produced and functions | Anatomy | Pancreas |
| EnR-A-039 | Explain the histological basis and manifestation of Diabetes Mellitus | Anatomy | |
| | Explain the components and functions of neuroendocrine system | Anatomy | |
| | Describe the light microscopic structure of Thyroid Gland | Anatomy | |
| EnR-A-040 | Describe the light microscopic structure of Parathyroid Gland | Anatomy | Thyroid Gland |
| | Describe the light microscopic structure of Pineal gland | Anatomy | |
| EnR-A-041 | Describe the light and ultramicroscopic structure of Testes, structure & function of Sertoli cells. Describe Blood testes Barrier | Anatomy | Testes |
| | Describe the histological basis and manifestation of Orchitis, Cryptorchidism | Anatomy Pathology | |
| EnR-A-042 | Describe the light microscopic structure of Epididymis | Anatomy | Epididymis |
| EnR-A-043 | Describe the light microscopic structure of vas deferens | Anatomy | Vas deferens |
| EnR-A-044 | Describe the light microscopic structure of seminal vesicle | Anatomy | Seminal Vesicle |
| | Describe the light microscopic structure of Prostate Gland | Anatomy | |
| EnR-A-045 | Describe the lobes of prostate and correlate with the pathologies of prostate | Anatomy pathology | Prostate gland |
| EnR-A-046 | Describe the light microscopic structure of ovaries | Anatomy | Ovaries |

| | Describe the light microscopic structure of ovarian follicles in different stages of menstrual cycle. | Anatomy | |
|-----------|---|-------------------------|--------------------------|
| | Describe the histological basis and manifestation of Polycystic Ovary Syndrome | Anatomy Pathology | |
| | Discuss the light microscopic structure of uterus | Anatomy | |
| EnR-A-047 | Describe the light microscopic structure of different stages of Menstrual cycle | Anatomy | Uterus |
| | Describe the histological basis and manifestation of Endometriosis | Anatomy Gynae & Obs. | |
| EnR-A-048 | Describe the light microscopic structure of Fallopian Tube. | Anatomy | Fallopian Tube |
| | Describe the light microscopic structure of Cervix | Anatomy | |
| EnR-A-049 | Describe the histological basis and manifestation of Cervical Carcinoma | Anatomy Pathology | Cervix |
| EnR-A-050 | Describe the light microscopic structure of Vagina | Anatomy | Vagina |
| EnR-A-051 | Describe light microscopic structure of mammary gland (inactive, during pregnancy, after lactation) Discuss histological basis of Breast cancer | Anatomy pathology | Mammary Gland |
| | PRACTI L AL | | |
| CODE | HISTOLOGY | TOTAL H | OURS = 11 |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC |
| EnR-A-052 | Identify draw & Label the Pituitary gland under light microscope | Anatomy | Pituitary gland |
| EnR-A-053 | Identify draw & label the Thyroid & Parathyroid glands under light microscope | Anatomy | Thyroid & Parathyroid |
| EnR-A-054 | Identify draw & Label the Adrenal gland under light microscope | Anatomy | Adrenal Gland |
| EnR-A-055 | Identify draw & Label Testes, Epididymis & Vas deferens under the light Microscope | Anatomy | Testes Epididymis |

| | Identify draw & label the seminal vesicle & prostate gland | | Seminal |
|-----------|--|---------|----------------|
| EnR-A-056 | under light Microscope | Anatomy | Vesicle |
| | j ' | | Prostate Gland |
| | Identify, draw and label the ovaries under light | Α | |
| EnR-A-057 | microscope | Anatomy | Ovaries |
| | Identify, draw and label the slide of different phases of | | |
| EnR-A-058 | uterus under light microscope | Anatomy | Uterus |
| | Identify, draw and label the fallopian tube under light | | |
| EnR-A-059 | microscope | Anatomy | Fallopian Tube |
| EnR-A-060 | Identify, draw and label the cervix under light microscope | Anatomy | Cervix |
| EnR-A-061 | Identify, draw and label the vagina under light microscope | Anatomy | Vagina |
| | Identify, draw and label the mammary gland (different | | Mammary |
| EnR-A-062 | stages) under light microscope | Anatomy | gland |

NORMAL FUNCTION

THEORY

| CODE | MEDICAL PHYSIOLOGY | TOTAL HOURS = 59 | |
|-----------|---|------------------|-------------------------------|
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС |
| EnR-P-001 | Define different chemical messengers. Enlist endocrine organs and hormones of the body. Enlist the hormones on the basis of chemical nature. Discuss the feedback control of hormone secretion. Explain the up and down regulation of receptors. Enlist the location of hormone receptors. Explain the mechanism of intracellular signaling after hormone receptor activation. Name the hormones that use enzyme-linked hormone receptors signaling. Explain the mechanism of enzyme linked receptors. Enlist second messenger mechanisms for mediating intracellular hormonal functions. Define second messenger system. | Physiology | Introduction to Endocrinology |
| | Explain the adenylyl cyclase– cAMP Second Messenger System. | | |

| - | | | 1 |
|-----------|--|------------|-------------------|
| | Enumerate the hormones that use the adenylyl cyclase- | | |
| | cAMP Second Messenger System. | | |
| | Explain The cell membrane phospholipid second | | |
| | messenger System. | | |
| | Enumerate the hormones that use cell membrane | | |
| | phospholipid second messenger system. | | |
| | Explain the mechanism of calcium Calmodulin system. | | |
| | Name the hormones/ factors of hypothalamus. | | |
| | Name the hormones of anterior pituitary. | | |
| | Name the hormones of posterior pituitary. | | |
| | Describe the functional relationship between | | |
| | hypothalamus, anterior and posterior pituitary gland. | | |
| | Explain the significance of hypothalamic- hypophysial | | |
| | portal circulation. | | |
| | Explain the hypothalamic pituitary tract. | | |
| | Explain the mechanism of action of growth hormone. | | |
| | Explain the actions of Growth hormone on Carbohydrate. | | Hypothalamus / |
| | Discuss the actions of Growth hormone on protein | | |
| | metabolism. | | |
| | Describe the actions of Growth hormone on fat | | |
| EnR-P-001 | metabolism. | Physiology | |
| | Explain the effect of growth hormone on skeletal growth | | Pituitary Gland |
| | and age. | | |
| | Explain the significance of somatomedins in mediating | | |
| | the actions of growth hormone. | | |
| | Describe the regulation of Growth Hormone. | | |
| | Describe the causes and features and treatment of | | |
| | panhypopituitarism in adults and childhood. | | |
| | Define Sheehan's syndrome. | | |
| | Enlist the types of dwarfism according to cause. | | |
| | Explain the pathophysiology and features of gigantism | | |
| | and acromegaly. | | |
| | Explain the mechanism of action of antidiuretic hormone. | | |
| | Discuss the actions of antidiuretic hormone. | | |
| | <u> </u> | I | 1 |

| | Regulation of antidiuretic hormone production. | | |
|-----------|---|--------------|----------------------|
| | Elaborate the mechanism of action of oxytocin. | | |
| | Discuss the actions of oxytocin. | | |
| | Discuss the transport of thyroid hormone | | |
| | Discuss the mechanism of action of thyroid hormone | | |
| | Explain the actions of thyroid hormone on carbohydrate | | |
| | metabolism | | |
| | Discuss the actions of thyroid hormone on protein | | |
| | metabolism | | |
| EnR-P-002 | Explain the actions of thyroid hormones on fat | Physiology | Thyroid gland |
| | metabolism | | |
| | Explain the non-metabolic functions of thyroid hormone | | |
| | Explain the regulation of thyroid hormone | | |
| | Enumerate antithyroid substances and explain their | | |
| | mechanism of action | | |
| | Enumerate the causes of hyperthyroidism | | |
| | Explain the features, pathophysiology and treatment of | | |
| | thyrotoxicosis/ grave's disease | | |
| | Explain the thyroid function test to investigate hypo and | | |
| | hyperthyroidism | | |
| | Enlist the causes of hypothyroidism | | |
| | Explain the pathophysiology of Hashimoto | | |
| | hypothyroidism | | |
| | Discuss the features and pathophysiology and treatment | | |
| | of myxedema | | |
| | Explain the pathophysiology and features of endemic | | |
| | colloid goiter | | |
| | Discuss the pathophysiology and features of nontoxic | | |
| | colloid goiter | | |
| | Enlist the causes of cretinism | | |
| | Discuss the features and pathophysiology of cretinism | | |
| | Name the hormones of adrenal cortex. | | |
| EnR-P-003 | Explain the physiological anatomy of adrenal cortex. | Physiology & | Adreno |
| | Explain the cellular mechanism of Aldosterone action. | Pathology | cortical hormones |
| | Explain the effects of mineralocorticoid hormone. | | |

| | Discuss the regulation of aldosterone secretion. | | |
|-----------|---|------------|---------------------|
| | Discuss the metabolic and non-metabolic functions of | | |
| | cortisol | | |
| | Explain the interconversion of active cortisol and inactive | | |
| | cortisone by the 2, 11 beta hydroxysteroid | | |
| | dehydrogenase isoform. | | |
| | Explain the mechanism for regulation of glucocorticoid | | |
| | secretion by hypothalamus and pituitary | | |
| | Name adrenal androgens and enlist the functions of | | |
| | adrenal androgens. | | |
| | Discuss the causes, features, pathophysiology and | | |
| | treatment of hypoadrenalism (Addison's disease). | | |
| | Enlist the causes of hyperadrenalism. | | |
| | Explain the features, pathophysiology and treatment of | | |
| | Cushing's syndrome. | | |
| | Differentiate between Cushing's syndrome and Cushing's | | |
| | disease | | |
| | Explain the clinical importance of dexamethasone | | |
| | suppression test to diagnose Cushing's syndrome. | | |
| | Discuss the features, pathophysiology and treatment of | | |
| | Conn's syndrome. | | |
| | Enlist the cause, features and pathophysiology of | | |
| | congenital adrenal hyperplasia/ Androgenital syndrome. | | |
| | Enumerate the types of pancreatic cells with their | | |
| | hormones. | | |
| | Explain the mechanism of action of insulin. | | |
| | Discuss the synthesis and mechanism of release of | | |
| | insulin. | | _ |
| EnR-P-004 | Explain the effects of insulin on carbohydrate, protein and | Physiology | Pancreatic hormones |
| | lipid metabolism. | | |
| | Enlist the actions of insulin on liver, adipose tissue and | | |
| | skeletal muscle. | | |
| | Enlist the factors and conditions that increase or | | |
| | decrease insulin secretion. | | |

| | Explain the role of insulin (and other hormones) in | | |
|-----------|---|------------|--------------------------|
| | "switching" between carbohydrate and lipid metabolism. | | |
| | Discuss the effects of glucagon on carbohydrate and lipid | | |
| | metabolism. | | |
| | Explain the factors that regulate the secretion of | | |
| | glucagon. | | |
| | Explain the 24-hour regulation of glucose. | | |
| | Discuss the importance of blood glucose regulation. | | |
| | Explain the actions of somatostatin. | | |
| | Enlist the types of diabetes mellitus | | |
| | Explain the causes of Type I and type II diabetes mellitus | | |
| | Discuss the features and pathophysiology of diabetes | | |
| | mellitus | | |
| | Explain the role of insulin resistance, obesity and | | Abnormalities |
| EnR-P-005 | metabolic syndrome in developing type II diabetes | Physiology | of Glucose regulation |
| | mellitus | | 3 |
| | Explain how to diagnose the diabetes mellitus | | |
| | Explain the treatment of type I and type II diabetes | | |
| | mellitus Explain the features, cause of insulinoma | | |
| | Discuss the physiological anatomy of parathyroid gland | | |
| | Explain the rapid and slow mechanism of resorption of | | |
| E B B 200 | bone by parathyroid hormone | D | Parathyroid |
| EnR-P-006 | Discuss the actions of parathyroid | Physiology | hormones |
| | Explain the control of parathyroid secretion by calcium ion | | |
| | concentration | | |
| | Discuss the effects of Vitamin D | | |
| | Discuss the effects of calcitonin on calcium | | |
| | Discuss the regulation of calcium (the first & second line | | |
| | of defense) | | Regulation of |
| EnR-P-007 | Explain the causes and features of hypoparathyroidism | Physiology | calcium in body |
| | Explain the causes and the features of primary and | | j |
| | secondary hyperparathyroidism | | |
| | Enumerate the causes and features of osteoporosis | | |
| E D D 222 | Enlist the functions of adrenal medullary hormones and | DI '' | Adreno |
| EnR-P-008 | explain pheochromocytoma | Physiology | medullary hormones |

| | Describe the hormonal factors that affect | | |
|-----------|--|------------|--------------------|
| | spermatogenesis | | |
| | Explain the maturation and storage of sperm in | | |
| | epididymis | | |
| | Discuss the structure and physiology of a mature sperm | | Spermatogene |
| E B B 000 | Describe the composition of semen | D | sis |
| EnR-P-009 | Discuss the functions of prostate & seminal vesicles in | Physiology | Capacitation & |
| | the formation of semen | | Acrosome reaction |
| | Explain the phenomenon of capacitation and its | | |
| | significance | | |
| | Describe the acrosome Reaction and its significance | | |
| | Discuss the role of pineal gland in reproduction | | |
| | Discuss the site of secretion of testosterone | | |
| | Name the active form of testosterone | | |
| | Explain the production of estrogen in males | | |
| | Describe the basic intracellular mechanism of action of | | |
| E D D 040 | testosterone | D | . |
| EnR-P-010 | Explain the functions of testosterone in intrauterine life | Physiology | Testosterone |
| | and after birth | | |
| | Discuss the regulation of male sexual functions by | | |
| | hormones from the hypothalamus and anterior pituitary | | |
| | gland | | |
| | Enumerate and explain the phases of ovarian cycle along | | |
| | with the hormonal changes | | |
| | Explain the postulated mechanism of ovulation | | |
| | Explain the formation and involution of Corpus luteum | | |
| EnR-P-011 | Endometrial cycle | Physiology | Menstrual cycle |
| | Explain the structural and hormonal changes of | | 3,5.5 |
| | endometrial cycle | | |
| | Explain the regulation of female monthly cycle | | |
| | Discuss the role of progesterone on female sexual organs | | |
| EnR-P-012 | Enumerate the ovarian hormones | Dhysiology | Female sexual |
| | Discuss the synthesis of estrogen and progesterone | Physiology | hormones |

| | Describe the interaction of follicular theca and granulosa cells for production of estrogens with the help of a diagram Explain the functions of the estrogens on different organs Discuss the role of progesterone on female sexual organs Explain the physiological basis of puberty, menarche | | |
|-----------|--|--------------|-------------------------------------|
| EnR-P-013 | Define menopause Explain the cause of menopause Discuss the physiological changes in the function of the body at the time of menopause | Physiology | Puberty, menarche & menopause |
| EnR-P-014 | Explain the non-hormonal functions of placenta Explain the hormonal factors in pregnancy/ hormones of placenta Explain the changes in non- placental hormones during pregnancy Response of the mother's body to pregnancy Explain the mechanical and hormonal factors that increase uterine contractility during parturition Explain the physiology of lactation | Physiology | Normal Pregnancy |
| EnR-P-015 | Discuss the actions of prolactin Justify the suppression of ejection of milk during pregnancy Discuss the physiological basis of suppression of the female ovarian cycles in nursing mothers for many months after delivery | Physiology | Lactation |
| CODE | MEDICAL BIOCHEMISTRY | TOTAL H | OURS = 35 |
| | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC |
| EnR-B-001 | Define different chemical messengers. Enlist endocrine organs and hormones of the body. Enlist the hormones on the basis of chemical nature. Discuss the feedback control of hormone secretion. Explain the up and down regulation of receptors. Enlist the location of hormone receptors. | Biochemistry | Introduction to Endocrinology |

| | Explain the mechanism of intracellular signaling after | | |
|------------|---|--------------|----------------------------|
| | hormone receptor activation. | | |
| | Name the hormones that use enzyme-linked hormone | | |
| | receptors signaling. | | |
| | Explain the mechanism of enzyme linked receptors. | | |
| | Explain the mechanism of hormones that receptors | | |
| | present in cytoplasm and nucleus (act on genetic | | |
| | machinery). | | |
| | Enlist second messenger mechanisms for mediating | | |
| | intracellular hormonal functions. | | |
| | Define second messenger system. | | |
| | Explain the adenylyl cyclase– cAMP Second Messenger | | |
| | System. | | |
| | Enumerate the hormones that use the adenylyl cyclase– | | |
| | cAMP Second Messenger System. | | |
| | Explain The cell membrane phospholipid second | | |
| | messenger System. | | |
| | Enumerate the hormones that use cell membrane | | |
| | phospholipid second messenger system. | | |
| | Explain the mechanism of calcium Calmodulin system. | | |
| EnR-B-002 | Describe the features of Signal transduction Describe | Biochemistry | Signal |
| LIIN-D-002 | different types of receptors | Diochemistry | Transduction |
| EnR-B-003 | Discuss the classification of hormones | Biochemistry | Classification of hormones |
| | Describe different types of second messengers | | |
| | Differentiate the G protein and non-G protein mediated | | |
| | pathways of signal transduction | | |
| | Discuss the hormones which act through: Cyclic AMP | | |
| EnR-B-004 | (Adenosine monophosphate) | | |
| | Discuss the hormones which act through: Cyclic GMP | Biochemistry | Second messengers |
| | (guanosine monophosphate) | | messengers |
| | Discuss the hormones which act through calcium | | |
| | phosphoinositol | | |
| | Describe the Receptor tyrosine kinase pathway of signal | | |
| | transduction | | |
| • | | • | |

| | Explain the Serine threonine kinase pathway of signal | | |
|------------|--|------------------|----------------------------|
| | transduction | | |
| | Discuss the Nuclear Receptor mediated pathway of | | |
| | signal transduction | | |
| | Describe the Receptor coupled to Jak Stat pathway of | | |
| | signal transduction | | |
| | Explain the control and negative feedback mechanism of | D: 1 : 1 | |
| | hormone regulation | Biochemistry | |
| | Discuss the biosynthesis, secretion, mechanism of action | | |
| | and metabolic functions of Insulin, glucagon, | | |
| | epinephrine, cortisol, thyroid and growth hormone with | Biochemistry | |
| | special reference to carbohydrate, protein and lipid | | |
| | metabolism | | |
| | Interpret disorders of hormones on the basis of sign, | Biochemistry | |
| | symptoms and given data | Diocricinistry | |
| EnR-B-005 | Explain the synthesis, secretion, transport and clearance | Biochemistry | Synthesis of |
| LIII & OOO | of steroid and protein hormones. | Biodricinioury | Hormones |
| | Enlist the steps in the synthesis of adrenocortical | | |
| | hormone. Explain the synthesis and secretion of ACTH | | Synthesis of |
| EnR-B-006 | (Adrenocorticotropic hormone) in association with | Biochemistry | ACTH & adrenocortical |
| | melanocyte-stimulating hormone, lipotropin, and | | adicilocortical |
| | endorphin. | | |
| | Explain the structure, biosynthesis, secretion, transport, | | Synthesis of |
| EnR-B-007 | regulation, catabolism, mechanism of action and | Biochemistry | testosterone, progesterone |
| | biochemical role of testosterone, progesterone and | | and estrogen |
| | estrogen Discuss the role of steroid hormones in oral | | |
| EnR-B-008 | contraception, Infertility | Biochemistry | Steroid in infertility |
| | Define the following terms: chromosome, allele | | ioruity |
| | (dominant and recessive), gene, locus, heterozygote, | | |
| EnR-B-009 | homozygote, hemizygous, autosome, genotype, | | |
| | phenotype, haploid and diploid number of chromosomes, | Die als austatus | Nomenclature of genetics |
| | aneuploidy, proband, proposita, pedigree, propositus, | Biochemistry | |
| | penetrance, codominance and polygenic | | |
| | 1 73 | | |

| EnR-B-010 | Discuss the structures of genes, how they are organized and regulated. | Biochemistry | Genes |
|----------------|--|-----------------|-------------------------|
| E. D. D. 044 | Describe Mendelian Law of Segregation and Law of | Disabassists. | Mendelian |
| EnR-B-011 | Independent Assortment. | Biochemistry | laws |
| | Describe the patterns of inheritance characteristic of | Biochemistry | Patterns of inheritance |
| EnR-B-012 | autosomal dominant, autosomal recessive, X- linked | | |
| | dominant, X-linked recessive and mitochondrial traits. | | |
| EnR-B-013 | Interpret genetic symbols as they appear in pedigrees. | Biochemistry | Pedigrees |
| | Analyze pedigree to determine the mode of inheritance of | | |
| | following traits: | | |
| | 1) X-linked recessive (Duchenne Muscular | | |
| F., D. D. 04.4 | dystrophy) | Dia da anciatan | Mode of |
| EnR-B-014 | X-linked dominant (Rickets) | Biochemistry | inheritance |
| | 3) Autosomal recessive (Xeroderma Pigmentosum) | | |
| | 4) Autosomal dominant (Huntington's Disease)) | | |
| | Mitochondrial disorder (Mitochondrial diabetes) | | |
| E D D 045 | Discuss different structural and numerical chromosomal | D: 1 : 1 | Chromosomal |
| EnR-B-015 | abnormalities. | Biochemistry | abnormalities |
| F., D. D. 040 | Interpret the normal human karyotype in terms of number | Dia da anciatan | |
| EnR-B-016 | and structure of chromosomes. | Biochemistry | Karyotypes |
| | Describe the effect of the following chromosomal | | |
| E D D 047 | mutations on a segment of DNA: | D. 1 | NA (() |
| EnR-B-017 | point mutation, frameshift mutation, deletion, insertion, | Biochemistry | Mutations |
| | inversion, Robertsonian Translocation and mosaicism. | | |
| C.D.D.040 | Discuss the concept of central dogma from gene to | Diachamiatmy | Control do amo |
| EnR-B-018 | protein | Biochemistry | Central dogma |
| EnR-B-019 | Describe in detail all the steps in prokaryotic DNA | | |
| | replication with emphasis on: Different proteins required, | Biochemistry | Prokaryotic DNA |
| | Primers, DNA polymerase; their different components | | |
| | and functions, Initiation, elongation and termination of | | replication |
| | replication, Topoisomerases | | |
| | Describe in detail all the steps in Eukaryotic DNA | | Eukaryotic |
| EnR-B-020 | replication with emphasis on differences between Pro- | Biochemistry | DNA |
| | and Eukaryotes | | replication |

| | Discuss telomeres and Telomerase and their clinical | | Telomeres |
|------------|--|--------------|----------------------------|
| EnR-B-021 | | | and |
| | significance | | Telomerase |
| EnR-B-022 | Describe DNA repair, mutation and cancers | | |
| | Interpret Xeroderma pigmentosa on basis of sign | | DNA Repair |
| | /symptoms and data | | |
| | Explain the transcription in prokaryotes focusing on the | | |
| | following key points; RNA polymerase, its components | | Transcription |
| EnR-B-023 | and functions, Initiation, elongation and termination of | | in prokaryotes |
| | transcription. | | p. 0.1.3 |
| | Illustrate the transcription in eukaryotes focusing on the | | Transcription |
| EnR-B-024 | differences between pro- and eukaryotic replication | | in Eukaryotes |
| | | | post |
| EnR-B-025 | Discuss post transcriptional modifications | | transcriptiona |
| | | | modifications |
| EnR-B-026 | Describe the role of Wobble hypothesis in codon | | Wobble |
| EIIK-D-020 | recognition by tRNA | | hypothesis |
| FD. D. 007 | Interpret the translation focusing on the following key | Biochemistry | Translation |
| EnR-B-027 | points: Initiation, elongation and termination | | |
| FD. D. 000 | Describe Post-translational modification of proteins | | Post- |
| EnR-B-028 | Illustrate RNA dependent synthesis of RNA and DNA | | translational modification |
| | Discuss the gene expression especially Lac operon and | | |
| | Tryptophan operon | | |
| EnR-B-021 | Discuss the regulation of eukaryotic gene expression with | | Gene Expression |
| | special emphasis on iron metabolism and RNA | Biochemistry | Ехргоззіон |
| | interference | | |
| | Discuss the following Recombinant DNA techniques with | | |
| | reference to their principles, procedures and application: | | |
| | PCR (Polymerase Chain Reaction) | | |
| EnR-B-022 | RFLP (Restriction Fragment Length Polymorphism) | | |
| | 3) Cloning | Biochemistry | Techniques |
| | 4) Human Genome Project | | ' |
| | 5) Blotting Techniques | | |
| | 6) DNA (Deoxyribose Nucleic Acid) sequencing | | |
| | 7) | | |
| | | | |

| | · · | | | |
|--------------------|---|------------------------|---|--|
| PRACTI È AL | | | | |
| CODE | BIOCHEMISTRY | TOTAL HOURS = 06+02=08 | | |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | торіс | |
| EnR-B-023 | Demonstrate DNA extraction | Biochemistry | DNA | |
| EnR-B-024 | Demonstrate Gel Electrophoresis | Biochemistry | Electrophoresis | |
| EnR-B-025 | Demonstrate PCR | Biochemistry | PCR | |
| EnR-B-026 | Demonstrate ELISA (enzyme-linked immunoassay) to measure concentration of hormones | Biochemistry | ELISA | |
| EnR-P-016 | Perform Pregnancy test | Physiology | Pregnancy test | |
| | PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS | | | |
| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL HOURS = 02 | | |
| 0002 | SI DON TO BEARINING COOLS 20 | DISCIPLINE | ТОРІС | |
| EnR-Ph-001 | Explain the mechanism of action of thyroxine Explain Clinical uses and potential adverse effects with use of Thyroxine | Pharmacology | Anti thyroid substance & MOA, uses, | |
| | 1 | | effects | |
| CODE | SDECIFIC I FADNING OR IECTIVES | TOTAL H | effects | |
| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL H | | |
| CODE EnR-Pa-001 | SPECIFIC LEARNING OBJECTIVES Enumerate clinical manifestations along with hormone levels of anterior pituitary Classification of pituitary adenomas | | TOPIC Pathology of Anterior | |
| | Enumerate clinical manifestations along with hormone levels of anterior pituitary | DISCIPLINE | TOPIC Pathology of | |

Thyroiditis

Pathology

significant subtypes of thyroiditis

i. Hashimoto Thyroiditis

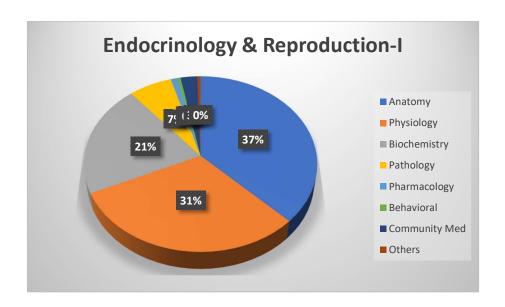
ii. Granulomatous Thyroiditis

EnR-Pa-003

| EnR-Pa-004 | Describe the pathogenesis & salient morphological features of Grave's Disease Describe the pathogenesis & salient morphological features of Diffuse and Multinodular goiter | Pathology | Grave's Disease |
|------------|---|--------------|--|
| EnR-Pa-005 | Enumerate causes of hypo and hyperthyroidism along with levels of thyroid hormones | Pathology | Pathology of Thyroid Gland |
| EnR-Pa-006 | Enumerate causes of hypercalcemia, hyper and hypoparathyroidism Describe the histopathological features of parathyroid hyperplasia | Pathology | Pathology of Parathyroid Gland |
| EnR-Pa-007 | Give etiological Classification of DM (Diabetes Mellitus) Differentiating features of DM-I and DM-II on the basis of pathogenesis, clinical features, diagnosis and complications | Pathology | Pathology of Endocrine Pancreas Gland |
| EnR-Pa-008 | Enumerate causes of Cushing syndrome with lab investigations Causes and clinical features of adrenocortical insufficiency (Addison disease) | Pathology | Pathology of Adrenal Gland |
| EnR-Pa-009 | Describe the morphological features of inflammatory disorders of breast. | | Breast |
| | Enumerate the infectious agents that cause the lower genital tract infections and PIDs along with lab investigations | Microbiology | |
| EnR-Pa-010 | Enumerate causes of infertility in females along with hormonal investigations Causes of dysfunctional uterine bleeding with histopathological features Pathophysiology and lab diagnosis of eclampsia and preeclampsia Causes of placental implantations (ectopic pregnancy) | Pathology | Female Reproductive Pathology |

| EnR-Pa-011 | Enumerate causes of inflammation of male genital tract Causes of male infertility with semen analysis Describe pathological features of testicular torsion | Pathology | Male Reproductive Pathology |
|------------|---|------------------------|-----------------------------------|
| | DISEASE PREVENTION AND IMPACT | | |
| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL HOURS = 05 | |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС |
| | Define Diabetes Mellitus according to WHO (World Health Organization) criteria | | |
| | Classify types of Diabetes Mellitus | _ | Diabetes |
| EnR-CM-001 | Describe epidemiological risk factors for Diabetes | Community Medicine and | |
| | Epidemiological distribution & statistics of DM | Public Health | |
| | Screening of community for Diabetes | | |
| | Apply levels of prevention for control of Diabetes. | | |
| EnR-CM-002 | Classify types of genetic disorders common in community. Describe health promotional measures to control genetic diseases. Describe screening programs for community to prevent genetic disorders. Apply levels of preventive and social measures for control of genetic abnormalities. | Community Medicine | Genetics |
| EnR-CM-003 | Define women health and life cycle approach for health-related events. Highlight statistics related to human reproductive health issues. Enumerate health related problems across a woman's reproductive lifetime. Explain the components of reproductive health. | Community Medicine | Reproductive health |

| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL H | HOURS = 1 |
|-------------|--|------------------------|--|
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC |
| EnR-BhS-001 | Discuss common sexual dysfunctions and their prevalence, with emphasis on culture bound syndromes. Identify the various biological, psychological, and relational factors that can contribute to sexual difficulties. Discuss barriers to seek help. Discuss the importance of person centered and nonjudgmental approach when discussing sexual health concerns. Explain the ethical obligations of healthcare professionals in respecting patient confidentiality and informed consent when addressing sexual health issues. | Behavioral Sciences | Sexual difficulties and Medical Practices |
| | AGING | | |
| CODE | THEORY | TOTAL H | OURS = 01 |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС |
| EnR-Ag-001 | Enlist the changes that occur in female body after menopause. | Gynae/ OBS | Menopause |



| Module Weeks | Recommended Minimum Hours |
|--------------|------------------------------|
| 07 | 200 |



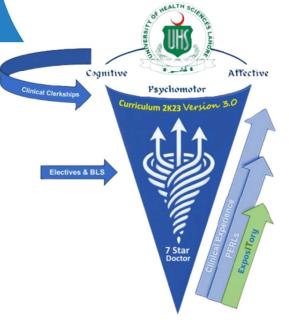


MODULE-09 HEAD & NECK, SPECIAL

SENSES

Modular Integrated Curriculum 2K23

version 3.0



MODULE RATIONALE

The second year MBBS students will have a detailed understanding of the anatomy, physiology, and clinical aspects of the Head and Neck, Special Senses. This knowledge is critical for the diagnosis and treatment of a wide range of diseases associated with these senses.

This module covers the important structures and functions of the Head & Neck, eye, ear, tongue, nose, as well as the pathologies and treatments associated with them. This includes common conditions such as cataracts, glaucoma, aging changes, hearing loss, tinnitus, otitis media, olfactory disorders.

Additionally, the special senses module includes training in relevant clinical examination skills, such as ophthalmoscopy, otoscopy, rhinoscopy, and vestibular testing. These skills are essential for identifying and diagnosing special senses conditions, and for monitoring the effectiveness of treatments.

An understanding of these structures is important for the general practice of medicine as they play a critical role in the overall health and well-being of patients. For example, vision and hearing loss can lead to a decline in cognitive function and social isolation, while smell and taste disorders can affect appetite and nutrition.

MODULE OUTCOMES

- Integrate the anatomical and pathophysiological aspects of the Head & Neck, eye, ear, nose, tongue, vestibular system and the neural pathways, receptors involved in their function with the clinical aspects.
- Develop the ability to identify and diagnose common pathologies such as cataracts, glaucoma, age-related degeneration, hearing loss, impacted wax, otitis media and olfactory disorders.
- Demonstrate the clinical examination (simulation) skills necessary for the assessment of special senses, such as ophthalmoscopy, otoscopy, rhinoscopy, and vestibular testing.
- Differentiate the differential diagnosis and options available for special senses conditions, including medical, surgical, and rehabilitative approaches.
- Illustrate awareness of the impact on overall health and well-being, the importance of preventing and early detection of related disorders.
- Develop the ability to communicate effectively with patients and their families, including explaining diagnosis and treatment options, and providing emotional support.
- Practice the attitude to work in a multidisciplinary team, collaborating with other healthcare professionals to provide comprehensive care for patients.

Equip themselves with the ability to appreciate the significance of lifelong learning and professional development to keep up with latest advances in the clinical field.

THEMES

- Vision
- Hearing
- Taste
- Olfaction
- Head & Neck

CLINICAL RELEVANCE

- Glaucoma
- Cataract
- Night Blindness
- Conjunctivitis
- Impacted Wax
- Otitis Media
- Otomycosis
- Glue Ear
- Rhinitis

IMPLEMENTATION TORS

- The time calculation for completion of modules and blocks 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.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the Second professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



NORMAL STRUCTURE THEORY **GROSS ANATOMY TOTAL HOURS = 56** CODE DISCIPLINE **SPECIFIC LEARNING OUTCOMES TOPIC** Define the boundaries and openings of orbital cavity. List orbital contents and structures traversing these openings. In a tabulated manner list the extraocular and intraocular muscles of eyeball giving their nerve supply and actions List and define the movements of eyeball with special reference to orbital and visual axis Describe the functional modalities, course, distribution, branches of oculomotor, trochlear and abducent nerve. Describe the location, roots and Human distribution of ciliary ganglion. Anatomy Describe the course and distribution of optic nerve in reference to visual pathway. Give the effects of its lesions. HNSS-A-Vision 001 Give the clinical correlates of nerves supplying the eyeball and its muscles. Give anatomical justification for Horner's syndrome. Describe the course and branches of ophthalmic artery mentioning its origin and termination. Describe the structure of eyelids, conjunctiva and tarsal glands with their neurovascular supply List the parts of Lacrimal apparatus giving their Human location and anatomical features. Describe the Anatomy nerve supply of lacrimal gland. Describe the location, roots and distribution of Human pterygopalatine ganglia. Anatomy the of Give anatomical structure eyeball Human emphasizing on its three coats and their Anatomy neurovascular supply

| septum, lateral wall of nose, roof and floor. Give their anatomical features and neurovascular supply. Describe the anatomical features and neurovascular supply of external nose List the paranasal sinuses giving their locations, openings, neurovascular supply and clinical significance. Describe the course and distribution of olfactory |
|--|
| Give their anatomical features and neurovascular supply. Describe the anatomical features and neurovascular supply of external nose List the paranasal sinuses giving their locations, openings, neurovascular supply and clinical significance. Human Anatomy Olfaction |
| Describe the anatomical features and neurovascular supply of external nose HNSS-A- 002 Describe the anatomical features and neurovascular supply of external nose Anatomy Olfaction Human Anatomy Anatomy |
| HNSS-A- 002 List the paranasal sinuses giving their locations, openings, neurovascular supply and clinical significance. Human Anatomy Olfaction Human Anatomy |
| HNSS-A- 002 List the paranasal sinuses giving their locations, openings, neurovascular supply and clinical significance. Olfaction Human Anatomy |
| HNSS-A- 002 openings, neurovascular supply and clinical significance. Human Anatomy |
| openings, neurovascular supply and clinical Anatomy significance. |
| significance. |
| Describe the course and distribution of olfactory |
| |
| nerve in reference to olfactory pathway. Give the Human Anatomy |
| effects of its lesions. |
| Describe the anatomical features and _{Human} |
| neurovascular supply of external ear Anatomy |
| Describe the boundaries, contents, neurovascular Human |
| supply and communications of middle ear cavity. Anatomy |
| Describe the parts, anatomical features and Human |
| neurovascular supply of internal ear. HNSS-A- Hearing |
| Describe the course and distribution of |
| vestibulocochlear neve mentioning the effects of its Human |
| lesion. Anatomy |
| Describe auditory pathway. |
| Describe the anatomical features of tongue with |
| emphasis on its mucosa, attachments, musculature, Human Anatomy |
| vascular supply and lymphatic drainage. |
| Describe the nerve supply of tongue (general |
| sensory, special sensory and motor) with reference Human Anatomy |
| to their lesions and embryological basis. |
| HNSS-A- List taste buds mentioning their structure, location Taste |
| and nerve supply. Human Anatomy |
| Describe the taste pathway. |
| Discuss lesions of motor and sensory nerves |
| supplying the tongue. Discuss the anatomical Human |
| correlates of lingual carcinoma in reference to Anatomy |
| lymphatic drainage of tongue. |

| | Describe the features of Norma Frontalis, Norma | | |
|----------------|---|------------------|-------------------------------|
| | Verticalis, Norma Parietalis, Norma occipitalis and | Human | |
| HNSS-A- 005 | Norma Basalis | Anatomy | |
| | Describe the features of Norma lateralis: temporal, | | |
| | infratemporal & pterygopalatine fossae giving their | Human Anatomy | Skull |
| | boundaries, contents and communications. | ratomy | |
| | Discuss the sutures and fontanelles of skull, their | Human | |
| | age changes and clinical significance. | Anatomy | |
| | List the layers of scalp and describe the anatomical | Lluman | |
| | features with neurovascular supply and lymphatic | Human Anatomy | |
| HNSS-A- | drainage of scalp. | - | Scalp |
| 006 | Give anatomical justification of spread of scalp | Human | 333.15 |
| | infections, profuse bleeding in superficial scalp | Anatomy | |
| | lacerations, gaping of scalp wounds and black eye. | | |
| | Enlist in tabulated manner the muscles of facial | | |
| HNSS-A- | expression and mastication, giving their nerve | Human Anatomy | Muscles of facial expressions |
| 007 | supply and actions. | | |
| | Define modiolus. | | |
| | Describe the functional modalities, course, | | |
| | branches, and distribution of cranial nerves | Human | |
| | innervating the face (sensory and motor): trigeminal | Anatomy | |
| | and facial nerves | | |
| HNSS-A- | Describe the vascular supply and lymphatic | Human Anatomy | Neurovascular |
| 800 | drainage of face. Draw a diagram to illustrate cutaneous innervation | | supply of face |
| | of face. | Human Anatomy | |
| | Discuss anastomoses of facial artery with | Anatomy | _ |
| | contralateral vessels and branches of internal | Human | |
| | carotid artery with their clinical significance. | Anatomy | |
| | Describe the danger area of face with it its clinical | | |
| HNSS-A- | significance. Define the routes of spread of infection | Human | Danger area |
| 009 | from face and scalp to intracranially. | Anatomy | Danger area |
| | Describe the bony features and muscle attachment | Human | |
| | of mandible. | Anatomy | Mandible. |
| | | | 1 |

| HNSS-A- | Classify temporomandibular joint mentioning its | | |
|----------------|---|------------------|--|
| 010 | ligaments, relations, nerve supply and movements | Human | |
| | (with their mechanics and muscles producing them). | Anatomy | |
| | Describe anatomical features, relations and | | |
| | neurovascular supply of parotid gland and its duct, | Human | |
| | mentioning the structures entering and exiting the | Anatomy | |
| HNSS-A- | gland | | Parotid gland |
| 011 | Discuss the clinical correlates of parotid gland: | | |
| | parotiditis, Mumps, Frey's syndrome, parotid duct | Human | |
| | stones and parotid tumor surgery with its | Anatomy | |
| | complications | | |
| HNSS-A- | Describe the parts and boundaries of oral cavity and | Human | \\\\-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ |
| 012 | give its relation to the Waldeyers' ring. | Anatomy | Waldeyers' ring |
| HNSS-A- | Describe the anatomical features of hard and soft | Human | lland and a ft |
| 013 | palate with their neurovascular supply. | Anatomy | Hard and soft |
| | Describe anatomical features, relations and | | Submandibular |
| HNSS-A- 014 | neurovascular supply of submandibular and | Human Anatomy | Sublingual |
| 014 | sublingual glands with their ducts. | Anatomy | glands |
| HNSS-A- | Describe the location, roots and distribution of otic | Human | Otic and |
| 015 | and submandibular ganglia. | Anatomy | Submandibular ganglia. |
| HNSS-A- | Describe the anatomical features of Hyoid bone and | Human | I braid bana |
| 016 | give attachments on the bone. | Anatomy | Hyoid bone |
| | Enumerate the types of cervical vertebrae and list | | |
| | the differences between them. | Human | |
| | Describe the anatomical features and attachments | Anatomy | |
| HNSS-A- 017 | on cervical vertebrae. | | cervical vertebrae |
| | Classify the joints of cervical vertebrae mentioning | | Vertebrae |
| | their ligaments, movements with muscle producing | Human Anatomy | |
| | them and neurovascular supply. | ruidionily | |
| HNSS-A- | List the prevertebral muscles of cervical region. | Human | Prevertebral |
| 018 | Describe their attachments, actions and innervation. | Anatomy | muscles |
| 1000 : | Enumerate parts of deep cervical fascia with their | | |
| HNSS-A- 019 | respective extents, attachments, relations and | Human Anatomy | Deep cervical fascia |
| | contents. | , | |

| | Describe the facial spaces in head and neck | | |
|----------------|---|------------------|---------------------------|
| HNSS-A- 020 | mentioning their communications and their relation | Human Anatomy | Facial spaces |
| | to spread of infection. | | |
| HNSS-A- | Describe the attachments, actions and nerve supply | Human | Infrahyoid and suprahyoid |
| 021 | of infrahyoid and suprahyoid muscles of neck. | Anatomy | muscles |
| HNSS-A- | Describe the location, formation and distribution of | Human | A.s.s. samisalia |
| 022 | ansa cervicalis. | Anatomy | Ansa cervicalis. |
| HNSS-A- | Describe the attachments, actions and nerve supply | Human | Sternocleidoma |
| 023 | of sternocleidomastoid and trapezius. | Anatomy | stoid and trapezius |
| HNSS-A- | Describe the boundaries and contents of | Human | Triangles of |
| 024 | suboccipital, anterior and posterior triangles of neck. | Anatomy | neck |
| HNSS-A- | Describe the cervical part of trachea and esophagus | Human | Trachea and |
| 025 | with their neurovascular supply. | Anatomy | esophagus |
| | Describe the location, anatomical features and | | Thyroid, |
| HNSS-A- 026 | vascular supply of thyroid and parathyroid glands. | Human Anatomy | Parathyroid glands |
| 020 | List the variations in location of parathyroid glands. | | |
| HNSS-A- | Describe the carotid arteries mentioning their origin, | Human | Constid arterios |
| 027 | course, branches, distribution and termination. | Anatomy | Carotid arteries |
| HNSS-A- | Describe carotid body and carotid sinus and give | Human | Carotid body |
| 028 | their clinical significance. | Anatomy | Carolid body |
| | Give the venous drainage of Head and Neck region. | | |
| HNSS-A- | Describe the formation, tributaries and area of | Human | Head & Neck |
| 029 | drainage of vessels constituting jugular venous | Anatomy | venous supply |
| | system. | | |
| HNSS-A- | Name the superficial and deep cervical lymph nodes | Human | Lymphatics |
| 030 | and give their location and drainage areas | Anatomy | Lymphatics |
| HNSS-A- | Describe the location, formation, branches, | Human | Convical playue |
| 031 | distribution and lesions of cervical plexus | Anatomy | Cervical plexus |
| | Name the parts of pharynx giving their extent, | | |
| | anatomical features, structure and neurovascular | Human Anatomy | |
| HNSS-A- | supply. | / unatomy | - Pharynx |
| 032 | Name the pharyngeal constrictor muscles defining | Urma | 1 Haryila |
| | their attachments, innervation and structure | Human Anatomy | |
| | traversing the gaps between adjacent muscles. | , | |

| HNSS-A- 033 | Name the parts of larynx giving their extent, anatomical features, musculoskeletal framework and neurovascular supply. | Human Anatomy | Larynx |
|----------------|---|------------------|--|
| HNSS-A- 034 | Discuss the location, anatomical features, relations and vascular supply of tonsils: nasopharyngeal, palatine and lingual. | Human Anatomy | Tonsils |
| CODE | EMBRYOLOGY & POST-NATAL DEVELOPMENT | TOTAL HOURS = 15 | |
| | SPECIFIC LEARNING OUTCOMES | DISCIPLINE | ТОРІС |
| HNSS-A- 035 | List the components of pharyngeal apparatus. Describe the development of pharyngeal arches, grooves, pouches and membrane and give derivatives and fate of each of them. | Embryology | Pharyngeal apparatus pharyngeal arches |
| HNSS-A- 036 | Describe the development and histogenesis of auditory tube, tympanic cavity, tonsils, thymus and parathyroid | Embryology | auditory tube, tympanic cavity, tonsils, thymus and parathyroid |
| HNSS-A- 037 | Discuss the embryological basis of congenital anomalies related to the development of pharyngeal arches, pharyngeal clefts and pharyngeal pouches: cervical sinus/fistula/cyst, 1st arch syndrome, DiGeorge syndrome, congenital malformations of thymus and parathyroid glands | Embryology | Congenital anomalies |
| HNSS-A- 038 | Describe the development of face and nasolacrimal duct and their respective congenital anomalies. | Embryology | Face and nasolacrimal duct |
| HNSS-A- 039 | Describe the development of nasal cavity and paranasal sinuses. Give the associated congenital anomalies. | Embryology | Nose |
| HNS-A-040 | Describe the development of lip and palate and their associated congenital malformations. | Embryology | Lips and palate |
| | Explain the types and embryologic basis of cleft lip and cleft palate. | Embryology | Lips and palate |
| HNSS-A- 041 | Describe the development of optic vesicle and retina. | Embryology | Eye & ear |

| | Describe the development of cornea, sclera, choroid, iris, ciliary body and lens and relate it to their respective congenital anomalies. | Embryology | |
|--------------------|---|------------|-------------|
| | Describe the development of internal ear and give the embryological basis of associated congenital anomalies. | Embryology | |
| CODE | MICROSCOPIC ANATOMY (HISTOLOGY & PATHOLOGY) | TOTAL H | OURS = 08 |
| | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС |
| HNSS-A- 042 | Describe the light and electron microscopic structure of tongue mentioning the histological structure of lingual papillae and taste buds. | Histology | Tongue |
| HNSS-A- | Describe the histological structure of parotid, submandibular and sublingual glands. | Histology | Glands |
| 043 | Compare and contrast the histological structures of parotid, submandibular and sublingual glands. | Histology | 0.4 |
| HNSS-A- 044 | Differentiate between serous and mucous acini. Describe the structure and location of serous demilunes. Describe the serous and mucous acini and give histological differences between the two. | Histology | Head & Neck |
| LINICO | Describe the histological structure of layers of eyeball, eyelid and retina. | Histology | Eye |
| HNSS-A- 045 | Describe the light and electron microscopic structure of cornea. | Histology | , |
| HNSS-A- 046 | Describe the histological and ultramicroscopic structure of internal ear with special reference to Organ of Corti. | Histology | Ear |
| PRACTI È AL | | | |
| CODE | HISTOLOGY | TOTAL H | OURS = 09 |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС |

| HNSS-A- 047 | Identify, draw and label diagrams to show histological structure of tongue, lingual papillae and taste buds. | Histology | tongue |
|----------------|---|-----------|-------------|
| HNSS-A- 048 | Draw and label diagrams to show histological structure of serous demilunes, serous and mucous acini. | Histology | Head & Neck |
| | Draw and label diagrams to show histological structure of eyelid and cornea. | Histology | _ |
| HNSS-A- 049 | Draw and label a diagram to show histological structure of retina. List its histological layers and their respective components | Histology | Eye |
| HNSS-A- 050 | Draw and label a diagram to show histological structure of internal ear. | Histology | Ear |

NORMAL FUNCTION

THEORY

| CODE | MEDICAL PHYSIOLOGY | TOTAL H | OURS = 30 |
|----------------|---|---------------------------------|----------------------|
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC |
| | Define and describe the visual acuity | Physiology | |
| | Define Emmetropia | Physiology | |
| | Enlist the errors of refraction | Physiology | Visual Acquity |
| HNSS-P- 001 | Explain the cause, features, physiological basis, and correction of Hyperopia | Physiology | |
| | Explain the cause, features, physiological basis, and correction of myopia | Physiology | |
| | Explain the cause, features, physiological basis, and correction of astigmatism | pasis, Physiology | |
| | Describe the pathophysiology and treatment of cataract | Integrate with Ophthalmology | |
| HNSS-P- 002 | Interpret common treatment modalities for Refractive errors | Integrate with Ophthalmology | Refractive Errors |

| | Describe the mechanism of formation and outflow of aqueous humor | Physiology | |
|----------------|--|---------------------------------|--------------------------|
| HNSS-P- 003 | Describe normal value of intraocular pressure and its regulation | Physiology | Fluid systems of the Eye |
| | Describe the method for measuring the intraocular pressure | Integrate with Ophthalmology | |
| | Discuss the clinical features of Open Angle and | | |
| HNSS-P- | Angle Closure Glaucoma | Integrate with | |
| 004 | Describe the causes and features and | Ophthalmology | Glaucoma |
| | pathophysiology of glaucoma | | |
| | Describe the physiological anatomy and function of | | |
| | structural elements of retina | | |
| | Enlist different layers of retina | | |
| | Explain the significance of melanin pigment in retina | | |
| | Describe macula and foveal region of retina and | Physiology | Retina |
| | their significance | | |
| LINCO D | Describe the structure of rods and cones | | |
| HNSS-P- 005 | Comment on the location of optic disc and its significance | | |
| | Describe the cause, features, and treatment of | | |
| | retinal detachment | | |
| | Differentiate the Visual Pathway from the Cones to | | |
| | the Ganglion Cells and from rods to the ganglion | | |
| | cells | | |
| | Enlist the current investigations for Retinal Diseases | Integrate with Ophthalmology | |
| | Describe the rhodopsin-retinal visual cycle | Physiology | |
| HNSS-P- 006 | Describe the mechanism of excitation of rods/ rods | Physiology | Photochemistry |
| | receptor potential | i ilysiology | of vision |
| | Describe the causes and treatment of night | Physiology | |
| | blindness | , olology | |
| | Define and describe different mechanisms of light | Physiology | Adaptation |
| | adaptation | , 5.5.09, | |

| HNSS-P- 007 | Define and describe different mechanisms of dark adaptation | Physiology | |
|----------------|--|---------------------------------|-----------------|
| | Enumerate the diseases leading to Night Blindness and retinal detachment | Integrate with Ophthalmology | |
| | Explain the tri color mechanism of color determination | Physiology | |
| HNSS-P- | Define term protanopes, deuteranopes, tritanopes | Physiology | Color vision |
| 800 | Enlist the types of color blindness and their causes | Physiology | |
| | Enlist clinical features of Color vision deficiencies | Integrate with Ophthalmology | |
| | Trace the visual pathway | | |
| HNSS-P- 009 | Enlist and describe the abnormalities of visual pathway & visual field | Physiology | Visual Pathways |
| | Explain the effect of removal of primary visual cortex | | |
| 111100 5 | Define the physiological blind spot and describe its location | Physiology | Field of vision |
| HNSS-P- 010 | Define scotoma/ pathological blind spot and enlist causes | Physiology | |
| HNSS-P- 011 | Illustrate the abnormalities of field of vision | Integrate with Ophthalmology | Visual fields |
| HNSS-P- 012 | Describe the muscular and neural control of eye movements | Physiology | Eye movements |
| HNSS-P- 013 | Define and enlist the types of Strabismus | Integrate with Ophthalmology | Strabismus |
| | Explain the mechanism of accommodation | Physiology | |
| | Enlist the components of near response in accommodation | Physiology | |
| HNSS-P- 014 | Describe the neural pathway for accommodation reflex | Physiology | Accommodation |
| | Describe the regulation of accommodation | Physiology | |
| | Enlist the clinical features of Presbyopia | Integrate with Ophthalmology | |
| | Trace the neural pathway for pupillary light reflex | Physiology | Pupillary light |
| HNSS-P- 015 | Explain the pupillary light reflexes or reactions in CNS diseases | Physiology | reflex |

| | Describe the cause and features of Horner syndrome | Physiology | |
|----------------|--|---|----------------------------------|
| | Illustrate the differential diagnosis of Anisocoria | Integrate with Ophthalmology | |
| | Describe the physiological anatomy of outer and middle ear | Physiology | |
| | Enlist the functions of middle ear | Physiology | |
| | Discuss clinical features and treatment of impacted wax | Integrate Otorhinolaryng ology | Sense of |
| HNSS-P- 016 | Define causes and clinical features of Otomycosis | Integrate Otorhinolaryng ology | hearing |
| | Describe the mechanism of impedance matching and its significance | Physiology | |
| | Describe the mechanism of attenuation reflex and its significance | Physiology | |
| HNSS-P- | Describe the physiological anatomy of inner ear | Physiology | Inner Ear/ |
| 017 | Describe the mechanism of transmission of sound waves in cochlea | Physiology | Cochlea |
| HNSS-P- | Describe the physiological anatomy and function of organ of Corti | Physiology | Organ of Costi |
| 018 | Describe the mechanism of generation of endo- cochlear potential and its significance | Physiology | Organ of Corti |
| | Write down the normal range of frequency for hearing | Physiology | |
| HNSS-P- 019 | Describe the role of place principle in determination of sound frequency | Physiology | Determination of sound frequency |
| | Describe the role of volleys principle in determination of sound frequency | Physiology | |
| HNSS-P- 020 | Discuss determination of loudness of sound | . 55 | Determination of Loudness |
| | Trace the normal auditory nervous pathway | Physiology | |
| HNSS-P- | Describe the types of deafness | Physiology | Auditory |
| 021 | Discuss the clinical features and investigations of Congenital and Acquired hearing loss | Integrate with Otorhinolaryng ology | pathway |

| | Enlist the primary taste sensations | Physiology | |
|----------------|---|-------------------------------------|---|
| HNSS-P- 022 | Define and explain the term taste blindness | Physiology | Sense of Taste |
| 022 | Describe the physiological anatomy and location of taste buds | Physiology | |
| HNSS-P- 023 | Describe the mechanism of stimulation of taste buds/ receptor potential | Physiology | Excitation of Taste buds |
| 020 | Trace the pathway of taste sensation | Physiology | |
| HNSS-P- 024 | Define and explain the terms: Ageusia, Hypergeusia, Hypogeusia and dysgeusia | Physiology | Abnormalities of Taste sensations |
| 024 | Describe the senile changes in taste buds | | - , |
| HNSS-P- 025 | Explain the terms: Taste preference and taste aversion | Physiology | Taste preference and aversion |
| | Enlist the primary sensations of smell | Physiology | |
| HNSS-P- 026 | Describe the physiological anatomy and location of olfactory membrane Explain the mechanism of excitation of olfactory cells, membrane potential and action potential on olfactory cells Discuss the Adaptation of olfactory sensations Discuss the transmission of smell signals in the the CNS | Physiology | Sense of smell |
| HNSS-P- | Enlist the causes and clinical features of Rhinitis | Integrate with Otorhinolaryng ology | Rhinitis |
| 027 | Differentiate between viral and allergic Rhinitis | Integrate with Otorhinolaryng ology | Tallinus |
| CODE | MEDICAL BIOCHEMISTRY | TOTAL H | IOURS = 7 |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС |
| 111100 5 | Discuss the metabolism of mono and disaccharides | Biochemistry | Metabolism of |
| HNSS-B- 001 | Interpret Hereditary fructose intolerance, fructosuria, galactosemia and lactose intolerance, in relevance to the clinical findings | Biochemistry | mono and disaccharides |

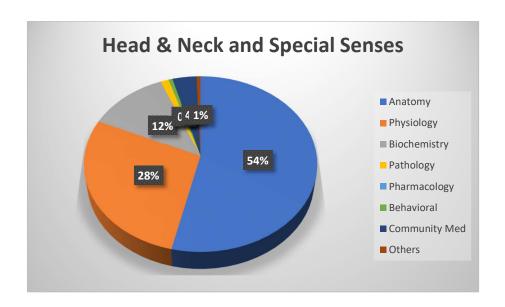
| Explain the Polyol pathway and effect of hyperglycemia on sorbitol pathway | Biochemistry |
|--|--------------|
| Discuss the sources, metabolically active forms, | |
| biochemical role and clinical correlation of Vit-A with | Biochemistry |
| vision | |

PRACTI**È**AL

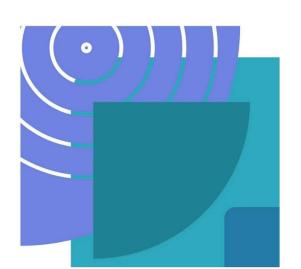
| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL HOUR | RS = 16+05=21 | | |
|----------------|--|----------------|-----------------------|--|--|
| 3332 | J. 2011 10 22/11/11/10 0002011/420 | DISCIPLINE | TOPIC | | |
| HNSS-P- | Examine the Second, Third, Fourth & Sixth Cranial | | Cranial Nerves | | |
| 028 | Nerves | | Ciama Nerves | | |
| HNSS-P- 029 | Examination of Light Reflex | Physiology | Light reflex | | |
| HNSS-P- 030 | Determine the Visual Acuity for Far and Near vision | | vision | | |
| HNSS-P- 031 | Perform Ophthalmoscopy | | ophthalmoscopy | | |
| HNSS-P- | Examine Field of Vision and interpretation of visual | | Visual field | | |
| 032 | field plotted | | Visual liciu | | |
| HNSS-P- 033 | Examine Color Vision | Physiology | Color vision | | |
| HNSS-P- | Perform Tuning fork test and audiometry, interpret | | _ | | |
| 034 | the report | | Ear | | |
| HNSS-B- | Intermediate of installing and Constitute | | Interpretation of | | |
| 002 | Interpretation of insulin and C peptide | | results | | |
| HNSS-B- | Demonstrate HbA1C | Biochemistry | HbA1C | | |
| 003 | Demonstrate FIDATO | Diodrieiniau y | _ | | |
| HNSS-B- | Detect abnormal constituents in urine by chemical | | Abnormal | | |
| 004 | methods | | constituents in urine | | |
| | PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS | | | | |
| | | | | | |

| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL HOURS = 03 DISCIPLINE TOPIC | URS = 03 |
|------|---|------------------------------------|-----------------------|
| | SPECIFIC LEARNING OBJECTIVES | | |
| | Enlist the common causative agents of Eye, Ear infections | Pathology (Microbiology) | Eye/Ear infections |

| HNSS-Pa- | Discuss the pathogenesis and clinical features of | | | |
|-------------------------------|---|--|--------------|--|
| 001 | common pathogens | | | |
| DISEASE PREVENTION AND IMPACT | | | | |
| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL HOURS = 06 | | |
| | | DISCIPLINE | TOPIC | |
| HNSS-CM- 001 | Identify factors leading to noise pollution | Community Medicine/ Otorhinolaryng ology | Hearing loss | |
| HNSS-CM- | Describe the common causes of blindness in community | Community Medicine | Blindness | |
| 002 | Describe risk factors and preventive strategies for blindness at community level | | | |
| HNSS-BhS- 001 | At end of module the students will learn the psychosocial aspects of pain which will help in understanding the complex and multidimensional nature of pain. | Behavioral Sciences | Pain | |
| AGING | | | | |
| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL HOURS = 03 | | |
| 3332 | | DISCIPLINE | ТОРІС | |
| HNSS-Ag- 001 | Familiarize with the age-related hearing loss | Otorhinolaryng ology | Deafness | |
| HNSS-Ag- 002 | Discuss the age changes of mandible | Anatomy | Head & Neck | |



| Module Weeks | Recommended Minimum Hours |
|--------------|------------------------------|
| 05 | 164 |

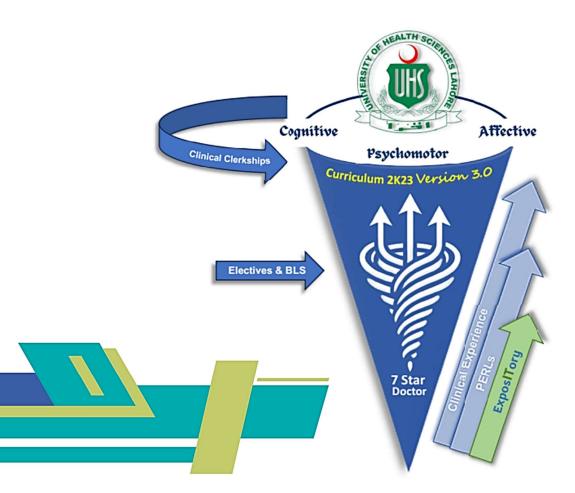


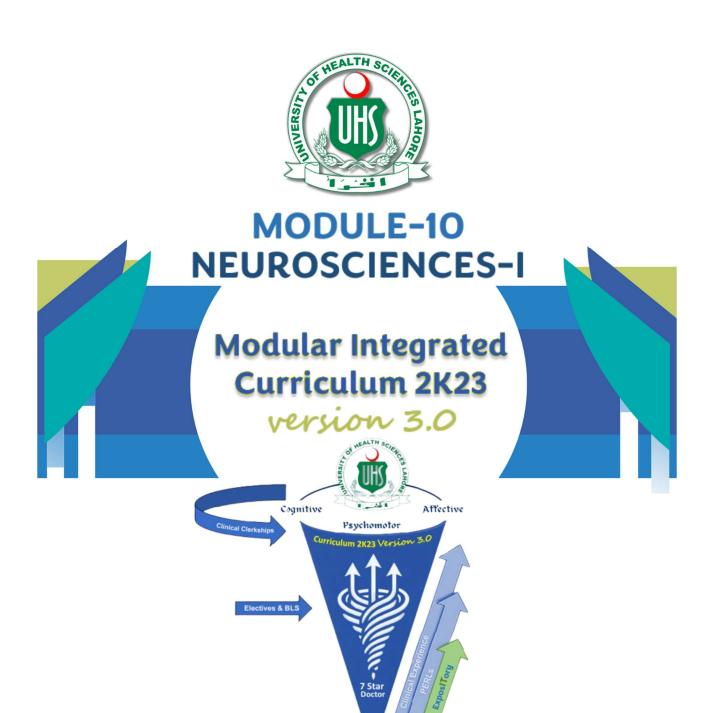


Modular Integrated Curriculum 2K23

version 3.0

BLOCK-06





MODULE RATIONALE

The neurosciences module is crucial as understanding the brain and nervous system is essential for diagnosing and treating a wide range of neurological and psychiatric conditions. This includes conditions such as Alzheimer's disease, Parkinson's disease, epilepsy, migraines, traumatic brain injuries, depression, schizophrenia, and autism. By studying neurosciences, medical students will gain the knowledge and skills necessary to accurately diagnose and effectively treat these conditions.

MODULE OUTCOMES

- Describe the neuroanatomy, histology and embryology of the central nervous system.
- Discuss the physiology of Autonomic Nervous System (ANS), motor and sensory system.
- Explain the pathophysiology of common diseases pertaining to the nervous system.
- Explain a basic management and prevention plan for common neurological disorders.
- Appreciate the burden of neuroscience disorders and their psychosocial impact.

THEMES

- Neurons/ nerve fibers and receptor
- Cerebrum
- Spinal cord and tracks
- Cerebellum and brainstem, basal ganglia
- Autonomic Nervous System (ANS)

CLINICAL RELEVANCE

- Neurons/ nerve fibers and receptor
- Cerebrum
- Spinal cord and tracks
- · Cerebellum and brainstem, basal ganglia
- ANS

IMPLEMENTATION TORS

- The time calculation for completion of modules and blocks 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.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the Second professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



NORMAL STRUCTURE THEORY GROSS ANATOMY TOTAL HOURS = 46 CODE SPECIFIC LEARNING OUTCOMES DISCIPLINE **TOPIC** Human Describe the basic organization of nervous system Anatomy Nervous system NS-A-001 Identify and describe the components of the Nervous Human system and their function Anatomy Trace the Origin, exit from vertebral canal, branches & NS-A-002 Human Spinal Nerves Distribution of typical spinal nerve. Anatomy Identify the Location, Extent, Coverings and Blood supply of spinal cord Discuss & tabulate nuclear organization at different levels of Spinal cord. Describe, draw & label the transverse section of spinal cord at mid cervical level showing ascending & descending tracts Spinal cord Clinical NS-A-003 Human correlates Anatomy Tabulate the sensory nerve endings, and anatomical (Spinal cord) sites of first, second, third order neurons of ascending tracts Tabulate first, second, third order neurons of descending tracts. Elaborate on the Cross-sectional details of white and gray matter of cervical, thoracic and lumbar segments of Spinal cord for localization of site of lesion. Differentiate clearly between upper and lower motor Human neuron lesions **Anatomy** Location, Relations, Blood supply and external NS-A-004 Brainstem Human features of medulla, pons midbrain. Anatomy

| | Cross sectional details of white and grey matter of | | |
|----------|--|------------------|---------------------------|
| | Brain stem (mid brain, pons, medulla) | | |
| | | | |
| | Discuss clinical correlates of brain stem | | |
| | Medial and lateral medullary syndrome Weber | | |
| | syndrome, Benedikt syndrome | | |
| | Location, Relations, Functional classification & Blood | | |
| NO 4 005 | supply along with major connections of Cerebellum | Human | |
| NS-A-005 | (Cerebellar Peduncles) | Anatomy | Cerebellum |
| | Define important clinical correlates | | |
| | Identify the Lobes, Sulci & Gyri, Cortical areas. | | |
| | Describe Venous drainage and arterial supply of each | | |
| | lobe | | |
| | Describe Functional areas of cerebrum. Draw and | | |
| NS-A-006 | Label Homunculus. Define important clinical correlates | | Cerebrum |
| | Describe internal structure of cerebral hemisphere; | Human | |
| | 1. white matter | Anatomy | |
| | 2. Basal ganglia | | |
| | 3. Lateral ventricle | | |
| | Describe components & functions of Limbic system & | | Limbic system. |
| NS-A-007 | Reticular formation | | Reticular formation |
| | Explain the origin, exit from the brain and intracranial | | |
| | course of cranial nerves | Human | |
| NS-A-008 | Describe the Functional Components and specific | Anatomy | Cranial nerves |
| | functions of each cranial nerve. | | |
| NS-A-009 | Identify the Location and sub division of Diencephalon. | Human | |
| | Discuss the Location, Relations, Blood supply, nuclei | Anatomy | Diencephalon |
| | and major connections of Thalamus, Hypothalamus, | | |
| | Epithalamus, Subthalamus, Metathamalus | | |
| | Epithalamas, Cabinalamas, Metathamatas | | |
| NS-A-010 | Describe and Illustrate the Hypothalamic and pituitary | Human Anatomy | Thalamus and hypothalamus |
| | gland Nuclei with their functions, location afferents. | a.o.iiiy | , - 3 (3.11140 |
| | Describe the Hypothalamo-Hypophyseal Portal | | |
| | System | | |
| | Cyclem | | |

| | Describe the functions of Hypothalamus | | |
|----------|---|------------------|--------------------------------|
| | Explain the anatomical basis for the Thalamic | | |
| | Cauterization, Thalamic Pain, Thalamic Hand and | | |
| | Hypothalamic Disorders | | |
| NS-A-011 | Explain the Gross anatomy of Intracranial fossae with | Human | Intracranial fossa |
| NO-A-011 | intracranial foramina | Anatomy | IIII acialilai 1055a |
| NS-A-012 | Explain the attachments, blood supply and nerve | Human | Moningos |
| NS-A-012 | supply of the meninges of the brain | Anatomy | Meninges |
| NC A 042 | Discuss the Origin, tributaries & area of drainage, | Human | Dural venous |
| NS-A-013 | termination of Dural venous sinuses | Anatomy | sinuses |
| | Explain the Formation, circulation and absorption into | | |
| NO 4 044 | venous system of CSF (Cerebrospinal fluid) | Human | 005 |
| NS-A-014 | Describe ventricular system, Lateral, 3 rd & 4 th | Anatomy | CSF |
| | ventricles | | |
| | Discuss the Origin, course, branches and distribution | | |
| | of internal carotid artery, vertebral artery | Human Anatomy | Blood supply of brain & spinal |
| NS-A-015 | Formation, Location, branches and area of supply of | | |
| | Circle of Willis | | cord |
| | Explain the Major subdivision of ANS into Sympathetic | | |
| NS-A-016 | and parasympathetic nervous system with comparison | Human Anatomy | ANS |
| | of anatomical differences. | Anatomy | |
| | Describe the Location, connections and functions of | Human | Autonomic |
| NS-A-017 | autonomic ganglion | Anatomy | ganglia |
| | Explain the origin, termination and branches of the | Human | Sympathetic |
| NS-A-018 | sympathetic chain Localize spinal cord lesions | Anatomy | chain |
| CODE | EMBRYOLOGY & POST-NATAL DEVELOPMENT | TOTAL H | OURS = 03 |
| | SPECIFIC LEARNING OUTCOMES | DISCIPLINE | TOPIC |
| | Explain the Development of Neural tube and Brain | | Neural tube |
| NS-A-019 | vesicles. Discuss related clinical anomalies | Embryology | development |
| 110 / | Describe the development of the spinal cord and | | Spinal cord |
| NS-A-020 | related clinical anomalies | Embryology | development |
| | 1 | | i . |

| CODE | MICROSCOPIC ANATOMY (HISTOLOGY & PATHOLOGY) | TOTAL H | OURS = 05 | |
|----------------------|---|----------------------------------|----------------------|--|
| 3332 | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС | |
| | Describe the histological structure of Nervous tissue, | | | |
| NS-A-021 | Neuron, Nerve fiber, Sensory & motor nerve endings, | Histology | Nervous tissue | |
| | Neuroglia, Blood brain barrier, ganglia | | | |
| NS-A-022 | Describe the histological structure of the spinal cord | Histology | Spinal cord | |
| NS-A-023 | Describe the histological structure of Cerebrum, | Histology | Cerebrum, | |
| 110 71 020 | Cerebellum | Thotology | Cerebellum | |
| | PRACTI È AL | | | |
| | | | | |
| CODE | HISTOLOGY | TOTAL H | OURS = 07 | |
| CODE | HISTOLOGY SPECIFIC LEARNING OBJECTIVES | TOTAL H | OURS = 07 | |
| | | DISCIPLINE | ТОРІС | |
| CODE NS-A-024 | SPECIFIC LEARNING OBJECTIVES | | | |
| NS-A-024 | SPECIFIC LEARNING OBJECTIVES Identify draw & label light microscopic structure of | DISCIPLINE Histology | TOPIC | |
| | SPECIFIC LEARNING OBJECTIVES Identify draw & label light microscopic structure of Peripheral nerve sensory ganglia, autonomic ganglia Identify Draw & label the light microscopic structure of the spinal cord | DISCIPLINE | ТОРІС | |
| NS-A-024 | SPECIFIC LEARNING OBJECTIVES Identify draw & label light microscopic structure of Peripheral nerve sensory ganglia, autonomic ganglia Identify Draw & label the light microscopic structure of the spinal cord Identify Draw & label the light microscopic structure of | DISCIPLINE Histology Histology | TOPIC CNS Cerebrum | |
| NS-A-024 NS-A-025 | SPECIFIC LEARNING OBJECTIVES Identify draw & label light microscopic structure of Peripheral nerve sensory ganglia, autonomic ganglia Identify Draw & label the light microscopic structure of the spinal cord Identify Draw & label the light microscopic structure of the Cerebrum | DISCIPLINE Histology | TOPIC | |
| NS-A-024 NS-A-025 | SPECIFIC LEARNING OBJECTIVES Identify draw & label light microscopic structure of Peripheral nerve sensory ganglia, autonomic ganglia Identify Draw & label the light microscopic structure of the spinal cord Identify Draw & label the light microscopic structure of | DISCIPLINE Histology Histology | TOPIC CNS Cerebrum | |

NORMAL FUNCTION

THEORY

| CODE | MEDICAL PHYSIOLOGY | TOTAL HOURS = 60 | |
|----------|---|-----------------------|-------------------------------|
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС |
| | Describe the general organization of nervous system | | |
| | Classify synapses | | |
| | Explain physiological anatomy of synapses | | |
| | Describe the properties of synaptic transmission | | Organization of |
| NS-P-001 | Classify the substances that act as neurotransmitters | | Nervous System, Neurons and |
| | Classify all sensory receptors in the body | | Synapses |
| | Enumerate the properties of receptors | | |
| | Explain the mechanism of adaptation of receptors | | |
| | Enlist the rapid adapting mechanism of receptors | | |
| | Explain the properties of receptors | Medical Physiology | |
| | Explain the general classification of nerve fibers | , 0, | Nerve fibers |
| NS-P-002 | Explain the numerical classification of nerve fibers | | |
| | Explain Gasser classification of nerve fibers | | |
| | Explain summation and its types | | |
| | Describe the sensory areas of brain | | |
| | Enlist Brodmann number of sensory areas | | |
| NS-P-003 | Describe the effects produced by damage to each | | Sensory areas of |
| | sensory area of brain | | the brain |
| | Describe the pathophysiology and features of personal | | |
| | neglect syndrome | | |
| NS-P-004 | Classify and explain somatic sensations | Medical Physiology | Somatic sensations |
| NS-P-005 | Enumerate the ascending tracts/Pathways | | Ascending Tracts/ pathways |
| | Name the sensations carried by Dorsal column medial | Physiology | |
| NS-P-006 | lemniscus system DCMLS | | Anterolateral system |
| | Trace the pathway of DCMLS | | System |

| | Classify pain | | |
|----------|--|-----------------------|--------------------------|
| | Differentiate between slow pain and fast pain | | |
| NS-P-007 | Describe the analgesia system in brain and spinal cord | | |
| | Describe the cause and features of Brown Sequard | | Pain |
| | Syndrome | | |
| | Define & explain the mechanism of referred pain | | |
| | Explain visceral and parietal pain | | |
| | Describe the Physiological anatomy of spinal cord | | |
| | Name the anterior motor neurons and their location | | |
| NS-P-008 | Explain the Renshaw cells feedback | | Spinal cord |
| | Classify the spinal cord reflexes according to number | | |
| | of synapses | | |
| | Describe the structure & functions of Muscle spindle | | Muscle Spindle |
| NS-P-009 | Trace the reflex arc of stretch reflex | | and stretch reflex |
| | Discuss the clinical significance of stretch reflex | | |
| NS-P-110 | Define tone and how it is maintained | | Tone |
| | Trace the reflex arc of Golgi Tendon Organ GTO, Golgi | Medical Physiology | |
| NS-P-011 | tendon reflex | | GTO |
| | Explain the importance of Golgi tendon reflex | | |
| | Define and explain flexor reflex and cross extensor | | |
| | reflex. | | Spinal cord |
| NS-P-012 | Discuss the reflexes of posture and locomotion | | reflexes |
| | Describe the spinal cord reflexes for scratch, muscle | | |
| | spasm and autonomic reflexes | | |
| | Name the motor areas of brain | | |
| NS-P-013 | Enlist Brodmann number of motor areas of brain | | Motor areas of the brain |
| | Explain the features produced due to damage to the motor areas | | the brain |
| _ | | | |
| NS-P-014 | Enlist the functions of brain stem | M-4:1 | Brainstem |
| NS-P-015 | Enumerate the descending tracts | Medical Physiology | Descending |
| | Describe the functions of Pyramidal tract | | tracts |
| | | | |

| | Describe the effect of lesions in motor cortex of brain | | |
|----------|--|-----------------------|-------------------------------|
| | or pyramidal tract | | |
| NS-P-016 | Discuss the location of upper and lower motor neuron | | Location of motor neurons |
| | Explain the features of upper motor neuron lesion | | |
| | Explain the features of lower motor neuron lesions | | |
| NS-P-017 | Define spinal shock | | Spinal shock and hemi section |
| | Enumerate and explain the stages of spinal shock | | |
| | Describe the features of hemi section of spinal cord (at | | |
| | the level, above the level, below the level) | | |
| | Name the functional parts of cerebellum | | Cerebellum |
| | Explain the functions of spinocerebellum | | |
| NS-P-018 | Describe the functions of cerebro cerebellum | | |
| | Discuss the functions of vestibule cerebellum | | |
| | Explain the clinical features of cerebellar disease | | |
| | Name the components of Basal ganglia | Medical Physiology | Basal Ganglia |
| | EXPLAIN the putamen and caudate circuits | | |
| | Enlist the neurotransmitters in basal ganglia and enlist | | |
| | the functions of basal ganglia | | |
| | Enumerate and explain the clinical abnormalities of | | |
| NS-P-019 | putamen circuit | | |
| | Explain the pathophysiology and features of Huntington's disease | | |
| | Explain the types of rigidity | | |
| | Differentiate spasticity and rigidity | | |
| | Define decerebrate rigidity | | |
| | Enumerate the components of vestibular Apparatus | Medical Physiology | Vestibular apparatus |
| NS-P-020 | Name the sensory organs of vestibular apparatus | | |
| NS-P-020 | Describe the role of vestibular Apparatus in | | |
| | maintenance of linear and angular equilibrium | | |
| NS-P-021 | Enlist the components of limbic system | | Limbia system |
| | Emist the components of limbic system | | Limbic system |

| | Explain the effects of bilateral ablation of the amygdala—The Klüver-Bucy Syndrome | | |
|----------|---|-----------------------|--------------------------------------|
| | Explain the functions of hippocampus | | |
| | Explain the functions of Hypothalamus | | |
| | Explain Functions of Thalamus | | |
| | Discuss the Thalamic syndrome | | |
| NS-P-022 | define brain stem reticular formation (BRF), name the neurotransmitters of BRF, enlist functions of BRF, differentiate between the functions of Pontine and medullary reticular Formation | Medical Physiology | Brain stem reticular formation |
| NS-P-023 | Enumerate and discuss the physiological basis of Electroencephalogram EEG waves | | EEG |
| | Explain the types of sleep | Medical Physiology | |
| | Discuss the stages of slow wave sleep | | Sleep |
| | Explain the changes in EEG during sleep wake cycle | | |
| NS-P-024 | Enumerate the areas and hormones/ | | |
| | neurotransmitters involved in sleep | | |
| | Describe sleep disorders (narcolepsy, cataplexy, | | |
| | insomnia, somnolence, somnambulism, bruxism, nocturnal enuresis and sleep apnea) | | |
| | Enumerate different types of epilepsy | | |
| NS-P-025 | Explain the features and physiological basis and EEG | | Epilepsy |
| | waves in different types of epilepsy | | |
| | Define memory | | Memory |
| | Classify memory on the basis of duration and | | |
| | information stored | | |
| | Explain the Molecular Mechanism of Intermediate | | |
| NS-P-026 | Memory Frameworks the etweetimal charges of languages | | |
| | Enumerate the structural changes of long-term memory | | - |
| | Explain the higher intellectual functions of prefrontal | Medical Physiology | |
| | association cortex | | |
| | Explain the mechanism of consolidation of memory | | |
| L | | | l . |

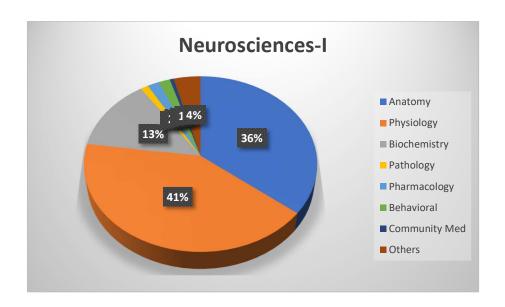
| NS-P-027 | Explain retrograde and anterograde amnesia Explain the physiological basis and features of Alzheimer's disease Enlist the areas of speech Explain the functions of motor and sensory areas of speech Trace and explain the pathway of written and heard speech Enlist the abnormalities of speech Explain the features of motor aphasia | | Speech |
|----------|--|-------------------------|---|
| | Elaborate the features of sensory aphasia Define dyslexia, alexia, agraphia | | |
| NS-P-028 | Discuss the sites of CSF secretion, flow of CSF, and abnormalities of CSF production Discuss the formation, flow and absorption of CSF Explain the functions of CSF Explain the composition and flow of CSF and pathophysiology of hydrocephalus. Explain the regulation of CSF pressure, increase in CSF pressure in pathological conditions of the brain, and measurement of CSF pressure. | Medical Physiology | CSF (Cerebrospinal Fluid) |
| CODE | MEDICAL BIOCHEMISTRY | TOTAL HOURS = 20 | |
| 0002 | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC |
| NS-B-001 | Explain the digestion and absorption of lipids with enzymes involved in it. Discuss role of bile acids and salts in lipid digestion and absorption | Medical Biochemistry | Digestion and absorption of lipids |
| NS-B-002 | Explain the concept of lipid transport and storage. Discuss the metabolism of cholesterol along with its regulations and associated disorders | | Lipid transport and storage and cholesterol metabolism |

| NS-B-003 | Discuss the reactions of beta-oxidation, alpha and omega oxidation of unsaturated and saturated fatty acids Calculate energy yield from palmitate in oxidation | | Sphingolipidosis |
|----------|--|-------------------------|--|
| NS-B-004 | Discuss role of carnitine shuttle | | Carnitine shuttle |
| NS-B-005 | Discuss the role of citrate shuttle in fatty acid synthesis | | Citrate shuttle |
| NS-B-006 | Explain the pathway of fatty acid synthesis and its regulation Explain the steps of the reactions of hepatic ketogenesis and regulation | | Fatty acid synthesis |
| NS-B-007 | Describe utilization of ketone bodies by extrahepatic tissue. Describe the Synthesis and degradation of phospholipids and sphingolipids interpret the disorders related to enzyme deficiencies. | | Metabolism of phosphor and sphingolipids |
| NS-B-008 | Discuss the metabolism of glycolipids interpret the disorders related to enzyme deficiencies. | | Glycolipid metabolism |
| NS-B-009 | Explain fast feed cycle with reference to pathways activated and suppressed in each tissue in starved and fed state Discuss integration of metabolism | | Fast feed cycle |
| NS-B-010 | Explain fast. Discuss the structure, biochemical function and metabolism, dopamine, serotonin, histamine, GABA, Acetylcholine Correlate the biochemical functions of these neurotransmitters with their deficiency diseases | Medical Biochemistry | Neurotransmitters |
| NS-B-011 | Explain proto-oncogene, oncogene and tumor suppressor genes concept. | | Oncogene |
| NS-B-012 | Discuss tumor markers and their significance. | | Tumor markers |
| NS-B-013 | Explain the role of genetics in cancers especially breast, ovary, lung and colon. | | Cancer |

| NS-B-014 | Discuss the metabolism of xenobiotics. | | Xenobiotics | |
|--------------------|--|-------------------------|-------------------------|--|
| PRACTI È AL | | | | |
| CODE | CODE SPECIFIC LEARNING OBJECTIVES | | OURS = 17 | |
| | | DISCIPLINE | TOPIC | |
| NS-B-015 | Interpret the lysosomal storage diseases on given data | | Data Interpret | |
| 110 0 0 10 | Neiman pick disease, Gaucher's disease etc. | Biochemistry | Data interpret | |
| NS-B-016 | Perform the estimation of serum triglycerides, cholesterol, HDL by kit method and calculate LDL and VLDL | Practical | Estimation of lipids | |
| NS-P-029 | Examine the Sensory System | | Sensory system | |
| NS-P-030 | Examine the Superficial Reflexes | | Superficial Reflexes | |
| NS-P-031 | Examine the Deep Reflexes | Physiology Practical | Deep Reflexes | |
| NS-P-032 | Demonstrate Cerebellar Function Test | | Cerebellar Tests | |
| NS-P-033 | Demonstrate the testing of Cranial Nerve (CN) VII | | CN VII | |
| NS-P-034 | Demonstrate the Testing of Cranial Nerves (XI, XII) | | CN X, XI, XII | |
| NS-P-035 | Examine the Motor system | | Motor system | |
| | PATHOPHYSIOLOGY AND PHARMACOTHERA | APEUTICS | | |
| | | TOTAL HOURS = 05 | | |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC | |
| | 1.Classify various opioid receptors | | | |
| NS-Ph-001 | 2.Describe Mechanism of Action (MOA), | | | |
| | pharmacological actions, clinical uses and adverse | | Opioids | |
| | effects of opioid agonist, mixed agonist -antagonist and | | | |
| | antagonist | Pharmacology | | |
| | 1.Classify various CNS stimulants and depressants | | | |
| | 2.Describe MOA, pharmacological actions, clinical | | CNS stimulants | |
| NS-Ph-002 | uses and adverse effects of CNS stimulant and depressants | | & depressants | |
| | Discuss the pathophysiology of cerebral vascular | | | |
| NS-Pa-001 | accident (CVA). | Pathology | CVA | |

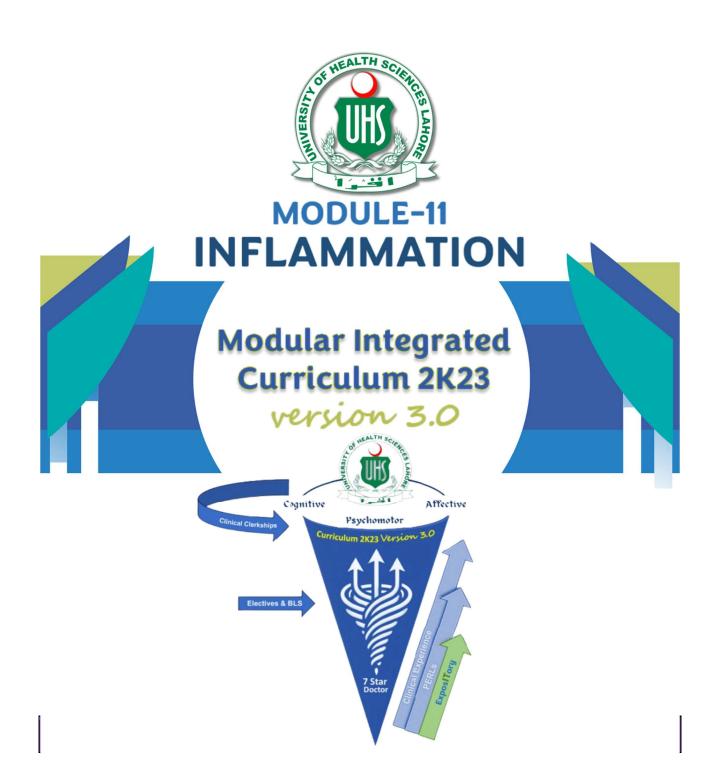
| NC Do 000 | Define Meningitis | Microbiology | Maningitia | |
|-------------------------------|---|-------------------------------|--|--|
| NS-Pa-002 | Identify types of meningitis | Microbiology | Meningitis | |
| DISEASE PREVENTION AND IMPACT | | | | |
| 0077 | | TOTAL H | OURS = 10 | |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС | |
| NS-CM-001 | Students should be able to depict the depth of problem in context of mental illnesses | Community | Epidemiology of Mental Disorders | |
| NS-CM-002 | Able to learn the general approach to prevent mental illnesses at community level | Medicine and Public Health | Community based interventions for Mental Illnesses | |
| NS-BhS- 001 | Explain the theoretical basis of classic conditioning, operant conditioning and observational learning with examples in medical practice Incorporate learning principles to help prepare people for medical interventions | Behavioral Sciences | Learning and Behavior | |
| NS-BhS- 002 | Outline the structure of memory and explain the distinction between short- and long-term memory. Describe memory improvement techniques and how the appropriate ones will help patients recall long and complex explanations | | Memory | |
| NS-M-001 | Identify various types of CVA (cerebrovascular accident) Describe various symptoms and signs Outline management strategies | Medicine | Stroke/CVA | |
| NS-S-001 | Discuss the role of surgery in stroke | Surgery | Stroke/CVA | |
| NS-M-002 | Define Epilepsy Enlist various types of epilepsy Identify various symptoms and signs Outline management strategies | Medicine | Epilepsy | |
| NS-M-003 | Enlist various types of meningitis Describe symptoms and signs Outline management strategies | Medicine/ Neurology | Meningitis | |
| NS-S-002 | Describe triage in ER Emergency Room | Surgery | Head injury | |
| NS-S-003 | Identify the various types of hematomas | Neurosurgery | Hematoma/ CVA | |

| NS-Pe-001 | Describe the clinical features of Cerebral Palsy | Pediatrics | Cerebral Palsy | |
|-----------|--|------------------|----------------|--|
| AGING | | | | |
| CODE | THEORY | TOTAL HOURS = 01 | | |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC | |
| NS-Ag-001 | Define dementia | Medicine | Dementia | |
| | Discuss various causes for dementia | | | |
| | Discuss various risks for dementia | | | |
| | Outline management strategies | | | |



| Module Weeks | Recommended Minimum Hours |
|--------------|------------------------------|
| 07 | 171 |





The objective of teaching inflammation to undergraduate students is to impart knowledge about cellular and molecular mechanisms of cell injury, inflammation, and repair. This understanding serves as the foundation for comprehending most disease processes within the body. It equips students to apply this knowledge in the clinical field when working with real-life patients.

MODULE OUTCOMES

- Define inflammation and describe its fundamental characteristics.
- Explain the cellular and molecular mechanisms that underlie the inflammatory response.
- Differentiate between acute and chronic inflammation
- Discuss the physiological role of inflammation in tissue repair and host defense.
- Identify how dysregulated inflammation contributes to the pathogenesis of various diseases.
- Describe the key inflammatory mediators, including cytokines, chemokines, and prostaglandins.
- Illustrate the signaling pathways involved in the initiation and resolution of inflammation.
- Recognize the roles of different immune cells (e.g., neutrophils, macrophages, lymphocytes)
 in the inflammatory response.
- Discuss the pharmacological aspects of steroidal and non-steroidal anti- inflammatory drugs
- Discuss the clinical aspects of inflammation.

THEMES

- Role of inflammation in embryology
- Inflammatory response and role of leukocytes
- Eicosanoids
- Acute inflammation
- Chronic inflammation
- Cell repair
- Prostaglandin analogues
- Anti-inflammatory drugs
- Steroidal anti-inflammatory drugs
- Non-steroidal anti-inflammatory drugs
- COX- inhibitors
- Histamines and antihistamines

- Communicable diseases and their prevention
- Psychological stress and inflammation
- Aging

CLINICAL RELEVANCE

- Inflammation, in medical terminology, refers to a collection of classical signs and symptoms, such as edema, erythema, increased warmth, pain, and loss of function.
- It represents a complex and dynamic series of responses to tissue injury, primarily triggered by toxic chemicals, environmental factors, trauma, overuse, or infection.
- Diseases in which inflammation plays a predominant pathological role are typically denoted by the suffix 'itis,' examples of which include encephalitis and meningitis.

IMPLEMENTATION TORS

- The time calculation for completion of modules and blocks 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.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the Second professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.

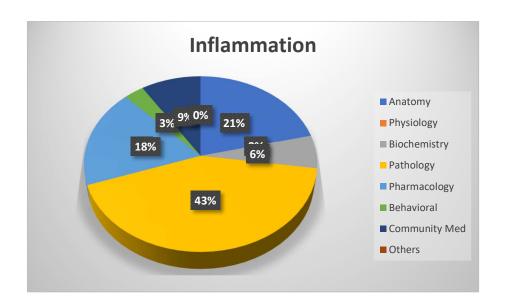


| NORMAL STRUCTURE | | | |
|------------------|---|-------------------------|--|
| THEORY | | | |
| CODE | EMBRYOLOGY & POST-NATAL DEVELOPMENT | TOTAL HOURS = 03 | |
| | SPECIFIC LEARNING OUTCOMES | DISCIPLINE | TOPIC |
| IN-A-001 | Identify role of inflammation in implantation Development of cells involved in acute & chronic inflammation Development of integumentary system | Embryology | Role of inflammation in Implantation & Development of Integumentary System |
| CODE | MICROSHOPIC STRUCTURE | TOTAL HO | OURS = 02 |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC |
| IN-A-002 | Discuss the microscopic structure of components involved in inflammation (cells, capillaries) Discuss the histology of integumentary system | Histology | Integumentary system & Inflammatory Response at Cellular Level |
| | PRACTI È AL | | |
| CODE | | TOTAL HOURS = 02 | |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC |
| IN-A-003 | Draw and identify microscopic structure of integumentary system | Histology | Integumentary System |
| CODE | MEDICAL BIOCHEMISTRY | | OURS = 01 |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС |
| IN-B-001 | Explain the biochemical and therapeutic roles of eicosanoids (prostaglandins, leukotrienes, thromboxane and prostacyclin | Medical Biochemistry | Eicosanoids |

| PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS | | | |
|--|--|--------------------------------|---|
| | | TOTAL HOURS = 06+12 | |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС |
| IN-Ph-001 | Enumerate prostaglandin analogues Discuss the clinical use and adverse effect of prostaglandin analogues | | Prostaglandin analogues |
| IN-Ph-002 | Enlist anti-inflammatory drugs Differentiate between steroidal and non-steroidal anti- inflammatory drugs | | Anti- Inflammatory drugs |
| IN-Ph-003 | Discuss mechanism of action, clinical usage, and adverse effects of steroidal anti-inflammatory drugs | | Steroidal anti- Inflammatory drugs |
| IN-Ph-004 | Discuss mechanism of action, pharmacological effects, clinical usage, and adverse effects of non-steroidal anti-inflammatory drugs | Pharmacology & Therapeutics | Non-steroidal anti- Inflammatory drugs (NSAIDs) |
| IN- Ph-005 | Differentiate between selective and non-selective cyclooxygenase (COX) inhibitors Differentiate between Aspirin and paracetamol Classify antihistamines Discuss the role of histamines and antihistamines in inflammation and allergies, adverse effects and drug interactions | | COX inhibitors |
| IN-Pa-001 | Define acute inflammation Enlist stimuli for Acute Inflammation Recognize microbes, necrotic cells, and foreign substances causing acute inflammation Identify different components of inflammation Define necrosis and explain its type with example | Pathology | Acute inflammation |
| IN-Pa-002 | Discuss the role of vascular and cellular events in acute inflammation Differentiate between transudate and exudate Classify chemical mediators Describe the different pathways of synthesis of chemical mediators and their role in clinical practice | Pathology | Process of acute inflammation |

| | Discuss the role of different chemical mediators in acute | | |
|--------------------|--|--------------|--------------|
| | inflammation | | |
| | Describe the different morphological patterns and | | |
| | outcomes of acute inflammation | | |
| | Define chronic inflammation | | |
| | Discuss the role of chronic inflammatory cells and | | |
| | mediators in chronic inflammation | Pathology | |
| | Discuss the causes, pathophysiology and morphology of | | |
| | granulomatous inflammation | | Chronic |
| IN-Pa-003 | Classify mycobacteria | | Inflammation |
| | Explain the pathogenesis and lab diagnosis of | | |
| | mycobacterium tuberculosis | Microbiology | |
| | Discuss the Runyon classification of atypical mycobacteria | | |
| | Discuss pathogeneses and lab diagnosis of leprosy | | |
| | Discuss the concept of Cell Proliferation, the Cell Cycle | | |
| | and Stem Cells in tissue repair | | |
| | Discuss the role of Growth Factors, receptors, signal | | |
| | transduction and extracellular matrix Involved in | | |
| | Regeneration and Repair | | |
| IN-Pa-004 | Explain the types of healing along with the steps in scar | Pathology | Cell Repair |
| | formation | | |
| | Identify the factors that influence the tissue repair | | |
| | Discuss the complication of wound healing | | |
| | -keloid, Hypertrophy, Scarring | | |
| PRACTI È AL | | | |
| | | | |
| CODE | PATHOLOGY | TOTAL HO | URS = 02 |
| | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC |
| | Identify the pathological features of acute inflammation | | |
| IN D 227 | y and planting, san realistice of aloute initiation | D. II | |
| IN-Pa-005 | Identify the pathological features of chronic inflammation & | Pathology | Inflammation |
| | 1 | | |
| | granulomatous inflammation | | |

| DISEASE PREVENTION AND IMPACT | | | | |
|-------------------------------|--|--|---|--|
| CODE | SPECIFIC LEARNING OBJECTIVES | TOTAL HOU | JRS = 03+01 | |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | TOPIC | |
| IN-CM- 001 | Discuss the mode of transmission of communicable diseases Explain the general concept of prevention of communicable diseases Discuss the primary, secondary and tertiary prevention of acute and chronic diseases Discuss the role of immunoprophylaxis and chemoprophylaxis in prevention of communicable diseases | Community Medicine and Public Health | Communicable Diseases | |
| IN-BhS- 001 | Understand the correlation between psychological stress and inflammation | Behavioral Sciences | Role of Psychological stress in Inflammation | |
| | AGING | | | |
| CODE | THEORY | TOTAL HO | OURS = 01 | |
| CODE | SPECIFIC LEARNING OBJECTIVES | DISCIPLINE | ТОРІС | |
| IN-Ag-001 | Explain inflammatory changes and role of leukotriene and cytokines in old age | Biochemistry | Inflammatory changes & signaling molecules in Aging | |



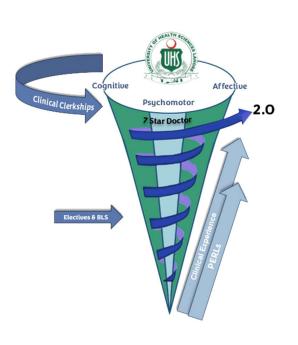
| Module Weeks | Recommended Minimum Hours |
|--------------|------------------------------|
| 01 | 33 |

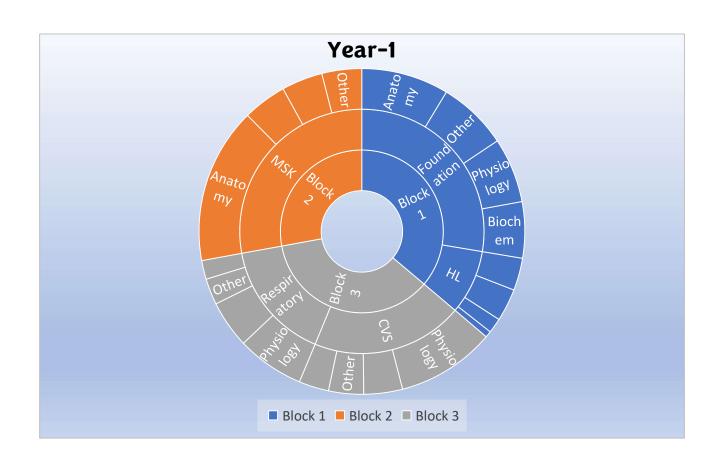


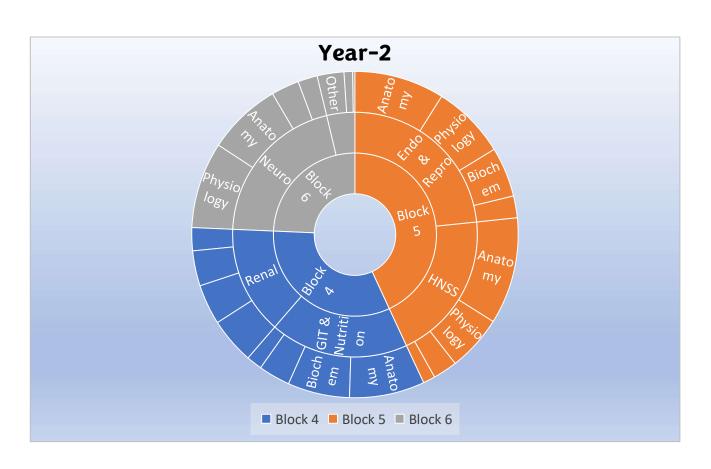


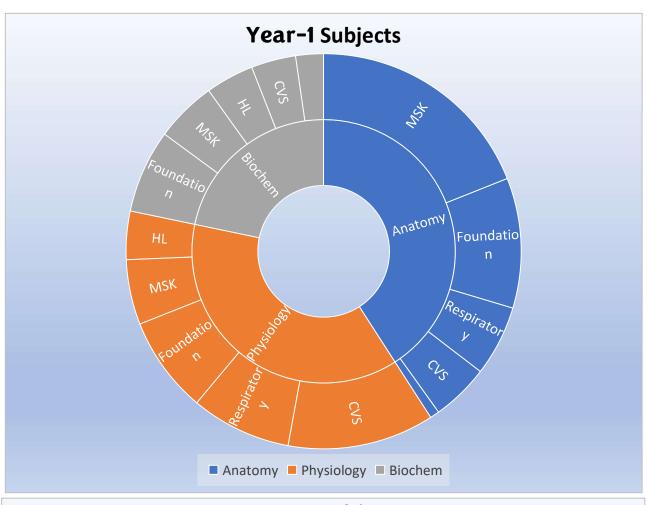
MODULAR LANDSCAPE

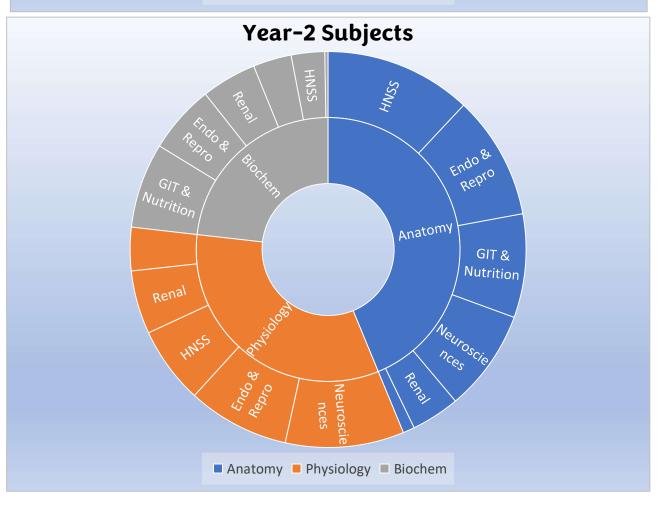
CURRICULUM 2K23
version 2.0

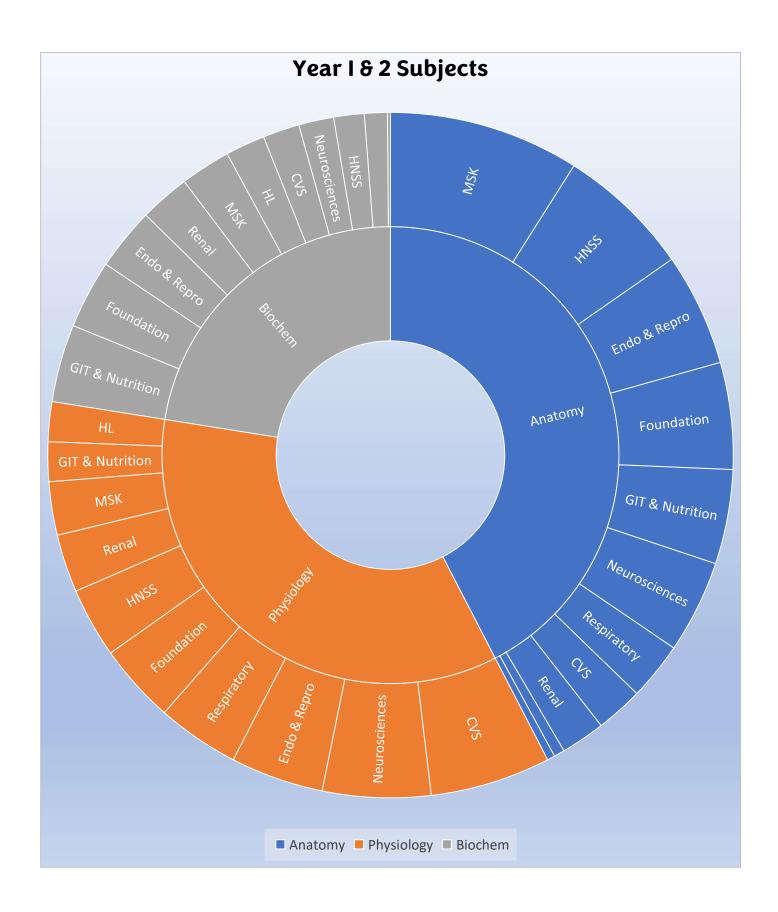










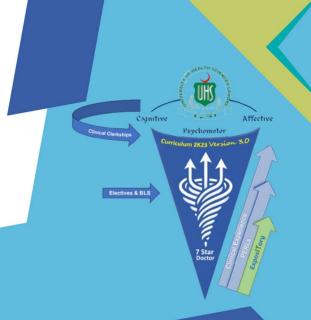






Modular Integrated Curriculum 2K23

version 3.0



THE HOLY QURAN PAKISTAN STUDIES ISLAMIAT CIVICS



THE HOLY QURAN

Modular Integrated Curriculum 2K23

version 3.0



1. MODULE RATIONALE

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

2. VISION & MISSION

- **2.1: Vision:** Building the personality and character of health professionals in light of teachings of the Holy Quran and Sunnah, to alleviate human sufferings.
- **2.2: Mission:** Teaching Holy Quran and Sunnah to undergraduate students of Health Sciences, building their personality and character, enabling them to apply these principles in patient care and innovative research.

3. CURRICULUM DESIGN AND ORGANIZATION

- **3.1: Course Aim:** The Holy Quran course aims to imbibe Health profession students with professionalism, general and medical, based on Divine teachings. The professionals thus groomed shall be able to correlate religion with healthcare delivery and modern science with an understanding that evidence-based practice itself originated from the system by which the "Hadith" was preserved after centuries.
- **3.2: Mode of Delivery:** The module will be taught in the form of interactive lectures.
- **3.3: Learning Experience:** Classroom environment will be used.
- **3.4: Attendance**: Seventy five percent (75%) attendance is mandatory to be eligible to sit in the professional examination.

3.5: Course Modules for Year 1 and Year 2

The curriculum will be taught under three Major Sections

- Faith
- Worship
- Specific Quranic Commandments

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

3.7: Assessment Portfolio

The assessment will be done through student portfolios based on four written assignments and two quizzes per year. The portfolio submission to the Quran teacher will be mandatory for sending admission to the university and sitting in the professional examination. The assignments will be based on the topics discussed during the year. One will be given after first half of the course will be completed for the year and second will be given at the completion of the Quran course.

3.8: Reference Material

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

3.9. Module Faculty

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



SECTION ONE: FAITH (AQAID)

LEARNING OUTCOMES

a. Oneness of Allah (SWT) (Tawheed)

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

b. Prophethood (Risalat)

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

c. Belief in Hereafter (Aakhirat)

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

d. Divine Revelations (Holy Books)

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

e. Angels

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

f. Qadr

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

CONTENTS

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

SECTION TWO: WORSHIP (IBADAAT)

LEARNING OUTCOMES

a. Prayer (Namaz)

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

b. Obligatory Charity (Zakat)

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

c. Fasting (Roza)

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

d. Pilgrimage (Hajj)

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

TOPIC AREAS

1. Prayer (Salah/Namaz)

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

Quran: Year-2

SECTION THREE: SPECIFIC QURANIC COMMANDMENTS

LEARNING OUTCOMES

a. Importance of the protection of Human life

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

b. Jihad

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

c. Heirship/Inheritence (Virasat)

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

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

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

e. Hadood-e Illahee and taazeerat

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

f. Justice (Adal-o-insaf)

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

g. Business (Bay-o-tijarat)

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

h. Interest (Riba or Sudi karobar)

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

i.Nikah-o-talaq

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

CONTENTS

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



MODULE RATIONALE

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

ISLAMIYAT

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

Course Content:

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

PAKISTAN STUDIES

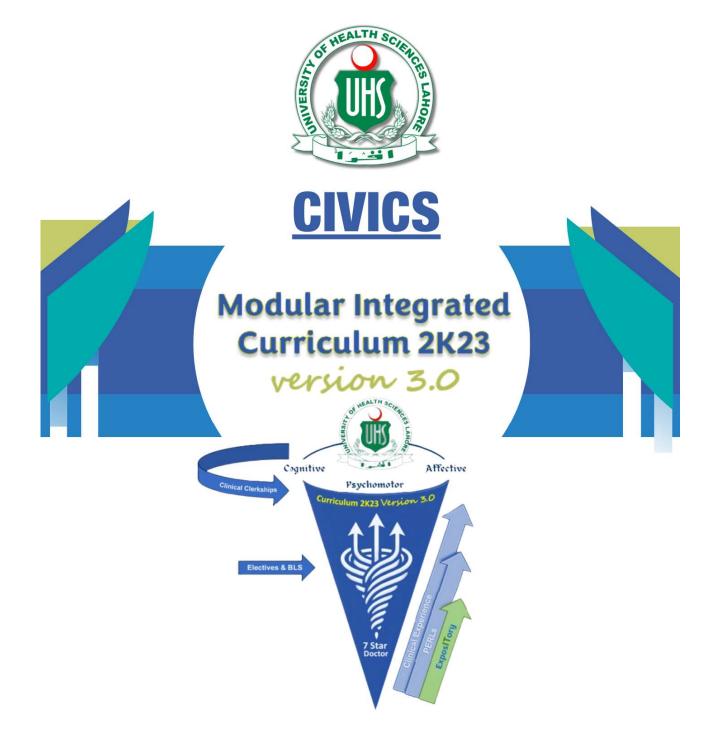
A short course on Pakistan Studies will be completed in First and Second year with an exam at the end of second year.

Course Content:

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

ISLAMIYAT AND PAKISTAN STUDIES BOOKS

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



1. MODULE RATIONALE

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

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

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

2. VISION & MISSION

- **2.1: Vision:** Building the personality and character of health professionals
- **2.2: Mission:** Teaching Civics to undergraduate students of Health Sciences, building their personality and character, enabling them to apply these principles in patient care.

3. CURRICULUM DESIGN AND ORGANIZATION

3.1: Course Aim:

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

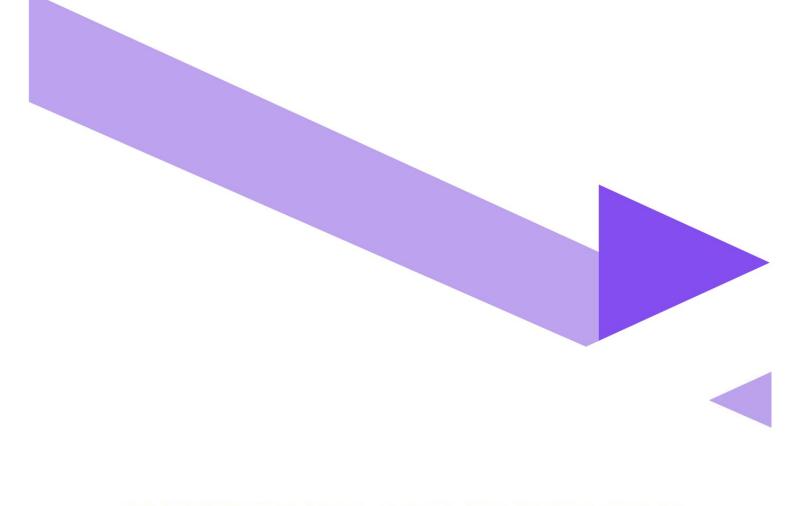
- To prepare students as future citizens, conscious of their positive role in a society and the world at large.
- **3.2: Mode of Delivery:** The module will be taught in the form of interactive lectures.
- **3.3: Learning Experience:** Classroom environment will be used.
- **3.4: Attendance:** Seventy-five percent (75%) attendance is mandatory to be eligible to sit in the professional examination.
- **3.5: Assessment:** The assessment will be done through two written assignments and two quizzes per year. The assignments will be based on the topics discussed during the year. One will be given after first half of the course will be completed for the year and second will be given at the completion of the course.
- **3.7: Module Faculty:** At least one full time faculty member (Lecturer or above) will be hired to run the civics course throughout four years. The qualifications of the faculty member will be certified by the academic council of the college/institution to be declared as the teacher of civics.



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

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





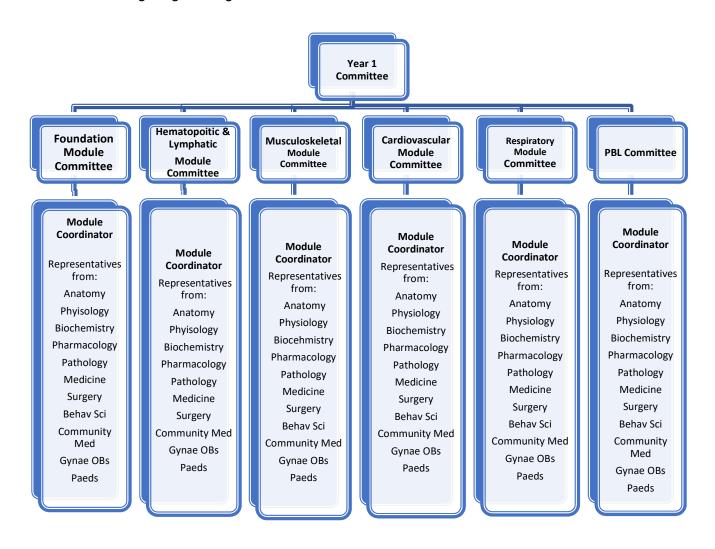
INSTITUTIONAL IMPLEMENTATION RECOMMENDATIONS



RECOMMENDED IMPLEMENTATION SOPS

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

A recommended organogram is given below:



A few recommended organizational titles and responsibilities are as follows:

YEAR COMMITTEE

- Identify the philosophy for implementing future Curriculum.
- Ensures module requirements ahead of time.
- Any adjustment of schedule if required.
- Liaison with the chairperson of the mentoring program.
- Quality assurance of teaching and learning.
- Hold regular meetings.
- Compliance to schedule and timetable.
- Compliance to proposed internal assessment.
- Oversee completion of Logbooks and Portfolio.
- Oversee the foundation component of C-FRC.
- Ensure student centeredness and feedback from students.
- Develop timetables.
- Analyze the implementation of current curriculum.
- Strategize communication with both faculty and students.

MODULE COMMITEE

- Module committee should be headed by module coordinator.
- The nomination of the 'Module Coordinator' will be based on the maximum content present in the respective module e.g., Musculoskeletal will have a module coordinator from Anatomy.
- The coordinator will develop module team.
- Collaboration and consultation with all the relevant departments.
- Follow the curricular guidelines by the modules provided by UHS.
- Coordinate with the Assessment Cell.
- Arrange regular meetings.
- Develop study guides in collaboration with the Department of Medical Education
- Liaison with the PBL Committee.

PBL COMMITTEE

- PBL committee should be headed by PBL coordinator.
- Responsible for coordination of the PBL meetings

- Responsible for training of tutors by incorporating experiential learning, small group work and critical reflection.
- The tutors must possess both content expertise and group facilitation skills.
- Forwarding the PBL to coordinator year committee / DME for the purpose of Quality assurance
- Ensure the teaching resources available for delivery of PBL.
- Quality assurance visits to the PBL site.
- Coordination with year committee head as well as Director Medical Education.

MENTORING COMMITTEE

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

DEPARTMENT OF MEDICAL EDUCATION

- The department of medical education serves as a backbone to provide effective and high-quality education to both undergraduate and post graduate medical and dental students.
- The Department of Medical Education needs to play the integral role in the implementation and adoption of Curriculum 2K23 version 2.0.
- DME will be overall responsible for the spirals of PERLs & C-FRC.

- DME will be monitoring the portfolio development by the students and the completion of logbook.
- DME will be responsible for developing a mentoring platform.
- Faculty development trainings for mentoring, reflective writing and portfolio development will be undertaken.
- Planning the affective training competency acquisition framework with the academic council will be the most pivotal role.
- Collaboration with other disciplines for the training sessions for different aspects of Professionalism, Ethics, Research and Leadership skills.

GENERAL RESPONSIBILITIES OF DME

- Contribute and design, train the trainer activities which fulfil the need for undergraduate and post graduate training.
- Shape and develop medical education research activities of the college.
- Facilitating & organizing workshops, seminars, symposia & conferences
- Conducting CME activities to leverage culture of awareness, journal club.
- Networking by representing the college, when needed, in national /international meetings or conferences.
- Student counseling
- Supervising students' academic progress
- Academic Committees Development and Support
- Staff Support and Development
- Curriculum development and reform
- Collaborate with curriculum committee and faculty members to develop quality instructional material such as modules, lecture, or study guides.
- Standard Operating Procedures for DME development
- Skill lab management
- Assessment analysis which includes blue printing, pre-exam review, item analysis and standard setting and provide feedback to concerned faculty and students on the learning outcome achievement.
- Develop and conduct periodical review of process of the program, learning and teaching activities, and assessment process.
- Identify opportunities for use of IT in teaching and learning, assessment and faculty development activities.

- Exam Cell management
- Quality Assurance Cell management
- Record keeping of departmental data.
- Leadership and management
- Participation in overall planning and management of teaching in liaison with the departments

INSTRUCTIONAL STRATEGIES

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

Large Group Interactive Session (LGIS)

Lecture format is the most widely used approach to teaching especially in a large class size with average attention span of 20-30 mins. Interactive lecturing involves a two-way interaction between the presenter and the participants. Interactive methods like brainstorming, buzz group, simulation, role play, and clinical cases can be used.

Significance of its usage

- Relaxed environment, diverse opinions, active involvement
- Increase attention and motivation.
- Independence and group skills.
- Cost effective.
- Suitable for taking advantage of available audiovisual technologies.

Team based learning (TBL)

TBL is a uniquely powerful form of small group learning. It provides a complete coherent framework for building a flipped course experience. There are four essential elements of TBL which include:

- Teams must be properly formed and managed (5-7 students)
- Getting students ready
- Applying course concepts
- Making students accountable

- Students are more engaged.
- Increased excitement in TBL classroom
- Teams outperforms best members.
- Students perform better in final and standardized exams.

Problem based learning (PBL)

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

Significance of its usage

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

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 use of case
- Helps students acquire insightful information.
- Stay abreast with novel advancements in healthcare

Tutorials

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

Significance of its usage

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

Reflective Writing

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

Significance of its usage

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

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 modelling

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.

- 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 different pace is permissible

Skill laboratories

It refers to specifically equipped practice rooms functioning as training facilities offering hands on training for the practice of clinical skills within non-threatening environment prior to their real-life application This applies to both basic clinical skills as 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 Conference

Clinical Case based conferences allow clinicians and medical students to present difficult case 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.

Laboratory Practical

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

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

Ward Rounds

It is a composite clinical practice to review inpatients' management and progress, to make 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

Demonstrations

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

Significance of its usage

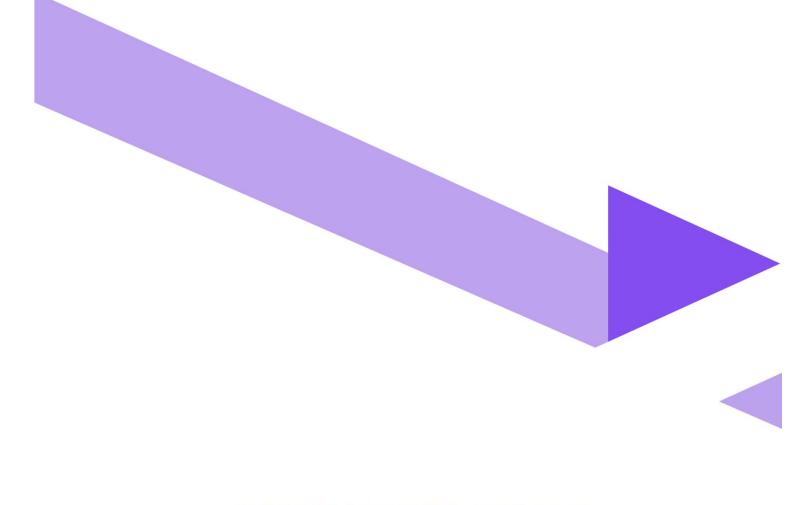
- Promotes learning and correlates theory with practice.
- Sharpens the observation skills.
- Sustain interests in learning environment.
- Helps teacher to evaluate students' response

Case Presentations

It is a teaching method which provides descriptive information about a clinical patient scenario 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.

- Cultivate the capacity for critical analysis.
- Judgement and Decision making
- Facilitate creative problem solving.
- Allow students to develop realistic solutions to complex problems





ASSESSMENT POLICY



Statutes

- 1. The First Professional MBBS Examination shall be held at the end of the first year MBBS, whereas, the Second Professional MBBS Examination shall be held at the end of the second year.
- 2. Every candidate shall be required to study contents of Anatomy (including Histology), Physiology, Biochemistry, Behavioural Sciences, Community Medicine & Public Health, Pathology, Pharmacology & Therapeutics, Islamic Studies/ Civics and Pakistan Studies, Clinical skills and Professionalism, Ethics, Research and Leadership. The teaching and assessment shall be done in three modular blocks.
- **3.** There will be three papers in the first professional examination, and four papers in the second professional examination:

First Professional Exam:

- a. Paper 1 will be based on contents of Block 1;
- b. Paper 2 will be based on contents of Block 2;
- c. Paper 3 will be based on contents of Block 3;

Second Professional Exam:

- a. Paper 1 will be based on contents of Block 4;
- b. Paper 2 will be based on contents of Block 5;
- c. Paper 3 will be based on contents of Block 6;
- d. Paper 4 will be based on contents of Islamic studies/Civics and Pakistan Studies
- **4.** Each paper will comprise of two components "Written" and "Oral/Practical/Clinical" examinations.
- **5.** The "Written" and "Oral/Practical/Clinical" examination in each paper will carry **175** marks each, making the total marks of **350** for each of the papers 1,2, and 3 (inclusive ofInternal Assessment).
- 6. Total marks for the First and Second Professional Examinations shall be 1050, each. Marks of Islamic Studies/Civics and Pakistan Studies shall not be counted towards total marks of any professional examination, and determination of position or merit of a candidate. However, the candidates failing in the subject of Islamic Studies/Civics & Pakistan Studies, while passing other subjects of 2nd Professional examination, may not be subjected to detention, as the subject has no contribution towards total marks of any professional examination, and determination of position or merit. The students may rather be allowed to pass the examination in the subject, before appearing in their Final Prof. MBBS examination, and in case of their failure to clear the subject they may not be allowed to take their Final Professional MBBS Examination.
- 7. Major content areas of the first two professional years shall be from:
 - a. Anatomy including applied/clinical Anatomy;
 - b. Physiology including applied/clinical Physiology;
 - c. Biochemistry including applied/clinical Biochemistry.



gu W

- 8. The Applied/Clinical content for the Anatomy, Physiology and Biochemistry shall be based on clinical correlations.
- 9. Integrated clinical content areas of the both years include Behavioral Sciences, Community Medicine & Public Health, Pathology, Pharmacology & Therapeutics. Clinical Foundation- I & II and PERLs- I & II.

Written Examination

- a. The written component of Papers 1, 2, and 3 will consist of 'One-besttype' Multiple Choice Questions (MCQ) and Structured Essay Questions (SEQ) in a ratio of **65:35** %.
- b. Each MCQ will have five options (one best response and four distractors) andwill carry one (01) mark.
- c. There will be no negative marking.
- d. There will be one section/s within an SEQ, and it will be a structured question with five (05) marks each.
- e. SEQ will only be based on the content areas of the year.
- f. There will be total of 90 MCQs and 10 SEQs in every written paper in Papers 1, 2, and 3.
- g. The duration of each written paper will be 195 minutes (03 hours &15 min).
- h. The MCQ section will be of 95 minutes duration and the SEQ section of 100 minutes.

Oral/Practical/Clinical Examination

- i. The 'Oral/Practical/Clinical' component of each Papers 1, 2, and 3 will consist of a total of sixteen (16) OSPE/OSCE/OSVE stations in each "Oral/Practical/Clinical" examination.
- j. Eleven (11) Observed OSPE (Objective Structured Practical Examination) stations will be from major subject areas. Each OSPE station will have the practical component and an evaluation of the underlying principle relevant to that practical with a component of applied knowledge.
- k. There will be two (02) Observed OSCE (Objective Structured Clinical Examination) stations, based on C-FRC1 and PERLs-1 in each "Oral/Practical/Clinical" examination.
- I. There will be three (03) Observed interactive OSVE (Objective Structured Viva Examination) from major subject areas. Each OSVE station will have a structured viva, to assess a practical component along with evaluation of the underlying principle relevant to that practical with an element of applied/practical knowledge and related clinical application.
- m. Each OSPE station will carry eight (08) marks.
- n. Each OSCE from C-FRC1 and PERLs-1 Will carry 5 marks.
- o. Each OSVE station will carry fourteen (14) marks
- p. The duration of each 'Oral/Practical/Clinical' examination will be 100 minutes.
- q. Time for each OSPE, OSCE and OSVE station will be six (06) minutes.

10.Every candidate shall take the examination in the following Blocks (Modules) in First& Second Professional MBBS Examinations: -

| Year 1 | | |
|--------|--|-----|
| A. | Block 1 (Foundation-I + Hematopoietic & Lymphatic) | 350 |
| | Marks | |
| В. | Block 2 (Musculoskeletal & Locomotion-I) | 350 |
| | Marks | |
| C. | Block 3 (Cardiovascular-I+ Respiratory-I) | 350 |
| | Marks | |
| Year 2 | | |
| A. | Block 4 (Gastrointestinal Tract & Nutrition-I + Renal-I) | 350 |
| | Marks | |
| B. | Block 5 (Endocrinology & Reproduction-I + Head & Neck, Special Senses) | 350 |
| | Marks | |
| C. | Block 6 (Neurosciences-I + Inflammation) | 350 |
| | Marks | |
| D. | Islamic Studies/ Civics + Pakistan Studies | 100 |
| | Marks | |

A. Block 1 (Foundation-I + Hematopoietic and Lymphatic)

The examination in Block 1 shall be as follows: -

- I. One written paper of **140 m**arks having two parts:
 - i. Part I shall have ninety (90) Multiple Choice Questions (MCQs) of a total of **90** marks (01 mark for each MCQ) and the time allotted shall be **95** minutes. There will be no negative marking.
 - ii. Part II shall have ten (10) Structured Essay Questions (SEQs) of a total of **50** marks (05 marks for each SEQ) and the timeallotted shall be **100** minutes.
- II. The "Oral/Practical/Clinical" examination shall have **140** marks in total.
- III. The duration of each 'Oral/Practical/Clinical' examination will be 100 minutes. Time for each OSPE. OSCE and OSVE stations will be six (06) minutes
- IV. The continuous internal assessment through the 'Block Examination', conducted by the college of enrollment shall carry **70** marks, i.e., **20**% of the total allocated marks (350) for the block. The score will be equally distributed to the Written and "Oral/Practical/Clinical" Examinations.

B. Block 2 (Musculoskeletal & Locomotion-I)

The examination in Block 2 shall be as follows: -

- I. One written paper of **140** marks having two parts:
 - i. Part I shall have ninety (90) Multiple Choice Questions (MCQs) of total 90 marks (01 mark for each MCQ) and the time allotted shall be 95 minutes. There will be no negative marking.
 - ii. Part II shall have ten (10) Structured Essay Questions (SEQs) of total **50** marks (05 marks for each SEQ) and the time allotted shall be **100** minutes.
- II. "Oral/Practical/Clinical" examination shall have 140 marks in total.
- III. The duration of each 'Oral/Practical/Clinical' examination will be 100 minutes. Time for each OSPE. OSCE and OSVE stations will be six (06) minutes





IV. The continuous internal assessment through 'Block Examination', conducted by the college of enrollment shall carry **70** marks, i.e., 20% of the total allocated marks (**350**) for the block. The score will be equally distributed to the "Written" and "'Oral/Practical/Clinical" Examinations.

C. Block 3 (Cardiovascular-I + Respiratory-I)

The examination in Block 3 shall be as follows: -

- I. One written paper of **140** marks having two parts:
 - i. Part I shall have ninety (90) Multiple Choice Questions (MCQs) of total 90 marks (01 mark for each MCQ) and the time allotted shall be 95 minutes. There will be no negative marking.
 - ii. Part II shall have ten (10) Structured Essay Questions (SEQs) of a total **50** marks (05 marks for each SEQ) and the timeallotted shall be **100** minutes.
- II. The "Oral/Practical/Clinical" examination shall have **140** marks in total.
- III. The duration of each 'Oral/Practical/Clinical' examination will be 100 minutes. Time for each OSPE. OSCE and OSVE stations will be six (06) minutes
- IV. The continuous internal assessment through the 'Block Examination', conducted by the college of enrollment shall **carry 70 marks**, i.e., 20% of the total allocated marks (**350**) for the block. The scorewill be equally distributed to the "Written" and "Oral/Practical/Clinical" Examinations.

D. Block 4 (Gastrointestinal & Nutrition-I + Renal-I)

The examination in Block 4 shall be as follows: -

- I. One written paper of **140** marks having two parts:
 - i. Part I shall have ninety Multiple Choice Questions (MCQs) of a total 90 marks (01 mark for each MCQ) and the time allotted shall be 95 minutes. There will be no negative marking.
 - ii. Part II shall have ten Structured Essay Questions (SEQs) of a total **50** marks (05 marks for each SEQ) and the timeallotted shall be **100** minutes.
- II. "Oral/Practical/Clinical" examination shall have 140 marks in total.
- III. The duration of each 'Oral/Practical/Clinical' examination will be 100 minutes. Time for each OSPE. OSCE and OSVE stations will be six (06) minutes
- IV. The continuous internal assessment through 'Block Examination', conducted by the college of enrollment shall carry **70** marks, i.e., 20% of the total allocated marks (**350**) for the block. The scorewill be equally distributed to the Written and 'Oral/Practical/Clinical' Examinations.

E. Block 5 (Endocrinology & Reproduction-I + Head & Neck, Special Senses)

The examination in Block 5 shall be as follows: -

I. One written paper of **140** marks having two parts:

5. 14 8 C

- i. Part-I shall have ninety (90) Multiple Choice Questions (MCQs) of total **90** marks (01 mark for each MCQ) and the time allotted shall be **95** minutes. There will be no negative marking.
- ii. Part-II shall have ten (10) Structured Essay Questions (SEQs) of total **50** marks (05 marks for each SEQ) and the timeallotted shall be **100** minutes.
- II. "Oral/Practical/Clinical" examination shall have 140 marks in total.

- III. The duration of each "Oral/Practical/Clinical" examination will be 100 minutes. Time for each OSPE, OSCE and OSVE stations will be six (06) minutes
- IV. The continuous internal assessment through 'Block Examination', conducted by the college of enrollment shall **carry 70 marks**, i.e., 20% of the total allocated marks (**350**) for the block. The score will be equally distributed to the Written and "Oral/Practical/Clinical" Examinations.

F. Block 6 (Neurosciences-I + Inflammation)

The examination in Block 6 shall be as follows: -

- I. One written paper of **140** marks having two parts:
 - i. Part I shall have ninety (90) Multiple Choice Questions (MCQs) of a total of **90** marks (01 mark for each MCQ) and the time allotted shall be **95** minutes. There will be no negative marking.
 - ii. Part II shall have ten (10) Structured Essay Questions (SEQs) of a total of **50** marks (05 marks for each SEQ) and the timeallotted shall be **100** minutes.
- II. The "Oral/Practical/Clinical" examination shall have **140** marks in total.
- III. The duration of each 'Oral/Practical/Clinical' examination will be 100 minutes. Time for each OSPE, OSCE and OSVE stations will be six (06) minutes
- IV. The continuous internal assessment through the 'Block Examination', conducted by the college of enrollment shall carry **70** marks, i.e., 20% of the total allocated marks (**350**) for the block. The score will be equally distributed to the "Written" and "Oral/Practical/Clinical" Examinations.

G. ISLAMIC STUDIES/CIVICS AND PAKISTAN STUDIES

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

- I. One written paper of 100 marks in Islamic Studies/ Civics and Pakistan Studies having two components:
 - The Islamic Studies/Civics component having total 60 marks. There will be three (3) Long Essay Questions (LEQs) to be attempted out of five (5), having 20 marks each.
 - ii. Pakistan Studies component having total 40 marks. There will be two (2) Long Essay Questions (LEQs) to be attempted out of four (4), having 20 marks each.

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

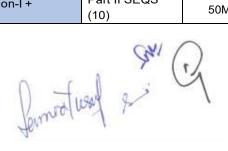
11.The marks distribution in each subject is given in Table 1:

F. 14 CM & CA



Table 1

| | | YEAR- | | | | |
|-------------------------------------|-------------------------------|----------|-------------------------------|-----------------------------|-------------------------|-------|
| Subject | The | ory | P | ractical | | Total |
| Block 1 Modules (Foundation-I + | Part I MCQs (90) | 90 Marks | Practical _ /Clinical | 011 OSPE 88 02 OSCE 10 | | |
| Hematopoietic and Lymphatic) | Part II SEQS (10) | 50 Marks | Examination | 03 OSVE | 42 | 350 |
| | Internal Assessment 10% | 35 Marks | Internal Assessment 10% | 35 Marks | | |
| | Total | 175 | Total | 175 | | |
| Block 2 Modules | Part I MCQs (90) | 90 Marks | Practical /Clinical | 11 OSPE | Marks 88 10 | |
| (Musculoskeletal & Locomotion-I) | Part II SEQS (10) | 50 Marks | Examination | 02 OSCE 03 OSVE | 42 | 350 |
| | Internal Assessment 10% | 35 Marks | Internal Assessment 10% | 35 Mark | 35 Marks | |
| | Total | 175 | Total | 175 | | |
| Block 3 Modules | Part I MCQs (90) | 90 Marks | Practical /Clinical | Marks 11 OSPE 88 02 OSCE 10 | | |
| (Cardiovascular-I & Respiratory-I) | | 50 Marks | Examination | 03 OSVE | 42 | 350 |
| | Internal Assessment 10% | 35 Marks | Internal Assessment 10% | 35 Marks | | |
| | Total | 175 | Total | 175 | | |
| | | | | Total Mark | (S: | 1050 |
| Disab 4 | 1 | YEAR | -2 | | | |
| Modules | Part I MCQs (90) | 90 Marks | Practical /Clinical | 11 OSPE | Marks 88 | |
| (GIT & Nutrition-I + Renal-I) | Part II SEQS (10) | 50 Marks | Examination | 02 OSCE 03 OSVE | 10 42 | 350 |
| | Internal Assessment 10% | 35 Marks | Internal Assessment 10% | 35 Mark | s | |
| | Total | 175 | Total | 175 | | |
| Block 5 Modules | Part I MCQs (90) | 90Marks | Practical /Clinical | 11 OSPE | Marks 88 10 42 | |
| (Endocrinology & Reproduction-I + | Part II SEQS (10) | 50Marks | Examination | 02 OSCE 03 OSVE | | 350 |







| Head& Neck, Special Senses) | Assessment Ass 10% 10% | | Internal Assessment 10% | 35 Ma | arks | |
|---|---|----------------------------------|-------------------------------|----------|-------|------|
| | Total | 175 | Total | 175 | | |
| Block 6 Modules (Neurosciences-I + Inflammation) | Part I MCQs (90) Part II SEQS (10) Internal Assessment | 90 Marks 50 Marks 35 Marks | Practical | | 350 | |
| | Total | 175 | Total 17 | | 5 | |
| | | ı | | Total Ma | arks: | 1050 |
| | I | | | 1 | | |
| Jalamia Chudiaa/ | Islamic Studies/ 3 LEQs of | Civics f 20 marks each | | 60 Marks | | |
| Islamic Studies/ Civics and PakistanStudies | Pakistan Studies 2 LEQs of | s f 20 marks each | | 40 | Marks | 100* |
| | | | Total | 10 | 0 | |

- 12. No grace marks shall be allowed in any examination or practical under any guise or name.
- **13.** At least 25% MCQs & 25% SEQs shall be based on applied/clinical/case scenario to assess high order thinking in the papers set for the students of First and second Professional MBBS Examinations.



Regulations

- 1. Professional examination shall be open to any student who: -
 - has been enrolled/registered and completed one academic year preceding the concerned professional examination in a constituent/affiliated college of the University.
 - b. has his/her name submitted to the Controller of Examinations, for the purpose of examination, by the Principal of the college in which he / she is enrolled & is eligible as per all prerequisites of the examination.
 - c. has his/her marks of internal assessment in all the Blocks sent to the Controller of Examinations by the Principal of the college along with the admission form.
 - d. produces the following certificates duly verified by the principal of his / her college:
 - (i) of good character;
 - (ii) of having attended not less than cumulative 85% of the full course of lectures delivered and practical conducted in the particular academic session, while maintaining 75 % attendance in each block,
 - (iii) Certificate of having appeared at the Block Examinations conducted by the college of enrolment with at least 55 % cumulative percentage in aggregate of blocks 1,2 and 3 for the 1st Year and 4,5, and 6 for the Second year;
 - (iv) Candidates falling short of block/s attendance shall not be admitted to the annual examination unless they take remedial classes to complete the requirement.
- 2. The minimum number of marks required to pass the professional examination for each paper shall be fifty-five percent (55%) in Written and fifty-five percent (55%) in the 'Oral/Practical/Clinical' examinations and fifty-five percent (55%) in aggregate, independently and concomitantly, at one and the same time.
- 3. Candidates who secure eighty five percent (85%) or above marks in any of the papers shall be declared to have passed "with distinction" in that Block, subject to having at least 80 % marks in the Written component of that paper, concomitantly. However, no candidate shall be declared to have passed "with distinction" in any paper, who does not pass in all the papers of the Professional Examination as a whole at one and the same time,
- 4. A candidate failing in one or more paper of the annual examination shall be provisionally allowed to join the next professional class till the commencement of supplementary examinations. Under no circumstances, a candidate shall be promoted to the next professional class till he / she has passed all the papers in the preceding professional examination.

5. If a student appears in the supplementary examination for the first time as he/she did

L. Landwed 9-1

gus N

notappear in the annual examination because of any reason and fails in any paper in the Supplementary Examination, he/she will be detained in the same class and will not be promoted to next class.

- **6.** The colleges may arrange remedial classes and one re-sit for each block examination after approval from the Competent Authority.
- 7. The remedial classes and re-sit examination can be conducted during summer vacation/weekends, before or during preparatory leave, for the concerned professional examination, subject to the following conditions:
 - i. At the completion of each block, the principals of the colleges shall submit a detailed report to the university, including cases of students with short attendance, poor performance/absence in the block examination along with the reasons and evidence for the same, proposed schedule for remedial classes and re-sit examination.
 - ii. Competent Authority UHS will have the cause and the submitted evidence evaluated and documented, before permitting the colleges to arrange remedial classes and re-sit examination at the concerned block. No college is allowed to conduct remedial classes or re-sit examination without prior approval of the competent authority.
 - iii. The students can appear in remedial classes / re-sit of a block examination, However, conduct of remedial classes shall be permitted only in the cases of students, who shall have attended at least 50 % of total attendance of the concerned block in the first instance.
 - a. However, in special circumstances a student can be allowed to attend the 'remedial classes' for a certain block, with the permission of the Competent Authority, to complete his/her requirement of attendance, even if the block attendance is less than 50%. In such cases, the evidence of reason will be provided by the college after the Principal has endorsed the case.
 - b. The students who have attained a cumulative attendance of 85% directly or with remedial classes, can appear in the 'annual' professional examination.
 - c. The valid reasons for short attendance in a block or absence from a block examination may include major illness/accident/surgery of the student or sickness / death of an immediate relative/being afflicted by a natural/manmade calamity or disaster or detained students (missed the first block of the year) or UHS permitted late admission students
- 8. The application for admission of each candidate for examination shall be submitted to the Controller of Examination, through the Principal of the College, in a prescribed format, as per notified schedule, accompanied by the prescribed fee.
- 9. The marks of internal assessment through block/s exam and attendance shall be submitted to Controller of Examinations three times, within two weeks of completion of each block examination.
- 10. At the end of each block, the colleges are required to submit question papers and keys for the block examination, internal assessment marks and attendance record to the

I. Compress Sin

ge V

Department of Examinations UHS. Further, parent-teacher meetings shall be arranged by the colleges after every block examination to share feedback on the progress of students with their parents. Minutes of parent teacher meetings shall be submitted to the Department of Medical Education UHS.

- 11. It is emphasized that fresh internal assessment or a revision of assessment for supplementary examination shall not be permissible. However, a revised internal assessment for the detained students can be submitted. The internal assessment award in a particular year will not be decreased subsequently detrimental to the detainee candidate. A proper record of the continuous internal assessment shall be maintained by the concerned department/s in the colleges.
- 12. The candidates shall pay their fee through the Principal of their respective Colleges who shall forward a bank draft / pay order / crossed cheque in favor of Treasurer, University of Health Sciences Lahore, along with their Admission Forms.
- 13. Only one annual and one supplementary of First and Second Professional MBBS Examinations shall be allowed in a particular academic session. In exceptional situations, i.e., national calamities, war or loss of solved answer books in case of accident, special examination may be arranged after having observed due process of law. This will require permission of relevant authorities, i.e., Syndicate and Board of Governors.
- **14**. The internal assessment will be sent according to the following scheme:

Internal Assessment Theory

| | Scoring Parameter | Marks out of 20% | Marks Distribution |
|---|---|---|--|
| 1 | Attendance in Lectures | 85-90%=1% , > 90%=2% Remedial classes – re-sit examination allowed only after case endorsed and submitted by the college Principal and approval given by the Competent Authority . However, no marks given Remedial classes – re-sit examination allowed only in genuine cases after approval from Competent Authority . However, no marks given | 85-90%= 01 mark > 90%= 02 marks |
| 2 | Block Examination | 15% | 22 |
| 3 | Continuous Internal Assessment/Class Quiz/Class participation/ Professional Behaviour/ Ethical practices/ Leadership traits/ Module Exam Discipline/Punctuality | 3% | 06 |

Internal Assessment Practical & Behavioral

| | | Scoring Parameter | Marks out of 20% | Marks Distribution |
|---|------|---------------------------------------|---|--|
| | | | 85-90%=1% , > 90%=2% | |
| | 1 22 | Attendance in Practicals & Rotations | Remedial classes – re-sit examination allowed only after case endorsed and submitted by the college Principal and approval given by the Competent Authority . However, no marks given Remedial classes – re-sit examination allowed only in genuine cases after approval from Competent Authority . However, no marks given | 85-90%= 01 mark > 90%= 02 marks |
| | 2 | Block Examination (OSPE/OSCE/OSVE) | 15% | 26 |
| Ī | 3 | CFRC Log Book / PERLs Portfolio | 04% | 07 |

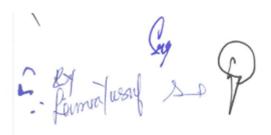




MBBS 1st Professional

| | | 1 | Written Exar | n | Oral/Practical/Clinical Exam | | | |
|----------------------|--|--------------------|-------------------------|-------|---------------------------------------|---------------------------------------|--|-------|
| Theme | Subject | MCQ (1 mark) | SEQ (5 mark each) | Marks | OSPE (8 marks each observed) | OSCE (5 marks each observed) | OSVE (14 marks each observed) | Marks |
| Normal Structure | Anatomy applied/clinical | 20 | 04 | 40 | 04 | - | 01 | 46 |
| Normal Function | Physiology applied/clinical | 22 | 03 | 37 | 03 | - | 01 | 38 |
| Normal Function | Biochemistry applied/clinical | 24 | 02 | 34 | 02 | - | 01 | 30 |
| Disease Burden & | Community Medicine & Public Health | 06 | - | 06 | - | - | - | |
| Prevention | Behavioral Sciences | 05 | - | 05 | - | - | - | |
| Pathophysiology & | Pathology | 80 | 01 | 13 | 1 | - | - | 8 |
| pharmacotherapeutics | Pharmacology | 05 | - | 05 | 1 | - | - | 8 |
| CFRC | CF-I | - | - | - | - | 01 | - | 05 |
| PERLs | PERLs-I | - | - | - | - | 01 | - | 05 |
| Total | • | 90 | 10x5=50 | 140 | 11 stations x 08 = 88 | 02 stations x 05 = 10 | 03 stations x 14=42 | 140 |

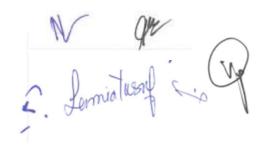






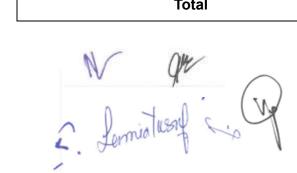
MBBS 1st Professional

| | | ' | Written Exar | n | Oral/Practical/Clinical Exam | | | |
|----------------------|--|--------------------|-------------------------|-------|---------------------------------------|---------------------------------------|--|-------|
| Theme | Subject | MCQ (1 mark) | SEQ (5 mark each) | Marks | OSPE (8 marks each observed) | OSCE (5 marks each observed) | OSVE (14 marks each observed) | Marks |
| Normal Structure | Anatomy applied/clinical | 35 | 04 | 55 | 05 | - | 01 | 54 |
| Normal Function | Physiology applied/clinical | 17 | 02 | 27 | 02 | - | 01 | 30 |
| Normal Function | Biochemistry applied/clinical | 13 | 02 | 23 | 02 | - | 01 | 30 |
| Disease Burden & | Community Medicine & Public Health | 06 | - | 06 | - | - | - | - |
| Prevention | Behavioral Sciences | 04 | - | 04 | - | - | - | - |
| Pathophysiology & | Pathology | 10 | 01 | 15 | 01 | - | - | 08 |
| pharmacotherapeutics | Pharmacology | 05 | 01 | 10 | 01 | - | - | 08 |
| CFRC | CF-I | - | - | - | - | 01 | - | 05 |
| PERLs | PERLs-I | - | - | - | - | 01 | - | 05 |
| Total | | 90 | 10x5=50 | 140 | 11 stations x 08 = 88 | 02 stations x 05 = 10 | 03 stations x 14=42 | 140 |



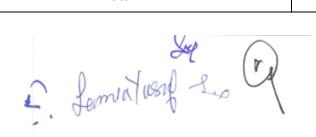
MBBS 1st Professional

| | | | Written Exar | n | (| Oral/Practical/Cl | inical Exam | |
|-----------------------------|--|--------------------|-------------------------|-------|---------------------------------------|---------------------------------------|--|-------|
| Theme | Subject | MCQ (1 mark) | SEQ (5 mark each) | Marks | OSPE (8 marks each observed) | OSCE (5 marks each observed) | OSVE (14 marks each observed) | Marks |
| Normal Structure | Anatomy applied/clinical | 17 | 03 | 32 | 03 | - | 01 | 38 |
| | Physiology applied/clinical | 31 | 04 | 51 | 04 | - | 01 | 46 |
| Normal Function | Biochemistry applied/clinical | 19 | 02 | 29 | 02 | - | 01 | 30 |
| Disease Burden & Prevention | Community Medicine & Public Health | 06 | - | 06 | - | - | - | - |
| | Behavioral Sciences | 02 | - | 02 | - | - | - | - |
| Pathophysiology & | Pathology | 10 | 01 | 15 | 01 | - | - | 08 |
| pharmacotherapeutics | Pharmacology | 05 | - | 05 | 01 | - | - | 08 |
| CFRC | CF-I | - | - | - | - | 01 | - | 05 |
| PERLs | PERLs-I | - | - | - | - | 01 | - | 05 |
| Total | | 90 | 10x5=50 | 140 | 011 stations x 08 = 88 | 02 stations x 05 = 10 | 03 stations x 14=42 | 140 |



MBBS 2nd Professional

| | | ' | Written Exar | n | Oral/Practical/Clinical Exam | | | |
|-----------------------------|--|--------------------|-------------------------|-------|---------------------------------------|---------------------------------------|--|-------|
| Theme | Subject | MCQ (1 mark) | SEQ (5 mark each) | Marks | OSPE (8 marks each observed) | OSCE (5 marks each observed) | OSVE (14 marks each observed) | Marks |
| Normal Structure | Anatomy applied/clinical | 23 | 03 | 38 | 04 | - | 01 | 46 |
| | Physiology applied/clinical | 18 | 02 | 28 | 03 | - | 01 | 38 |
| Normal Function | Biochemistry applied/clinical | 22 | 03 | 37 | 02 | - | 01 | 30 |
| Disease Burden & Prevention | Community Medicine & Public Health | 06 | - | 06 | - | - | - | - |
| | Behavioral Sciences | 05 | - | 05 | - | - | - | - |
| Pathophysiology & | Pathology | 11 | 01 | 16 | 01 | 1 | - | 08 |
| pharmacotherapeutics | Pharmacology | 05 | 01 | 10 | 01 | 1 | - | 08 |
| CFRC | CF-2 | - | - | - | - | 01 | - | 05 |
| PERLs | PERLs-2 | - | - | - | - | 01 | - | 05 |
| Total | | 90 | 10x5=50 | 140 | 11 stations x 08 = 88 | 02 stations x 05 = 10 | 03 stations x 14=42 | 140 |

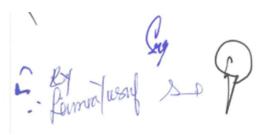




MBBS 2nd Professional

| | | , | Written Exar | n | (| Oral/Practical/Cl | inical Exam | |
|-----------------------------|--|--------------------|-------------------------|-------|---------------------------------------|---------------------------------------|--|-------|
| Theme | Subject | MCQ (1 mark) | SEQ (5 mark each) | Marks | OSPE (8 marks each observed) | OSCE (5 marks each observed) | OSVE (14 marks each observed) | Marks |
| Normal Structure | Anatomy applied/clinical | 30 | 04 | 50 | 04 | - | 01 | 46 |
| | Physiology applied/clinical | 20 | 04 | 40 | 03 | - | 01 | 38 |
| Normal Function | Biochemistry applied/clinical | 14 | 01 | 19 | 01 | - | 01 | 22 |
| Disease Burden & Prevention | Community Medicine & Public Health | 07 | - | 07 | - | - | - | 0 |
| | Behavioral Sciences | 04 | - | 04 | - | - | - | 0 |
| Pathophysiology & | Pathology | 13 | 01 | 18 | 2 | - | - | 16 |
| pharmacotherapeutics | Pharmacology | 02 | - | 02 | 1 | - | - | 08 |
| CFRC | CF-2 | - | - | - | - | 01 | - | 05 |
| PERLs | PERLs-2 | - | - | - | - | 01 | - | 05 |
| Total | | 90 | 10x5=50 | 140 | 11 stations x 08 = 88 | 02 stations x 05 = 10 | 03 stations x 14=42 | 140 |

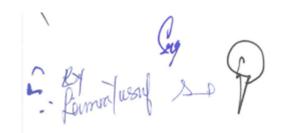




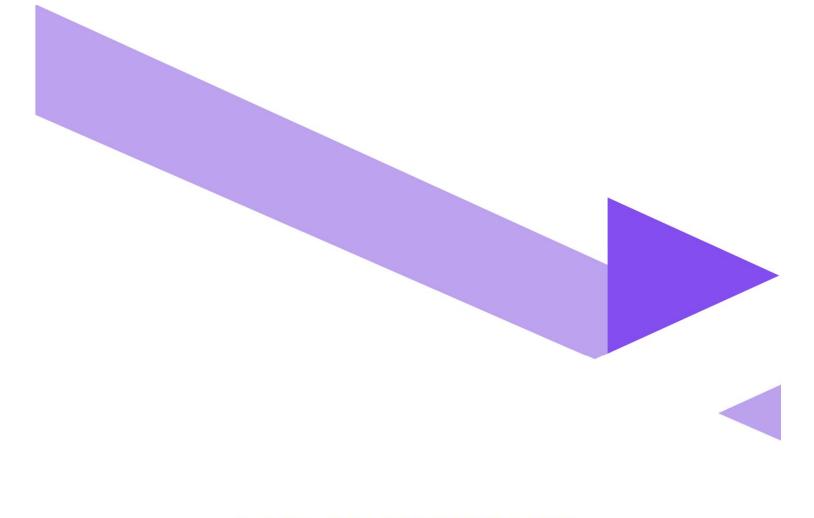
MBBS 2nd Professional

| Theme | Subject | Written Exam | | | Oral/Practical/Clinical Exam | | | |
|--|--|--------------------|-------------------------|-------|---------------------------------------|---------------------------------------|--|-------|
| | | MCQ (1 mark) | SEQ (5 mark each) | Marks | OSPE (8 marks each observed) | OSCE (5 marks each observed) | OSVE (14 marks each observed) | Marks |
| Normal Structure | Anatomy applied/clinical | 24 | 03 | 39 | 03 | - | 01 | 38 |
| Normal Function | Physiology applied/clinical | 27 | 04 | 47 | 04 | - | 01 | 46 |
| | Biochemistry applied/clinical | 12 | 02 | 22 | 01 | - | 01 | 22 |
| Disease Burden & Prevention | Community Medicine & Public Health | 04 | - | 04 | - | - | - | - |
| | Behavioral Sciences | 03 | - | 03 | - | - | - | - |
| Pathophysiology & pharmacotherapeutics | Pathology | 12 | 01 | 17 | 02 | - | - | 16 |
| | Pharmacology | 08 | - | 08 | 01 | - | 1 | 08 |
| CFRC | CF-2 | - | - | - | - | 01 | - | 05 |
| PERLs | PERLs-2 | - | - | - | - | 01 | - | 05 |
| Total | | 90 | 10x5=50 | 140 | 11 stations x 08 = 88 | 02 stations x 05 = 10 | 03 stations x 14=42 | 140 |



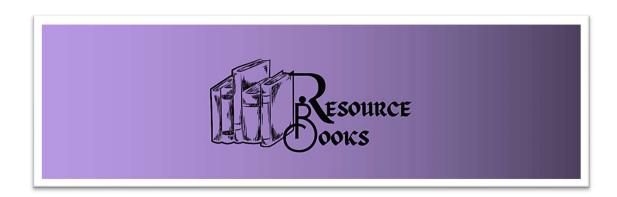






LIST OF RESOURCES





Anatomy

- Snell's Clinical Anatomy 10th ed.
- Langman's Medical Embryology 12th ed
- Medical Histology by Laiq Hussain Siddiqui 8th edition.
- General Anatomy by Laiq Hussain Siddiqui 6th edition.

Biochemistry

- Harpers illustrated Biochemistry (latest edition). Rodwell.V.W MCGrawHill publishers.
- Lippincott illustrated Review (latest edition). Kluwer.W.
- Essentials of Medical Biochemistry vol 1&2 by Mushtaq Ahmed.

Pathology

- Vinary Kumar, Abul K. Abbas and Nelson Fausto Robbins and Cotran, Pathologic basis of disease. WB Saunders.
- Robbins and Cotran Pathological Basis of Disease. Kumar, V., Abbas, A. and Aster, J. Latest Edition
- Richard Mitchall, Vinary Kumar, Abul K. Abbas and Nelson Fausto Robbins and Cotran, Pocket Companion to Pathologic basis of diseases, Saunder Harcourt.
- Walter and Israel. General Pathology. Churchill Livingstone.
- Robbins & Kumar, Medical Microbiology and Immunology Levinson.

General Medicine

- Principles and Practice of Medicine by Davidson (latest edition)
- Clinical Medicine by Parveen J Kumar & Michaell Clark
- Oxford Handbook of Medicine
- Macleod's Clinical Examination book
- Medicine and Toxicology by C.K. Parikh
- Hutchison's Clinical Methods by Michael Swash. 21st edition

Pharmacology And Therapeutics

- Katzung and Trevor's Pharmacology: Examination and Board Review- 15th Edition
- Basic and Clinical Pharmacology by Bertram G Katzung (case scenarios only) 16th Edition-
- Current Medical Diagnosis and Treatment- reference book –Edition-2024
- Basic and Clinical Pharmacology by Bertram G Katzung (case scenarios only) 15th Edition

- Basic and Clinical Pharmacology by Katzung, McGraw-Hill. 16th Edition.
- Pharmacology by Champe and Harvey, Lippincott Williams & Wilkins 8th Edition.
- Katzung Basic and Clinical pharmacology, Lippincot Illustated reviews.
- Clinical Pathology Interpretations by A. H. Nagi

Behavioural Sciences

- Handbook of Behavioural Sciences by Prof. Mowadat H.Rana, 3rd Edition
- Medical and Psychosocial aspects of chronic illness and disability 6th edition by Donna R.Falvo and Beverely E.Holland,
- Integrating behavioral sciences in healthcare, Asma Humayun, 2003, 1st edition

Community medicine

- Parks Textbook of Preventive and Social Medicine. K. Park
- Public Health and Community Medicine by Ilyas Ansari
- MSDS manual of Government of Punjab
- Text book of Community Medicine by Park J E. Latest Edition

Surgery

- Bailey & Love's Short Practice of Surgery (latest edition)
- Browse's Introduction to the Symptoms & Signs of Surgical Disease 4th Edition
- Bailey & Love Short Practice of Surgery, Clinical Surgery pearls by Dayananda Babu RACS for Surgical Audits.

Patient Safety

• Patient Safety Currciulum Guide: Multi Professional Guide

Microbiology

- Levinson's review of Microbiology
- Medical Microbiology and Immunology by Levinson and Jawetz,

Pediatrics Medicine

- Nelson Textbook of Pediatrics
- Basis of Pediatrics by Pervez Akbar Khan

Gynecology

• Gynecology by Ten Teachers

Infection Control

• National Guidelines Infection Prevention and control, National Institute of Health Pakistan

Biosafety

- Biosafety in Microbiological and Biomedical Laboratories, 6th Edition (CDC, USA)
- WHO Laboratory Biosafety Manual, Fourth Edition, And Associated Monographs
- WHO safe management of wastes from healthcare facilities chapter 7 -8 page 77-99, 105-125)

Family medicine

• Oxford Handbook of General Practice, 5th Edition

Orthopedics

Apley and Solomon's System of Orthopaedics and Trauma by Ashley Blom (Editor)

Rheumatology

- Davidson's Principles and Practice of Medicine
- Clinical Medicine by Parveen J Kumar & Michaell, Clark
- Hutchison's Clinical Methods by Michael Swash

Radiology

 Aids to Radiological Differential Diagnosis by Chapman S. and Nakielny R. 4th edition. Elsevier Science Limited; 2003.

Forensic Medicine

- Knight's Forensic Pathology by Barnard Knight 3rd edition
- G. Principles and Practice of Forensic Medicine by Prof. NasibR. Awan,2nd edition
- Forensic DNA Typing 2nd Edition, Author: John M. Butler
- Parikh's Text book of Medical Jurisprudence, Forensic Medicine and Toxicology by C.K. Parikh 6th Ed., CBS Publisher.
- Gun Shot Wounds 2nd edition by V.J.Deimaio
- Knight B. Simpson's Forensic Medicine.
- Knight and Pekka. Principles of Forensic Medicine

Forensic Pathology

 Forensic pathology 2nd edition by V.J.Deimaio CRC press Boca Raton London New York Washington DC

Toxicology

• Principles of clinical toxicology 3rd edition Thomas . Gossel CRC press Taylor and Francis group

Forensic Sciences

- Fundamentals of Forensic Science- 3rd Edition: Author: Max M Houck, Jay A. Siegel
- Text Book of forensic medicine and toxicology Principles and Practice 5th edition by Krishan Vig

Biomedical ethics

• Principles of Biomedical ethics, 8th edition by Tom. L. Beauchamp, James F. Childress.

Evidence Based Medicine

- Databases for the latest articles/manuscripts
- Clinical Practice Guidelines- local and international (within last 3 years)
- Books (Latest edition-within last 5 years)

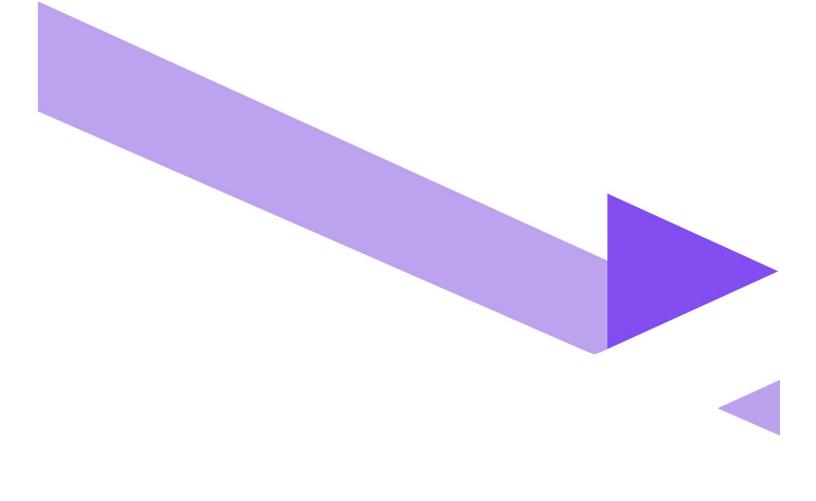
Pediatrics

• Nelson's Book of Pediatric 22 edition Illustrated book of Pediatrics, Pervaiz Akbar textbook peads medicine

Islamiyat

- Standard Islamiyat (compulsory) for B.A, BSc, MA, MSc, MBBS by Prof M Sharif Islahi.
- Ilmi Islamiyat(compulsory) for BA, BSc & equivalent.





GUIDELINES FOR INSTITUTIONAL STUDY GUIDES



Guidelines for Development of Study Guide for the Faculty & Students

Institutions are advised to develop one study guide for each module of the curriculum.

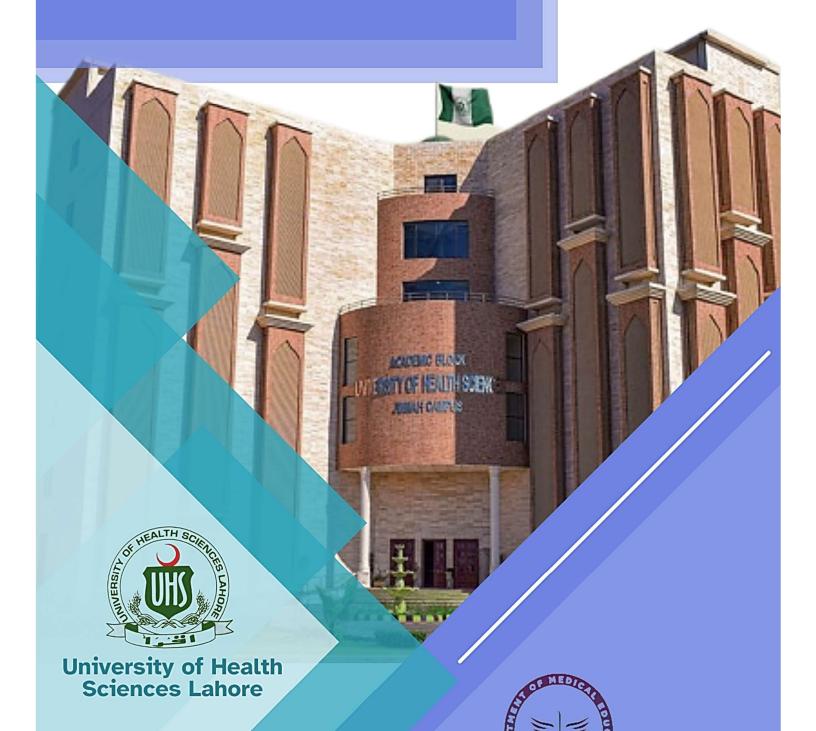
The study guide should have:

- 1. Title page having the name of the module and the year it is being taught.
- 2. Table of contents
- 3. List of abbreviation
- **4. Curriculum frame work** This is a comprehensive statement that provides an overview of how various subjects are integrated into different modules on a yearly basis, and it is applicable to all
- 5. Introduction to the study guide The introduction of the study guide should clearly state its purpose and outline the information it conveys, specifically addressing the following questions: What is the main objective of the study guide? What message does it aim to convey? Additionally, it should specify the intended audience for whom the guide was developed
- 6. Introduction to module In the introduction to the module, students are informed of the course name, year number, and the duration of the module. The module is focused on specific systems, such as the cardiovascular system or respiratory system. Students are informed of the relevance of these topics to real-life scenarios, emphasizing the importance of the knowledge they will gain and about end of module assessment.
- 7. Module committee the modular committee includes the coordinator, co-coordinator, and departmental representatives from areas such as internal medicine, surgery, pediatrics, and medical education. Together, they work to create an integrated and current curriculum that supports the educational objectives and prepares students for healthcare careers.
- **8.** Curriculum map of the module (optional) to give a clear overview of the learning goals, progression, and connections between subjects in a module.
- 9. Time table
- 10. Distribution and duration of teaching activities amongst different disciplines

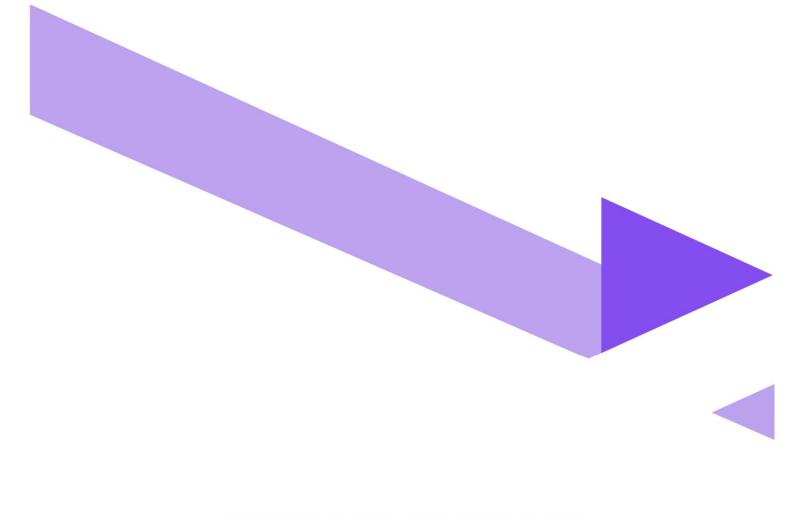
Tabulate the total contact hour for each such subject and their further distribution for different teaching activities

- **11.The modular outcomes** to help students understand what they will learn by the end of a module, it is important to provide a list of the specific outcomes that will be covered in a modular format.
- **12. The learning objectives** of the module distributed according to subject and theme. The provision of learning objectives to students alongside modular outcomes serves to define the particular abilities or information that they are expected to gain, as well as to provide guidance on the goals and trajectory of their learning.
- **13. Operational definitions** of the different teaching activities aligned with those published in the curriculum.
- 14. The assessment section needs to provide a clear description of the following.
 - Write the assessment policy regarding internal assessment and professional examination in terms of format and regulation.
 - Provide the assessment schedule
 - Mention the assessment tools that are going to be used for the formative and summative assessment. These assessment tools should be the recommended
 - Provide the operational definitions for the assessment instruments in alignment with those published in the curriculum.
 - Sample questions from each category of assessment tool (optional) so that student may understand the format of exam (optional)
- 15. The books and reading resources for every subject should be mentioned.

Innovating & Strategizing Healthcare Academia







FEEDBACK PROFORMA

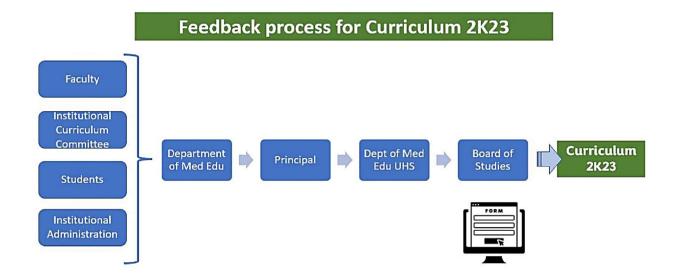


Program Evaluation & Feedback

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

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

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



Curriculum Feedback/Suggestion Proforma



| Name of the respondent / applicant |
|---|
| |
| Title of the respondent / applicant (student/faculty member/ Principal) |
| |
| Deviatuation Number (on one official identification number) |
| Registration Number (or any official identification number) |
| |
| Name of Department (in case of students mention year of entry) |
| |
| Name of Institution |
| |
| Observation / Impediment to training identified |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |

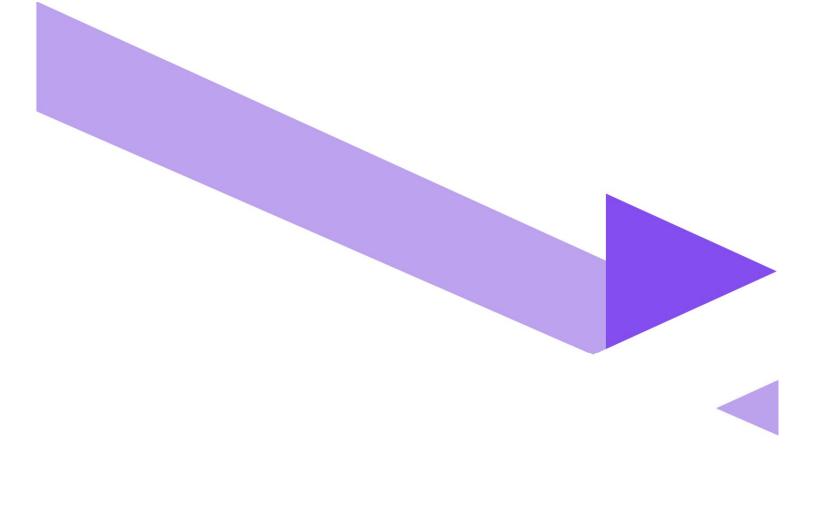
| Area of observation / Impediment (content, theme, resources, instructional strategy, timetable, | implementation, |
|---|-----------------|
| assessment, logbooks, clarity of instruction etc.) | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Any recommended solution: | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Sign | ature: |
| | |
| | |
| Name: | |
| | |
| | Date: |
| | |

FOR OFFICE USE

| Remarks by Director Medical Education | | | | |
|---------------------------------------|--|--|--|--|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Signature Director Medical Education: | | | | |
| | | | | |
| Name & Stamp: | | | | |
| | | | | |
| | | | | |
| Date: | | | | |

| Re | Remarks by Principal | | | | | | |
|----|----------------------|--|--|--|--|--|--|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| | Signature: | | |
|---------------|------------|-------|--|
| Name & Stamp: | | | |
| | | Date: | |
| | | | |
| | | | |



LIST OF ANNEXURES



MODULAR INTEGRATED CIRRICULUM 2K23

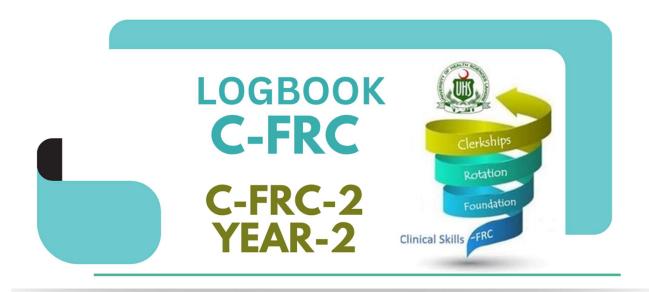
version 3.0



LOGBOOK

CLINICAL-FOUNDATION ROTATION CLERKSHIP

C-FRC



| Table of Contents | | |
|----------------------------------|----------|--|
| Contents | Page No. | |
| List of Abbreviations | 475 | |
| Preamble | 477 | |
| Miller's Pyramid | 478 | |
| GIT & Nutrition-I | 478 | |
| Renal-I | 493 | |
| Endocrinology and Reproduction-I | 500 | |
| Head & Neck, Special Senses | 511 | |
| Neurosciences-I | 519 | |
| Inflammation | 526 | |



| LIST OF ABBREVIATIONS | | | | |
|-----------------------|--|--|--|--|
| Abbreviations | Subjects | | | |
| A | Anatomy | | | |
| Ag | Aging | | | |
| В | Biochemistry | | | |
| BhS | Behavioral sciences | | | |
| С | Civics | | | |
| CM | Community Medicine | | | |
| C-FRC | Clinical-Foundation Rotation Clerkship | | | |
| CV | Cardiovascular | | | |
| EnR | Endocrinology & Reproduction | | | |
| ENT | Ear Nose Throat | | | |
| F | Foundation | | | |
| FM | Forensic Medicine | | | |
| GIT | Gastrointestinal tract | | | |
| GO | Gynecology and Obstetrics | | | |
| HL | Hematopoietic & Lymphatic | | | |
| HNSS | Head & Neck and Special Senses | | | |
| IN | Inflammation | | | |
| M | Medicine | | | |
| MS | Musculoskeletal | | | |
| NS | Neurosciences | | | |
| 0 | Ophthalmology | | | |
| Or | Orientation | | | |
| Р | Physiology | | | |
| Pa | Pathology | | | |
| Pe | Pediatrics | | | |



| PERLs | Professionalism, Ethics, Research, Leadership |
|-------|---|
| Ph | Pharmacology |
| Psy | Psychiatry |
| QI | Quran and Islamiyat |
| R | Renal |
| Ra | Radiology |
| Re | Respiratory |
| S | Surgery |



PREAMBLE

The Aim of Medical training is to deliver the best possible patient care. This is not possible until medical students are holistically trained to deliver standardized patient care, with management and counselling skills. The competencies given by PMDC for a graduating physician include:

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

All the above cannot be accomplished without a robust Clinical clerkship program.

The purpose of this document is to provide an outline to the UHS clinical clerkship program which will serve as a vertically integrated module throughout the five years of medical college, transitioning from Clinical Foundation (CF) in the first two years to Clinical Rotations (CR) in the third and fourth year and finally to a complete clinical clerkship (CC) in final year of MBBS.

Keeping in view the 45 affiliated medical colleges under the umbrella of UHS, we have tried our best to devise a flexible program which colleges can tailor according to their capacities and resources. We are hopeful this innovative new step will lead to standardization of patient care for UHS lead colleges in the best possible way.

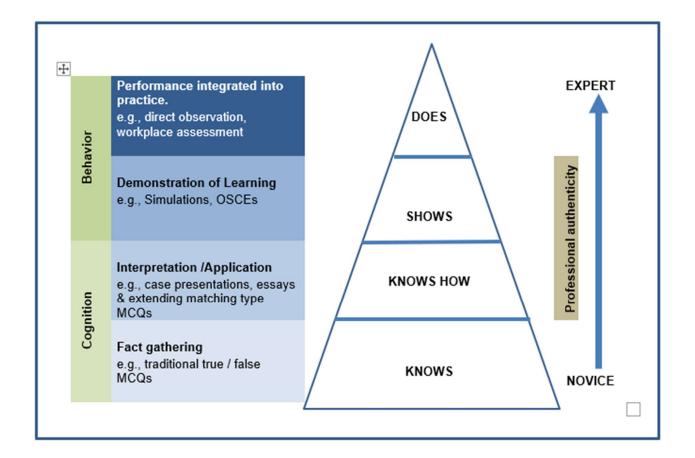
How to use this logbook:

- ❖ Each clinical skill has an entry in this logbook along with the checklist to be filled by the supervisor in the ward.
- Number of entries per skill is also mentioned in the modular study guides.
- The Clinical supervisor must tick all boxes deemed fulfilled and give feedback to the student regarding their performance.

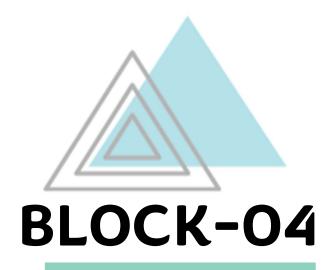


MILLER'S PYRAMID

The basis to assess clinical skills is the Miller's pyramid. Different skills throughout the CFR-C module scale from Knows How (e.g., Interpretation of CXR) to does (administer IM injections etc.).









GIT AND NUTRITION-1 MODULE Miller's Pyramid **Objectives** Skill **Level Reflected** Demonstrate steps of **Abdominal Examination** Shows abdominal examination Demonstrate the procedure of shifting dullness Shows shifting dullness Identify organs on X-ray X-ray Abdomen **Shows** abdomen dehydration Assess infant/young child and explain Dehydration Does procedure of making home

made ORS



Place a "√" in case box if step/task is performed satisfactorily, an "X" if it is not performed satisfactorily, or N/O if not observed.

<u>Satisfactory</u>: Performs the step or task according to the standard procedure or guidelines <u>Unsatisfactory</u>: Unable to perform the step or task according to the standard procedure or guidelines

| Data | Obcomod: | |
|------|-----------|--|
| Date | Observed: | |

| CHECKLIST FOR ABDOMINAL EXAMINATION (Some of the following steps/tasks should be performed simultaneously.) | | CASES linimum 3 Entries) | 3 |
|--|--|--------------------------------|---|
| STEP/TASK | | | |
| 1. Has performed hand washing 2. Introduces himself/herself to patient | | | |
| Explains Procedure and Asks for consent SKILL/ACTIVITY PERFORMED SATISFACTORILY | | | |
| THE PROCEDURE: GENERAL EXAMINATION: Examine the following features to check for any pathology related to the GIT: i. Facies ii. Body build iii. Posture iv. Color of skin v. Vital signs vi. Head | | | |
| vii. Neck viii. Upper limbs | | | |



- ix. Lower limbs
- x. Chest and heart
- xi. Spine

INSPECTION OF THE ABDOMEN:

- Position the patient in the supine position and drape the patient, exposing only the areas needed for assessment.
- Inspect the abdomen for shape/contour, symmetry, pigmentation/colour, lesions/scars, pulsation, and visible peristalsis
- 3. Examination was carried out in good light, looking from either end of the bed from the side, and finally tangentially
- 4. Looked for:
- i. shape (contour)
- ii. sub costal angle
- iii. epigastric pulsation
- iv. divarication of recti
- v. position of the umbilicus
- vi. hair distribution
- vii. skin(pigmentation, scars)
- viii. dilated veins
- ix. hernia orifices (ask pt to cough)
- x. visible movements
- xi. genitalia
- xii. back (all back exam at the end)
- 5. Type of breathing (ask the patient to take deep breath)

PALPATION:

- 1. Stand by the right side of the patient
- 2. Relax the abdominal wall by asking the patient to flex his hip and knees, and ask him to open the mouth and breathe quietly in and out.
- 3. Make sure that his/her hand is warm
- 4. If a painful area or mass is present, palpate that area at the end.
- 5. Started by light palpation (superficial palpation):



 Tenderness: Ask the patient to locate the site of tenderness. If he/she is not able to; ask them to take a deep breath or to cough.

Elicit Rebound tenderness

ii. Differentiate rigidity from guarding: rigidity is generally a sign of peritoneal irritation, it is present throughout the abdominal wall, the wall feels stiff and board like to touch.

Guarding is a protective mechanism usually triggered by touch or patient's anticipation to pain.

iii. (Swelling: If there is a swelling; - Ask the patient to contract his/her abdominal wall muscles by raising his/her head (to determine if it is intra or extra abdominal swelling)

Notice the swelling mobility with respiration

iv. Hernia orifices: Examine the anatomical sites of hernia for swelling and any expansile impulse with cough.

Elicit deep palpation:

i. Start Palpation of normal solid viscera (the liver, the spleen and the kidneys):

A. Palpation of the liver:

- i. Place hand in the right iliac fossa, (hand may either rest transversely and flat at right angle to the linea semilunaris and parallel to the costal margin, or placed with fingers pointing towards the head of the patient). The other hand is placed in the loin.
- ii. Ask the patient to take a deep breath.
- iii. Keep hand still during inspiration and during expiration slide the hand a little nearer to the right costal margin.

When examining a hepatic swelling record:

- i. The degree of enlargement in a fingerbreadth below the costal margin.
- ii. The character of the edge (sharp or rounded).
- iii. The surface (smooth or nodular)
- iv. The consistency (soft, firm, hard or heterogeneous)
- v. The presence of tenderness
- vi. The degree of movement on respiration.



B. Palpation of the spleen

There are several clinical methods for the detection of an enlarged spleen:

a) The standard method or bimanual examination:

Start palpation from the right iliac fossa with the tips of the examining hand directed towards the left axilla. The left hand is placed over the lateral aspect of the left costal margin, exerting a certain amount of compression. Followed the rules of palpation moving toward the left hypochondrium until feeling the spleen.(If the spleen is not felt, lift the rib cage forwards as the patient inspired).

b) The hooking method:

If the spleen is not felt by the bimanual method, ask the patient to place the fist of the left hand under the lower ribs in order to push the spleen forward. Then stand on the left side of the patients head and place the fingers of both hands over the costal margin. The patient is instructed to take deep breath.

c)The right lateral position:

If the spleen is not felt by the ordinary method ask the patient to turn to his right side and palpate the spleen by insinuating hand below the costal margin and ask the patient to take deep breath till feeling the lower edge of the spleen .

d)Dipping method:

In the presence of tense ascites. Place hand in the left hypochondrium and push the abdominal wall downwards and wait for the return impulse to hand

C). The kidneys:

- a) The right kidney is examined by the left hand behind the patient's right loin (between the last rib and the iliac crest) lift the loin and the kidney forward. Put the right hand on the right lumbar region just above the anterior superior iliac spine and as the patient to take deep breath. During expiration push the right hand deeply but gently and keep it still during inspiration and repeat as patient takes his breath.
- b) The left kidney is examined by the same procedure on the left side by either standing on the patient's left side or by leaning across



the patient, putting the right hand in the left loin and feeling the kidney with the left hand. D). Palpation for other abdominal swellings: Parietal swellings: Swellings of the anterior abdominal wall are differentiated from the intra-abdominal swellings by three signs: i. Relation to the costal margin. ii. Behavior on contraction of the abdomen. iii. Movement with respiration. ❖ If abdomen was tense, started percussion before palpation PERCUSSION: i. Percuss over the whole abdomen and particularly over any masses. ii. light percussion is necessary. iii. Start from resonant to dull in the midline A) Percussion of the liver (span of the liver): i. Determine the upper border of the liver by heavy percussion. (started from the 2nd intercostal space, opposite the sternocostal junction) ii. Percuss down along each interspace and when reaching the liver dullness of the upper border ask the patient to take a deep breath and hold it. Percuss again, and then asked him/her to exhale and re-percuss (tidal percussion). Percuss onto the abdomen until the liver dullness disappeared. iii. Mark the lower border of the liver. iv. Measure the distance between the upper and lower border in the right mid- clavicular line. B) Percussion of the spleen: The three methods for percussion of the spleen (a) Percussion in the right lateral position.

Start at the lower border of pulmonary resonance in the posterior axillary line and carry down obliquely towards the lowest midanterior costal margin.

(b) <u>Percussion in the supine position</u>: start from the right iliac fossa towards the left costal margin then continue to the mid axillary line.



| (c) Percussion of the Traube`s space: | | |
|---|--|--|
| Area defined by the left sixth rib superiorly, the left midaxillary line laterally, and the left costal margin inferiorly. | | |
| C)Percussion of the kidney: | | |
| Percuss the renal angle. | | |
| AUSCULTATION: | | |
| i. Intestinal sounds ii. Bruits iii. Venous hum iv. Succussion splash | | |
| Examination of the back: | | |
| i. Ask the patient to sit ii. Inspect for any swellings, deformities or scars iii. Palpate for edema over the sacrum iv. Palpate for the tenderness in the renal angles, palpate for tenderness over vertebrae v. Auscultate the renal angles for bruit | | |
| SKILL/ACTIVITY PERFORMED SATISFACTORILY | | |
| Signatures of Supervisor | | |



Place a "√" in case box if step/task is performed satisfactorily, an "X" if it is not performed satisfactorily, or N/O if not observed.

<u>Satisfactory</u>: Performs the step or task according to the standard procedure or guidelines <u>Unsatisfactory</u>: Unable to perform the step or task according to the standard procedure or guidelines

| Dato | Observed | I - | |
|------|-----------------|------------|--|
| Date | Observed | | |

| CHECKLIST FOR FLUID THRILL/SHIFTING DULLNESS (Some of the following steps/tasks should be performed simultaneously.) | CASES (Minimum 3 Entries) | |
|---|---------------------------------|--|
| STEP/TASK | | |
| GETTING READY: | | |
| Washed hands/sanitized hands | | |
| 2. Explained procedure to the patient and take consent | | |
| SKILL/ACTIVITY PERFORMED SATISFACTORILY | | |
| The Procedure: | | |
| Percuss from the umbilical region to the patient's left flank. If dullness is noted, this may suggest the presence of ascitic fluid in the flank. Whilst keeping your fingers over the area at which the percussion note became dull, ask the patient to roll onto their right side (towards you for stability). | | |
| Keep the patient on their right side for 30 seconds and then repeat percussion over the same area. | | |
| If ascites is present, the area that was previously dull should now be resonant (i.e. the dullness has shifted). | | |



| SKILL/ACTIVITY PERFORMED SATISFACTORILY | | |
|---|--|--|
| Signatures of Supervisor | | |



Place a "√" in case box if step/task is performed satisfactorily, an "X" if it is not performed satisfactorily, or N/O if not observed.

<u>Satisfactory</u>: Performs the step or task according to the standard procedure or guidelines <u>Unsatisfactory</u>: Unable to perform the step or task according to the standard procedure or guidelines

| Date Observed: | |
|----------------|--|
|----------------|--|

| CHECKLIST FOR X-RAY ABDOMEN (Some of the following steps/tasks should be performed simultaneously.) | CASES (Minimum 2 Entries) | |
|---|---------------------------------|--|
| STEP/TASK | | |
| Patient Information 1. Verify patient identification (name, date of birth). | | |
| 2. Confirm the date and time of the X-ray. | | |
| SKILL/ACTIVITY PERFORMED SATISFACTORILY | | |
| Technical Factors | | |
| 1. Check the X-ray for proper exposure, focus, and positioning. | | |
| 2. Assess the image for any artifacts or technical errors. | | |
| Ensure the correct orientation of the X-ray (anterior-posterior or posteroanterior view). | | |
| SKILL/ACTIVITY PERFORMED SATISFACTORILY | | |
| Procedure: 1. Identify and evaluate the integrity of the bony structures, including the spine, ribs, and pelvic bones. | | |
| 2. Assess the soft tissues, looking for any masses, swellings, or abnormalities. | | |



| ignatures of Supervisor | |
|---|--|
| KILL/ACTIVITY PERFORMED SATISFACTORILY | |
| 11. Abnormalities: identify any abnormalities such as calcification, masses, abnormal densities. | |
| 10. Muscles: examine abdominal wall muscles for symmetry and abnormalities. Fat: assess the distribution and amount of intraabdominal fat. | |
| 9. Vascular structures: Aorta: evaluate the size and course of the abdominal aorta Inferior Vena cava: check the patency and size | |
| 7. Small Bowel: Evaluate for normal loops and check for any signs of obstruction. 8. Colon: Assess the size and contour of the colon. | |
| i. Liver: assess Assess the size, shape, and density of the liver ii. Spleen: Evaluate the size and contours of the spleen iii. Stomach: identify the gastric air bubble and its location iv. Pancreas: look for pancreatic shadow v. Kidneys: identify both kidneys, assess their size, shape and density vi. Bladder: check for presence of urine in bladder | |
| 6. Identify abdominal organs: | |
| 5. Evaluate the cardiac silhouette for size and shape. | |
| 4. Examine the diaphragm for any abnormalities, such as elevation or flattening. | |
| 3. Identify the presence and distribution of gas throughout the abdomen and bowel loops. | |



| Dato | Observed | I - | |
|------|-----------------|------------|--|
| Date | Observed | | |

| CHECKLIST FOR ORS FORMULATION AND DEHYDRATION ASSESSMENT (Some of the following steps/tasks should be performed simultaneously.) | CASES (Minimum 2 Entries) |
|--|---------------------------------|
| STEP/TASK | |
| Introduction 1. Gain consent from parent / child for examination after explaining procedure | |
| 2. Make sure hands are washed and warm | |
| SKILL/ACTIVITY PERFORMED SATISFACTORILY | |
| Procedure: | |
| 3. Ask about diarrhea/vomiting and any reduction in urine output | |
| 4. Inquire about color of urine (darker indicates dehydration) | |
| 5. Look for dry cracked lips, dry mouth | |
| 6. Inspect eyes if they appear sunken (sign of dehydration) | |
| 7. Notice if child is generally irritable/has an altered mental status | |
| 8. Examine for absence of tears | |



| | Check pulse (dehydration results in tachycardia) Skin pinch is assessed by pinching the skin of the abdomen between the thumb and forefinger without twisting. If the skin goes back in <1 second it is normal, if it takes more than that, dehydration is likely | |
|-----|--|--|
| SK | ILL/ACTIVITY PERFORMED SATISFACTORILY | |
| F | ormulation of ORS at home | |
| 1. | Counsel patient regarding rehydration | |
| 2. | Explain the procedure of adding 6 teaspoons levelled of sugar, $\frac{1}{2}$ teaspoon of salt and exact 1 liter of water (Approx. 5 cups of 200 ml) | |
| 3. | Mix the ingredients well and make sure the salt and sugar amount are exact | |
| SKI | ILL/ACTIVITY PERFORMED SATISFACTORILY | |
| Sig | natures of Supervisor | |



| RENAL MODULE | | | | |
|--|------------------|-------------------------------------|--|--|
| Objectives | Skill | Miller's Pyramid Level Reflected | | |
| Detail the steps of urinary catheterization in females | *Catheterization | Knows how | | |
| Detail the steps of urinary catheterization in males | *Catheterization | Knows how | | |

These skills are at the 'Knows how' level of the miller's pyramid, meaning thereby that students need not perform them themselves but may develop a perception regarding them by observing performance/working on simulated patients/facilitation with video.

FEMALE CATHETERIZATION

Place a "√" in case box if step/task is performed satisfactorily, an "X" if it is not performed satisfactorily, or N/O if not observed.

| Date Observed: | | | | |
|----------------|--|--|--|--|
| | | | | |

| CHECKLIST FOR FEMALE CATHETERIZATION (Some of the following steps/tasks should be performed simultaneously.) | (Minimum 1 Entry) |
|---|----------------------|
| Identification of patient | |
| 2. Washed hands/ sanitized hands | |
| 3. Preparation: gloves, in place, Foley catheter kit, extra pair of sterile gloves, Velcro [™] catheter securement device to secure Foley catheter to leg, wastebasket, and light source | |
| SKILL/ACTIVITY DESCRIBED SATISFACTORILY | |
| 4. Explain procedure to the patient and obtain consent, and explain the need of a chaperone (for male students) | |
| Assess for latex/iodine allergies, GYN surgeries, joint limitations for positioning, and any history of previous difficulties with catheterization. | |
| 6. Position the female patient in a dorsal recumbent position. Uncover the patient, exposing the patient's groin, legs, and feet for positioning and sterile field (female = dorsal recumbent; may need assistance to position patient and help support legs). Drape the patient with a bath blanket, exposing only the necessary area for patient privacy. | |
| 7. Create a sterile field on the over-the-bed table. | |



| 8. | Open the outer package wrapping. Remove the sterile wrapped box with the paper label facing upward to avoid spilling contents and place it on the bedside table or, if possible, between the patient's legs. Place the plastic package wrapping at the end of the bed or on the side of the bed near you, with the opening facing you or facing upwards for waste. | |
|-----|--|--|
| 9. | Open the kit to create and position a sterile field: a. Open the first flap away from you. b. Open the second flap toward you. c. Open side flaps. d. Only touch within the outer 1" edge to position the sterile field on the table. | |
| | Carefully remove the sterile drape from the kit. Touching only the outermost edges of the drape, unfold and place the touched side of drape closest to linen, under the patient. Vertically position the drape between the patient's legs to allow space for the sterile box and sterile tray. | |
| 11. | Wash your hands and apply sterile gloves. | |
| 12. | Empty the lubricant syringe or package into the plastic tray. Place the empty syringe/package on the sterile outer package. | |
| S | imulate application of iodine/antimicrobial cleanser to cotton balls. | |
| 13. | Carefully remove the plastic catheter covering, while keeping the catheter in the sterile box. Attach the syringe filled with sterile water to the balloon port of the catheter; keep the catheter sterile. | |
| 14. | Lubricate the tip of the catheter by dipping it in lubricant and place it in the box while maintaining sterility. | |
| 15. | Tell the patient that you are going to clean the catheterization area and they will feel a cold sensation. | |
| 16. | With your nondominant hand, gently spread the labia minora and visualize the urinary meatus. Your nondominant hand will now be nonsterile. This hand must remain in place throughout the procedure. | |



| 17. With your dominant hand, use an antiseptic swab antiseptic soaked cotton ball with plastic forceps | | |
|---|---|--|
| minora farthest from you using a downward strol swab or cotton ball. Repeat for the labia minora | closest to you. Use | |
| another antiseptic swab or antiseptic soaked cotton between the labia minora. Discard the cotton ba | Ill after use into the | |
| plastic bag, not crossing the sterile field. Repeat for using a new cotton ball each time. Discard the force without touching the sterile gloved hand to the bag | | |
| 18. Pick up the catheter with your sterile dominant hand to take a deep breath and exhale or "bear down" steadily insert the catheter maintaining sterility of the is noted. | as if to void, as you | |
| 19. Once urine is noted, continue inserting the catheter force the catheter. | ⁻ 2-3″ farther." Do not | |
| 20. With your dominant hand, inflate the retention bat filled syringe to the level indicated on the balloon With the plunger still pressed, remove the syringe back on the catheter until resistance is met, confirmation place. | port of the catheter. and set it aside. Pull | |
| 21. Remove your gloves and perform hand hygiene. | | |
| 22. Apply new gloves. Secure the catheter with securer room as to not pull on the catheter. | nent device, allowing | |
| 23. Place the drainage bag below the level of the bladd bed frame. | er, attaching it to the | |
| 24. Remove your gloves and perform hand hygiene comfortable position. | . Assist patient to a | |
| SKILL/ACTIVITY DESCRIBED SATISFACTORILY | | |
| Signatures of Supervisor | | |



| Dato | Observed: | |
|------|-----------|--|
| Date | Observed. | |

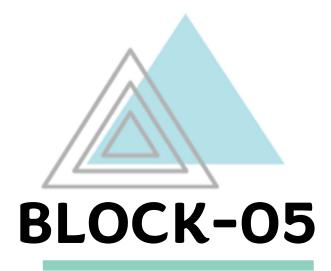
| CUECKLIST FOR MALE CATHETHERIZATION | |
|---|----------------------|
| CHECKLIST FOR MALE CATHETHERIZATION | (Minimum 1 Entry) |
| (Some of the following steps/tasks should be performed simultaneously.) | Entry) |
| Identification of patient | |
| 2. Collect the equipment required for the procedure and place it within reach on the clean trolley. Check the expiry date on the catheter, sterile water, normal saline and lidocaine gel. Ensure a clinical waste bin is placed nearby | |
| SKILL/ACTIVITY OBSERVED AND DESCRIBED SATISFACTORILY | |
| 1. Wash hands | |
| Introduce yourself to the patient, explain the procedure and take consent | |
| Explain the need for a chaperone (for female students) | |
| 4. Setup up the sterile field by first removing the outer packaging from the catheter pack and then opening the catheter pack from the corners without | |
| touching the inner surface of the field. 5. Using aseptic non-touch technique (ANTT) empty the catheter, lidocaine gel syringe, sterile water syringe and sterile gloves onto the field. | |
| 6. Pour the 0.9% sodium chloride solution over the cotton balls which should already be located within the gallipot of the catheter pack | |
| 7. With the patient lying supine, ensure the bed is at an appropriate height for you to comfortably carry out the procedure | |
| 8. Wash your hands again and don a pair of sterile gloves | |
| 9. Ask your chaperone to remove the sheet covering the patient's genitals to | |
| allow you to maintain sterility 10. Place a sterile absorbent pad underneath the patient's genital region, ensuring you maintain sterility | |



| 11. | With your dominant hand pick up a cotton ball and use a single stroke moving away from the urethral meatus to clean an area of the glans. Dispose of the first cotton ball into the clinical waste bin and continue to repeat this process with a new cotton ball each time until all areas of the glans have been cleaned | |
|-----|---|--|
| 12. | Discard your used gloves, wash your hands again and don a new pair of sterile gloves | |
| 13. | Place the sterile drape over the patient's penis, positioned such that the penis remains visible through the central aperture of the drape. Some drapes come with a hole already present for this purpose, whereas others will require you to create one | |
| 14. | Place the sterile urine collection bowl below the penis but on top of the sterile drape | |
| | Warn the patient that the anesthetic gel might initially sting, but then should quickly cause things to become numb with your dominant hand place the nozzle of the syringe of anaesthetic gel into the urethral meatus. Empty the entire 10mls of anaesthetic gel into the urethra at a slow but steady pace. Continue to hold to the penis in the vertical position to ensure the gel remains within the urethra and allow 3 to 5 minutes for the lidocaine gel to reach its maximum effect | |
| 16. | Pick up the catheter which should be on your sterile field in its wrapper. Remove the tear-away portion of the wrapper near the catheter tip, making sure not to touch the catheter. Clean away any urine spillage or excess lubricating gel and cover the patient with the sheet. Dispose of your equipment into a clinical waste bin 46 Provide the patient with privacy to get dressed | |
| 17. | Hold the penis again using sterile gauze with your non-dominant hand | |
| 18. | Warn the patient you are about to insert the catheter. Insert the exposed catheter tip into the urethral meatus using your dominant 'clean hand' | |
| | Advance the catheter slowly whilst gradually removing more of the wrapper to expose more of the catheter. You should continue to advance the catheter until it is fully inserted into the penis | |
| 20. | Once the catheter is fully inserted, inflate the catheter balloon with the 10ml syringe of sterile water to secure it within the bladder | |
| | Once the balloon is fully inflated, remove the syringe and gently withdraw the catheter until resistance is noted, confirming the catheter is held securely within the bladder | |
| 22. | Attach the catheter bag tubing to the end of the catheter securely. Position the catheter bag below the level of the patient to facilitate effective drainage of urine | |
| 23. | Clean away any urine spillage or excess lubricating gel and cover the patient with the sheet Dispose of your equipment into a clinical waste bin. Provide the patient with privacy to get dressed | |
| 24. | Dispose of your equipment into a clinical waste bin. | |
| 25. | Provide the patient with privacy to get dressed | |



| SKILL/ACTIVITY PERFORMED SATISFACTORILY | |
|---|--|
| Signatures of Supervisor | |





ENDOCRINOLOGY & REPRODUCTION-1 MODULE Objectives Miller's Pyramid Skill Level Reflected Examination of the thyroid gland Thyroid examination **Shows Examination for Acromegaly** Examination for acromegaly Shows Measurement of blood glucose Shows Blood sugar measurement levels Suturing Suturing *Knows how

❖ These skills are at the 'Knows how' level of the miller's pyramid, meaning thereby that students need not perform them themselves but may develop a perception regarding them by observing performance/working on simulated patients/facilitation with videos.



| Dato | Observed: | |
|------|-----------|--|
| Date | Observed. | |

| () | CHECKLIST FOR THYROID EXAMINATION Some of the following steps/tasks should be performed simultaneously.) | CASES (Minimum 3 Entries) | |
|-------|---|------------------------------|--|
| STEP/ | TASK | | |
| | NG READY: Wash your hands and don PPE if appropriate | | |
| | Introduce yourself to the patient including your name and role Gain consent to proceed with the examination | | |
| 5. | Ask the patient to sit on a chair for the assessment Adequately expose the patient's neck and upper sternum Ask if the patient has any pain before proceeding | | |
| | /ACTIVITY PERFORMED SATISFACTORILY | | |
| THE P | ROCEDURE: | | |
| 7. | Inspect the patient whilst at rest, looking for clinical signs suggestive of underlying pathology | | |
| 8. | Inspect the patient's face for clinical signs suggestive of thyroid pathology (dry skin, excessive sweating, eyebrow loss) | | |
| 9. | Inspect the patient's eyes for evidence of lid retraction, inflammation and exophthalmos | | |
| 10. | Assess for eye movement abnormalities | | |
| 11. | Assess for lid lag | | |



| Inspect the midline of the neck for evidence of thyroid enlargement, lumps or scars | | |
|---|--|--|
| 13. Ask the patient to protrude their tongue and repeat inspection | | |
| Palpate the patient's thyroid gland assessing size, symmetry and consistency. Also note any masses present in the thyroid tissue. | | |
| 15. Ask the patient to protrude their tongue whilst you palpate | | |
| 16. Palpate local lymph nodes to assess for lymphadenopathy | | |
| 17. Inspect for tracheal deviation | | |
| Percuss downwards from the sternal notch for evidence of retrosternal dullness | | |
| 19. Auscultate each lobe of the thyroid for a bruit | | |
| 20. Thank the patient | | |
| SKILL/ACTIVITY PERFORMED SATISFACTORILY | | |
| Signatures of Supervisor | | |



| Dato | Observed: | |
|------|-----------|--|
| Date | Observed. | |

| (S | CHECKLIST FOR ACROMEGALY ome of the following steps/tasks should be performed simultaneously.) | CASES (Minimum 3 Entries) | | |
|------|---|------------------------------|--|--|
| STEP | TASK | | | |
| | ROCEDURE: | | | |
| 1. | Wash your hands and gain consent from the patient | | | |
| 2. | Ask the patient if he/she has any pain in any region | | | |
| 3. | Perform a brief general inspection of the patient, looking for clinical signs suggestive of acromegaly such as: a. Facial features: coarse features, such as prominent supraorbital ridges and prognathism, may be indicative of acromegaly. | | | |
| 4. | Hands and feet: may be enlarged. | | | |
| 5. | Skin: may display thickening in the hands and face and excess sweating or oiliness in acromegaly. | | | |
| 6. | Posture: patients with acromegaly can present with signs of osteoarthritis, especially in the weight-bearing joints (knees and hips). | | | |



| | | rowth: hirsutism in women and hypertrichosis may | | |
|------|----------------------|---|--|--|
| (| occur. | | | |
| 8. 3 | Skin ta | gs: acromegaly can cause an increase in the number | | |
| (| of skin | tags. | | |
| 9. (| Gait: a | cromegaly can cause a rolling gait or varus deformity. | | |
| 10. | Clothe | s: clothes or jewellery may appear tight if significant | | |
| , | weight | gain has occurred. | | |
| 11. | Hands | | | |
| | b. c. d. e. | Inspect for: Enlargement: grossly increased size of the hands may be assessed by comparing your hands to the patient are, accounting for natural size differences. Wasting: thenar wasting can indicate untreated carpal tunnel syndrome. Scars: carpal tunnel release scar may indicate previous median nerve compression. Skin changes: skin thickening and excess sweating can occur in acromegaly. Finger pricks: finger prick marks on the tips of the fingers may indicate diabetes, which is linked to acromegaly Palpation Assess for thickening of the patient's skin by pinching the skin overlaying the third metacarpophalangeal joint. This can be compared with your own hand's skin to detect any differences. | | |
| | a. | , | | |
| 13. | Palpat | e for thyroid gland | | |
| 14. | Look fo | or raised JVP | | |
| 15. | Face: | | | |
| | a. | General features: | | |



| c. d. | Inspect the general appearance face for coarse features associated with acromegaly: Frontal bossing: a prominent or protruding brow can occur with excess GH. Large nose, ears, and lower lip: aspects of soft-tissue overgrowth. Prognathism: overgrowth of the jaw can lead to a mandibular protrusion | | |
|---------------|--|--|--|
| 16. Mouth | : Inspect the inside of the mouth for the following: | | |
| a. | Macroglossia: tongue enlargement may cause the tongue to appear large for the mouth or even cause visible partial airway obstruction in extreme cases. | | |
| b. | Wide spaced teeth: growth of the soft palate may cause interdental separation of the lower jaw. | | |
| C. | Prognathism: overgrowth of the jaw may only be discernible on closer inspection. | | |
| SKILL/ACTIV | ITY PERFORMED SATISFACTORILY | | |
| Signatures of | f Supervisor | | |



| Date Observed: | |
|-----------------------|--|
| | |
| | |
| | |

| | | T FOR EXAMINATION OF BLOOD GLUCOSE LEVELS of the following steps/tasks should be performed simultaneously.) | CASES (Minimum 3 Entries | | ries) |
|------|--------|---|--------------------------|--|-------|
| STEP | P/TASE | C | | | |
| HE : | PROCE | DURE | | | |
| 1. | | ain the procedure to the patient and get a verbal consent oceed. | | | |
| 2. | Gath | er the relevant equipment and place in a clean tray: | | | |
| | i. | Non-sterile gloves | | | |
| | ii. | Blood glucose reader (a.k.a. glucometer): calibrate using calibration fluid if required. | | | |
| | iii. | Spring-loaded lancet: to obtain the blood sample. | | | |
| | iv. | Testing strips: make sure the expiry date is valid. | | | |
| | ٧. | Gauze | | | |
| | vi. | Tape | | | |
| 3. | | re the patient's finger is cleaned prior to measuring ary blood glucose: | | | |
| | i. | It's important that the skin over the site being tested has been cleaned, as substances on the skin can affect the | | | |
| | ii. | accuracy of capillary blood glucose results (e.g. substances containing sugar). Ask the patient to wash their own hands or alternatively you can clean the site with an alcohol swab (70% isopropyl). | | | |



| | | completely before performing capillary blood glucose measurement. | | |
|-----|------|---|--|--|
| | 4. | Turn on the capillary blood glucose monitor and ensure it is calibrated. | | |
| | 5. | Load a test strip into the glucose monitor. | | |
| | 6. | Don a pair of non-sterile gloves. | | |
| | 7. | Pick up the lancet and carefully remove the protective cap. | | |
| | 8. | Prick the side of the patient's finger with the lancet and gently squeeze the finger from proximal to distal to produce a droplet of blood. Some guides advise cleaning away the first drop of blood, however, there is no evidence that this significantly impacts the reliability of blood glucose results. | | |
| | 9. | Gently touch the tip of the test strip against the droplet of blood to allow it to be absorbed into the strip. | | |
| | 10 | Apply gauze or cotton wool to the puncture site to stop the bleeding and ask the patient to maintain pressure over the site | | |
| | 11 | . Safely dispose of the lancet into a sharps bin. | | |
| | 12 | Dispose of the test strip and the cotton wool/gauze into a clinical waste bin. If the patient's finger is still bleeding, keep the cotton wool or gauze in place and secure with some tape. | | |
| PO | ST | PROCEDURE: | | |
| | 1. | 'Wash your hands, thank the patient' | | |
| SK | (ILL | ACTIVITY PERFORMED SATISFACTORILY | | |
| Sid | ana | tures of Supervisor | | |



<u>Satisfactory</u>: Performs the step or task according to the standard procedure or guidelines <u>Unsatisfactory</u>: Unable to perform the step or task according to the standard procedure or guidelines

Date Observed: _____

| CHECKLIST FOR SIMPLE INTERRUPTED SUTURE (Some of the following | | CASES | | |
|--|-------|----------|---------|--|
| steps/tasks should be performed simultaneously.) | (Mini | mum 2 Eı | ntries) | |
| STEP/TASK | | | | |
| EQUIPMENT: | | | | |
| Collect a procedure trolley, and clean the top surface using an alcohol surfac | е | | | |
| disinfectant wipe. Next obtain a plastic tray, and clean it in a similar manner. Yo | u | | | |
| will then need to collect a number of items. | | | | |
| For cleaning: | | | | |
| i. A pair of non-sterile gloves. ii. Five 10mL sachets of 0.9% sodium chloride (saline) solution. iii. Gauze. For anaesthesia: i. A pair of sterile gloves. ii. Alcohol wipe (2% chlorhexidine in 70% alcohol). | | | | |
| iii. 20mL 1% lidocaine solution (with or without adrenaline. iv. Drawing up needle (≤18 gauge). v. Subcutaneous needle (25-27 gauge) and syringe (20mL). vi. Sharps bin. | | | | |
| For suturing: | | | | |
| i. Suture pack (containing needle holder, scissors, toothed forceps, non-toothed forceps). ii. A pair of sterile gloves. | | | | |
| iii. Suture material. | | | | |
| iv. Sterile drape. v. Sharps bin. | | | | |
| | | | | |
| SKILL/ACTIVITY PERFORMED SATISFACTORILY | | | | |



| | | | |
|---------------|---|------|--|
| ГНЕ Р | ROCEDURE: | | |
| i. | Explain the procedure to the patient and take consent | | |
| Inspec | tion: | | |
| ii | Assess the size and depth of the wound as well as the state of its border. Inspect for any pus inside which may suggest infection. Ensure that there are no foreign bodies present, such as glass. Finally, check the surrounding skin for any bruising or erythema which may suggest a cellulitis infection. | | |
| <u>Cleani</u> | <u>ng</u> | | |
| iii | To clean the wound, take the gauze and soak it in saline solution. Carefully wipe the area starting from the centre of the wound and continuing outwards. | | |
| <u>Anaes</u> | thesia | | |
| iv | Before injecting the anaesthetic, confirm with the patient that they have had no previous reactions to local anaesthetic. Once this has been confirmed, clean the surrounding area using an alcohol wipe. Whilst waiting for the skin to dry, draw up the lidocaine solution into the syringe. | | |
| | a) Once ready to inject, switch the needle on the syringe and don some sterile gloves. Using proper technique, inject 2mL of lidocaine solution subcutaneously into the surrounding skin. After doing so, manoeuvre the needle and continue to inject small amounts of anaesthetic such that all of the surrounding skin is anaesthetised. For medium to large wounds, you will need to withdraw the needle and reinject at another area. | | |
| V | Wash and dry both your hands and the distal third of your forearms and then put the sterile gloves on using correct sterile technique. Allow the anaesthesia at least 5 minutes to work. | | |
| Vi | Carefully position the part of the body with the wound and apply the sterile drape over it. At this point, explain to the patient that it is very important for them to keep still and not touch anything on the sterile field to avoid contamination. a) Using the toothed forceps, pinch the sides of the wound to test | | |
| | for numbness, and ask the patient whether they can feel any pain. Be sure to warn the patient before you do this. The patient may be able to feel a sense of pressure but should not feel any pain. | | |
| vii | Use the forceps to position the needle in the needle holder so that the needle holder is two-thirds of the way up from the tip of the needle. | | |



| viii. | Hold the needle holder in your dominant hand and the toothed forceps in the other. Starting from the middle of the wound, use the forceps to pull the skin up on the wound side closest to your dominant hand. Insert the needle into the skin on the same side at a 90° angle, at least 5mm from the wound edge. | | |
|----------|--|--|--|
| ix. | Push the needle through the skin, supinating your forearm to follow the curvature of the needle as you do so. Remove the needle from the needle holder and pull the needle through that side of the wound using the forceps. | | |
| | a) Position the needle back into the needle holder and insert it into the dermis of the other side of the wound, around 5mm below the skin surface. Again, supinate your wrist such that the needle emerges to the skin surface. Pull the needle through such that only 15cm of thread remains on the other side. | | |
| X. | To secure the suture in place, you will need to tie a surgical knot. This is achieved by tying three smaller "throw" knots. | | |
| xi. | 1 st throw: Hold the needle holder directly above and parallel to the wound. Wrap the longer end of the thread around the needle holder twice in a clockwise direction and then use the tip of the needle holder to grasp the shorter end of the thread and pull in opposite directions, tying the first throw. | | |
| xii. | 2 nd throw: Once again wrap the longer end of the thread around the needle holder, however this time, do so only once and in an anticlockwise direction. Then, as before, use the tip of the needle holder to grasp the shorter end of the thread. Pull the suture material through, tying another throw. | | |
| xiii. | 3 rd throw: Tie this throw in a clockwise direction in a similar manner to the 1 st . However, only wrap the thread once around the needle holder. | | |
| xiv. | Once you have completed the three throws, you should have a strong surgical knot. Try to position the knot on one side of the wound. Next, cut both ends of the suture such that there is 5mm of thread on either side. This is so that it is easy to identify the suture. Insert more sutures as required about 5-10mm apart. | | |
| XV. | Once you are finished, dispose of the needle in the sharps bin. | | |
| xvi. | Press lightly on the sides of the wound to stop any bleeding. Once satisfied, remove the drape and your gloves. Arrange for the wound to be dressed using a non-adherent dressing. | | |
| SKILL/A | CTIVITY PERFORMED SATISFACTORILY | | |
| Signatur | es of Supervisor | | |



HEAD AND NECK, SPECIAL SENSES MODULE Objectives Skill Miller's Pyramid Level Reflected Examination of the nose Nasal examination Shows Examination of neck lumps Neck lump examination Shows

❖ These skills are at the 'Knows how' level of the miller's pyramid, meaning thereby that students need not perform them themselves but may develop a perception regarding them by observing performance/working on simulated patients/facilitation with videos.



| Date Observed: |
|----------------|
|----------------|

| CHECKLIST FOR EXAMINATION OF THE NOSE (Some of the following steps/tasks should be performed simultaneously.) | CASES (Minimum 3 Entries) | | |
|--|------------------------------|--|--|
| STEP/TASK | | | |
| THE PROCEDURE: | | | |
| Explain the procedure to the patient and get a verbal consent to proceed. | | | |
| Inspection: | | | |
| 2. Inspect the external surface of the nose from the front, side and behind the patient to identify any abnormalities. 3. Skin changes: Inspect for skin lesions: | | | |
| i. Basal cell carcinoma: pearly lesions with telangiectasia and rolled edges. ii. Squamous cell carcinoma: scaly lesions, sometimes with associated ulceration and hyperpigmentation. iii. Keratoacanthoma: raised lesions with a core of scaly keratin. | | | |
| II. Deformity i. Inspect for any deviation in the nasal bones or cartilage suggestive of a fracture. This is best performed by standing behind the patient with their head tilted slightly backwards. | | | |



| III. | Palpation: i. Warn the patient that you will be applying some pressure to their nose and ask them to let you know if they experience any pain. | | |
|----------------------------|---|--|--|
| 4. Palpat | te the nasal bones assessing: | | |
| i ii | i. Alignmenti. Tendernessi. Irregularity (suggestive of fracture)te the nasal cartilage assessing: | | |
| | i. Alignment i. Tenderness | | |
| | te the infraorbital ridges and assess eye movement if it is a history of trauma to screen for an orbital blowout re. | | |
| ne eye socke xamination | blowout fracture is a fracture of or or medial wall resulting from blunt trauma to et (e.g., tennis ball). Typical findings on clinical include infraorbital tenderness, epistaxis and restricted at (usually on vertical gaze). | | |
| counte | orrect method for using a nasal speculum is slightly er-intuitive, however, it does allow the best zation of the nasal mucosa: | | |
| i. | Insert your index finger into the bend of the speculum and support it above with the thumb. | | |
| ii. | The middle and ring fingers are used to manipulate the prongs of the speculum. | | |
| iii. | You will be aiming to look at the gap between these two fingers. | | |
| iv. | Press the prongs of the speculum together to allow them to be placed within the nostril and then reduce your grip on the speculum to widen the prongs until an optimal view of the nasal cavity is achieved. | | |
| | a) Nasal vestibule: inspect for inflammation, ulceration or oedema affecting the nasal mucosa. b) Nasal septum: note any polyps, deviation, perforation, haematoma, superficial vessels or areas of cautery. | | |



| | c) Inferior turbinates: note any asymmetry, inflammation or polyps. | | |
|-------|---|--|--|
| 8. | Place a cold shiny surface, such as a metal tongue depressor under the nose. | | |
| 9. | Observe for misting of the metal surface as the patient breathes and compare the misting pattern of the two nostrils. | | |
| SKILL | ACTIVITY PERFORMED SATISFACTORILY | | |
| Signa | atures of Supervisor | | |



| Date | Observed: | | | | | |
|------|-----------|--|--|--|--|--|
| | | | | | | |

| CHECKLIST FOR EXAMINATION OF NECK LUMPS (Some of the following steps/tasks should be performed simultaneously.) | CASES (minimum 2 entries) |
|--|------------------------------|
| STEP/TASK | |
| THE PROCEDURE: | |
| Explain the procedure to the patient and get a verbal consent to proceed. | |
| Inspect the patient, looking for clinical signs suggestive of underlying pathology: | |
| Scars: may indicate previous neck surgery (e.g. thyroidectomy, lymph node biopsy/excision, radiotherapy related scarring). | |
| ii. Cachexia: ongoing muscle loss that is not entirely reversed with nutritional supplementation. Cachexia is commonly associated with underlying malignancy. | |
| iii. Hoarse voice: caused by compression of the larynx due to thyroid gland enlargement (e.g. thyroid malignancy). | |
| iv. Dyspnoea or stridor: may indicate compression of the upper respiratory tract by a neck mass. | |
| v. Behaviour: anxiety and hyperactivity are associated with hyperthyroidism (due to sympathetic overactivity). Hypothyroidism is more likely to be associated with low mood. | |
| vi. Clothing: may be inappropriate for the current temperature. Patients with hyperthyroidism suffer from heat intolerance whilst patients with hypothyroidism experience cold intolerance. | |
| vii. Exophthalmos: bulging of the eye anteriorly out of the orbit associated with Graves' disease. | |

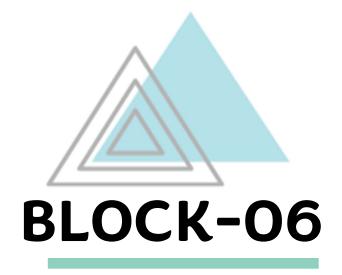


| 3. Ask | the patient to point out the neck lump's location if relevant. | | |
|-------------------|---|------|--|
| i. | Inspect the neck lump from the front and side, noting | | |
| | its location (e.g. anterior triangle, posterior triangle, midline). | | |
| 4 If o | midling mass is identified during the initial inspection, perform | | |
| son | midline mass is identified during the initial inspection, perform ne further assessments to try and further narrow the differential | | |
| dia | gnosis. | | |
| wallowing | 1 | | |
| wanowing | | | |
| sk the pa ass: | tient to swallow some water and observe the movement of the | | |
| i. | Thyroid gland masses (e.g. a goitre) and thyroglossal cysts | | |
| :: | typically move upwards with swallowing. | | |
| ii. iii. | Lymph nodes will typically move very little with swallowing. An invasive thyroid malignancy may not move with swallowing | | |
| | if tethered to surrounding tissue. | | |
| | | | |
| ongue pro | <u>otrusion</u> | | |
| sk the pa | tient to protrude their tongue: | | |
| i. | Thyroglossal cysts will move upwards noticeably during | | |
| ii. | tongue protrusion. Thyroid gland masses and lymph nodes will not move during | | |
| | tongue protrusion. | | |
| | | | |
| urther As | sessment | | |
| i. | If you identify a midline neck lump or systemic signs indicative | | |
| | of thyroid disease, ask the examiner if a full thyroid status | | |
| | examination should be performed. | | |
| 5. Pal | pate the neck lump assessing the following: | | |
| i. | Site: assess the lump's location in relation to other anatomical | | |
| ii. | structures (e.g. anterior triangle, posterior triangle, midline). Size: assess the size of the lump. | | |
| iii. | Shape: assess the lump's borders to determine if they feel | | |
| iv. | regular or irregular. Consistency: determine if the lump feels soft (e.g. cyst), hard | | |
| | (e.g. malignancy) or rubbery (e.g. lymph node). | | |
| V. | Mobility: assess if the lump feels mobile or is tethered to other local structures. Asking the patient to turn their head as you | | |
| | = : | | |



| Signati | ures of Supervisor | | |
|---------------|---|--|--|
| SKILL | ACTIVITY PERFORMED SATISFACTORILY | | |
| | Submandibular gland swellings are usually singular, whereas lymphadenopathy typically involves multiple nodes). Salivary duct calculi are relatively common and may be felt as a firm mass within the gland. | | |
| | Each submandibular gland can be palpated inferior and posterior to the body of the mandible. Move inwards from the inferior border of the mandible near its angle with the patient's head tilted forward. To assess the gland thoroughly, you should perform bimanual palpation with one gloved finger palpating the floor of the mouth whilst the other palpates externally underneath the mandible. | | |
| | Assess cervical lymph nodes and thyroid gland as explained in previous checklists Assess the submandibular gland if a swelling is found in that area. | | |
| ii. | illuminated it suggests the lump is fluid-filled (e.g. cystic hygroma). Vascular bruit: auscultate the lump to listen for a bruit suggestive of vascular aetiology (e.g. carotid artery aneurysm). | | |
| Other c i. | | | |
| Χ. | aetiology (e.g. ruptured epidermoid cyst, infected cyst). | | |
| ix. | aneurysm). | | |
| viii. | such as erythema (e.g. inflammatory/infective aetiology) or a punctum (a pore in the epidermis indicative of an underlying | | |
| vii. | mass is fluid-filled (e.g. cyst) then you should feel the sides bulging outwards. Temperature: increased warmth may suggest an inflammatory or infective cause (e.g. infected epidermoid | | |
| vi. | palpate, the mass can reveal if it is tethered to the underlying muscle (e.g. malignant tumour). Fluctuance: hold the lump by its sides and then apply pressure to the centre of the mass with another finger. If the | | |







| NEUROSCIENCES-1 MODULE | | | | | | |
|-----------------------------------|------------------------|-------------------------------------|--|--|--|--|
| Objectives | Skill | Miller's Pyramid Level Reflected | | | | |
| Assess Glasgow Coma Scale | GCS | Shows | | | | |
| Interpretation of Normal CT brain | CT scan interpretation | Knows how | | | | |



| Date | Observed: | |
|------|-----------|--|
| Date | ODSELVEU. | |

| CHECKLIST FOR GLASGOW COMA SCALE | CASES |
|--|---------------------|
| (Some of the following steps/tasks should be performed simultaneously) | (Minimum 3 Entries) |
| STEP/TASK | |
| THE PROCEDURE: | |
| The Glasgow Coma Scale (GCS) allows healthcare professionals to consistently evaluate the level of consciousness of a patient. It is commonly used in the context of head trauma, but it is also useful in a wide variety of other non-trauma related settings. Regular assessment of a patient's GCS can identify early signs of deterioration. | |
| There are three aspects of behaviour that are independently measured as part of an assessment of a patient's GCS – motor responsiveness, verbal performance and eye-opening. The highest response from each category elicited by the healthcare professional is scored on the chart. The highest possible score is 15 (fully conscious) and the lowest possible score is 3 (coma or dead). | |
| 1. Eye Opening: | |
| To assess eye response, initially observe if the patient is opening their eyes spontaneously. | |
| i. If the patient is opening their eyes spontaneously, your assessment of this behaviour is complete, with the patient scoring 4 points. You would then move on to assessing verbal response, as shown in the next section. If, however, the patient is not opening their eyes spontaneously, you need to work through the following steps until a response is obtained. | |



| ii. | If the patient doesn't open their eyes spontaneously, you need to speak to the patient "Hey Mrs Smith, are you ok?" | | |
|------|--|--|--|
| iii. | If the patient's eyes open in response to the sound of your voice, they score 3 points. | | |
| | If the patient doesn't open their eyes in response to sound, you need to move on to assessing eye-opening to pain. There are different ways of assessing response to pain, but the most common are: | | |
| | a. Applying pressure to one of the patient's fingertips b. Squeezing one of the patient's trapezius muscles (known as a trapezius squeeze) c. Applying pressure to the patient's supraorbital notch d. If the patient's eyes open in response to a painful stimulus, they score 2 points. | | |
| | e. If the patient does not open their eyes to a painful stimulus, they score 1 point. | | |
| | f. If the patient cannot open their eyes for some reason (e.g., oedema, trauma, dressings), you should document that eye response could not be assessed (NT). | | |
| 2. | Verbal responses: | | |
| i. | If the patient is able to answer your questions appropriately, the assessment of verbal response is complete, with the patient scoring 5 points. | | |
| ii. | If the patient is able to reply, but their responses don't seem quite right (e.g. they don't know where they are, or what the date is), this would be classed as confused conversation and they would score 4 points. | | |
| iii. | Sometimes confusion can be quite subtle, so pay close attention to their responses. | | |
| iv. | If the patient responds with seemingly random words that are completely unrelated to the question you asked, this would be classed as inappropriate words and they would score 3 points. | | |
| V. | If the patient is making sounds, rather than speaking words (e.g., groans) then this would be classed as incomprehensible sounds, with the patient scoring 2 points. | | |



| vi. If the patient has no response to your questions, they would score 1 point. | | |
|---|--|--|
| vii. If the patient is intubated or has other factors interfering with their ability to communicate verbally, their response cannot be tested, and for this, you would write NT (not testable). | | |
| 3. Motor Response: | | |
| i. The final part of the GCS assessment involves assessing a patient's motor response. | | |
| ii. You should score the patient based on the highest scoring response you were able to elicit in any single limb (e.g., if they were unable to move their right arm, but able to obey commands with their left arm, they'd receive a score of 6 points). | | |
| iii. Ask the patient to perform a two-part request (e.g. "Lift your right arm off the bed and make a fist."). | | |
| a. If they are able to follow this command correctly, they would score 6 points and the assessment would be over. | | |
| iv. This assessment involves applying a painful stimulus and observing the patient for a response. | | |
| There are different ways of assessing response to pain, but the most common are: | | |
| a. Squeezing one of the patient's trapezius muscles (known as a trapezius squeeze) b. Applying pressure to the patient's supraorbital notch | | |
| If the patient makes attempts to reach towards the site at which you are applying a painful stimulus (e.g. head, neck) and brings their hand above their clavicle, this would be classed as localising to pain, with the patient scoring 5 points. | | |
| This is another possible response to a painful stimulus, which involves the patient trying to withdraw from the pain (e.g. the patient tries to pull their arm away from you when applying a painful stimulus to their fingertip). | | |
| This response is also referred to as a "normal flexion response" as the patient typically flexes their arm rapidly at their elbow to move away from the painful stimulus. | | |



| Signatures of Supervisor | | |
|---|--|--|
| SKILL/ACTIVITY PERFORMED SATISFACTORILY | | |
| If the patient is unable to provide a motor response (e.g., paralysis), this should be documented as not testable (NT). | | |
| The complete absence of a motor response to a painful stimulus scores 1 point. | | |
| Progression from decorticate posturing to decerebrate posturing is often indicative of uncal (transtentorial) or tonsilar brain herniation (often referred to as coning). | | |
| Decerebrate posturing indicates brain stem damage. It is exhibited by people with lesions or compression in the midbrain and lesions in the cerebellum. | | |
| The signs can be on just one side of the body or on both sides (the signs may only be present in the upper limbs). | | |
| The patient appears rigid with their teeth clenched. | | |
| In decerebrate posturing, the head is extended, with the arms and legs also extended and internally rotated. | | |
| Abnormal extension to a painful stimulus is also known as decerebrate posturing. | | |
| Decorticate posturing indicates that there may be significant damage to areas including the cerebral hemispheres, the internal capsule, and the thalamus. | | |
| Abnormal flexion to a painful stimulus typically involves adduction of the arm, internal rotation of the shoulder, flexion of the elbow, pronation of the forearm and wrist flexion (known as decorticate posturing). | | |
| Withdrawal to pain scores 4 points on the Glasgow Coma Scale. | | |
| absence of the other features mentioned (e.g., internal rotation of the shoulder, pronation of the forearm, wrist flexion). | | |



| Dato | Observed: | |
|------|-----------|--|
| Date | Observed. | |

| | Cł | HECKLIST FOR INTERPRETATION OF CT BRAIN | CASES |
|------|---------------------|--|------------------------|
| | (Some | e of the following steps/tasks should be performed simultaneously) | (Minimum 2 Entries) |
| STEP | TASK | | |
| THER | ROCE | DURE: | |
| 1. | a. b. | ation and Windowing: Check the patient's information, including name, age, and date. Confirm that the images are properly oriented (anterior is at the top, and the left side corresponds to the patient's right side). Adjust window settings to optimize visualization of soft tissues and bone. | |
| 2. | Overa | Il Assessment: | |
| | | Begin by observing the overall appearance of the brain for symmetry and any obvious abnormalities. Look for signs of mass effect, midline shift, or other gross abnormalities. | |
| 3. | Ventrio a. b. | cles: Assess the size and symmetry of the lateral ventricles. Look for any signs of ventricular enlargement or obstruction. | |
| 4. | a. | and Gyri: Evaluate the sulci and gyri for normal patterns and symmetry. Ensure there are no signs of cortical atrophy or abnormal folding. | |
| 5. | | ns and Cisternal Spaces: Examine the major cisterns (e.g., suprasellar cistern, ambient cistern) for appearance. | |



| Signatures of Supervisor | | |
|--|-------------------|--|
| SKILL/ACTIVITY PERFORMED SATISFACTORILY | | |
| a. Evaluate major intracranial blood vessels for any signs of vascular abnormalities. b. Look for signs of intracranial hemorrhage. 14. Soft Tissue Structures: a. Soft tissue structures, including the eyes and muscles, for any abnormalities. | | |
| a. Check the paranasal sinuses and mastoid air ce aeration. b. Look for signs of sinusitis or mastoiditis. 13. Blood Vessels: | | |
| 11. Skull and Scalp: a. Inspect the skull for fractures, abnormalities, trauma b. Assess the scalp for any soft tissue swelling or a 12. Sinuses and Mastoids: | | |
| 10. Subarachnoid Spaces: a. Assess the subarachnoid spaces for normal disdensity of cerebrospinal fluid (CSF). b. Check for signs of subarachnoid hemorrhage. | tribution and | |
| a. Check the size and symmetry of the pineal glan b. Assess for calcification, which is a common find 9. Fourth Ventricle: a. Evaluate the size and symmetry of the fourth ventricle b. Look for any signs of obstruction or enlargement | ing. entricle. | |
| 8. Pineal Gland: | | |
| 7. Brainstem: a. Assess the midbrain, pons, and medulla for norr b. Look for any signs of midline shift or compression | | |
| Basal Ganglia and Thalamus: | d density. | |
| b. normal Check for any compression or effacement spaces. | nt of cisternal | |



| INFLAMMATION MODULE | | | | | |
|---|----------------|-------|--|--|--|
| Objectives Skill Miller's Pyramid Level Reflected | | | | | |
| Learn how to do history taking | History Taking | Shows | | | |



Place a "√" in case box if step/task is performed satisfactorily, an "X" if it is not performed satisfactorily, or N/O if not observed.

<u>Satisfactory</u>: Performs the step or task according to the standard procedure or guidelines <u>Unsatisfactory</u>: Unable to perform the step or task according to the standard procedure or guidelines

| Date Observed: |
|----------------|
|----------------|

| CHECKLIST FOR HISTORY TAKING (Some of the following steps/tasks should be performed simultaneously.) | CASES (Minimum 3 Entries) |
|--|------------------------------|
| STEP/TASK | |
| NTRODUCTION (WIIPP) | |
| 1. Wash your hands | |
| Introduce yourself: give your name and your job (e.g. Dr. Louise Gooch, ward doctor) | |
| Identity: confirm you're speaking to the correct patient (name and date of birth) | |
| Permission: confirm the reason for seeing the patient ("I'm going to ask you some questions about your cough, is that OK?") | |
| Positioning: patient sitting in chair approximately a metre away from you. Ensure you are sitting at the same level as them and ideally not behind a desk. | |
| PRESENTING COMPLAINT | |
| Ask the patient to describe their problem using open questions (e.g. "What's brought you into hospital today?") | |
| The presenting complaint should be expressed in the patient's own words (e.g. "I have a tightness in my chest.") | |
| Do not interrupt the patient's first few sentences if possible | |
| Try to elicit the patient's ideas, concerns and expectations (ICE) e.g. "I'm worried I might have cancer." or "I think I need some antibiotics." | |



| HISTORY OF PRESENTING COMPLAINT | | |
|--|--|---|
| 1. Ask the patient further questions about the presenting complaint 2. A useful mnemonic for pain is "SOCRATES" i. Site ii. Onset iii. Character iv. Radiation v. Alleviating factors vi. Timing vii. Exacerbating factors viii. Severity (1-10) | | |
| | | ĺ |



PAST MEDICAL HISTORY

- 1. Ask the patient about all previous medical problems.
- 2. They may know these medical problems very well or they may forget some. Top ensure none are missed ask about these important conditions specifically (mnemonic: "MJTHREADS Ca")
 - i. Myocardiac infarction
 - ii. Jaundice
 - iii. Tuberculosis
 - iv. Hypertension
 - v. Rheumatic fever
 - vi. Epilepsy
 - vii. Asthma
 - viii. Diabetes
 - ix. Stroke
 - x. Cancer (and treatment if so)
- 3. If the patient is unsure of their medical problems, ask them further clarifying questions, for example "What do you usually visit your doctor for?". Remember you can add to past medical history if any of the medication later mentioned don't match the medical problems listed.
- 4. Risk factors
 - i. As part of medical history ask about specific risk factors related to their presenting complaint.
 - ii. For example, if the patient presents with what maybe a myocardial infarction, you should ask about associated risk factors such as:
 - a. Smoking, cholesterol, diabetes, hypertension, family history of ischemic heart disease.
- 5. Clarification of past medical history
 - Some medical conditions require clarification of the severity.
 For example:
 - a. COPD
 - Ask about when the patient was diagnosed, their current and previous treatments, whether they have ever required noninvasive ventilation ("a tight-fitting face mask"), whether they have been to intensive care
 - b. Myocardial infarction
 - ii. Ask about angina, previous heart attacks, any previous angiograms ("a wire put into your heart from your leg or from your arm"), previous stenting



| c. Diabetes | | |
|--|--|--|
| iii. Duration of diagnosis, current management including insulin and usual control of diabetes i.e. well- or poorly-controlled | | |



| DRUG HISTORY | |
|---|--|
| All medications that they take for each medication ask them to specify: | |
| i. Dose, frequency, route and compliance (i.e whether they regularly take these medication). ii. If they take medication weekly ask what day of the week they take it. iii. If they take a medication with a variable dosing (e.g. Warfarin) ask what their current dosing regimen is | |
| Recreational drugs Intravenous drug use (current or previous) Over the counter (OTC) medications | |
| ALLERGIES | |
| 1. Does the patient have any allergies? i. If allergic to medications, clarify the type of medication and the exact reaction to that medication. ii. Specifically ask about whether there's been a history of anaphylaxis e.g. "throat swelling, trouble breathing or puffy face" | |
| FAMILY HISTORY | |
| Ask the patient about any family diseases relevant to the presenting complaints (e.g. if the patient has presented with chest pain, ask about family history of heart attacks). Enquire about the patient's parents and sibling and, if they were deceased below 65, the cause of death | |
| i. If relevant and a pattern has emerged from previous history sketch a short family tree | |



SOCIAL HISTORY

- 3. Alcohol intake
- 4. Tobacco use
 - Quantify the number of pack years (number of packs of 20 cigarettes smoked per day multiplied by the number of years smoking)
- 5. Employment history
 - Particularly relevant with exposure to certain pathogens e.g. asbestos, where you need to ask whether they have ever been exposed to any dusts
- 6. Home situation
 - i. House or bungalow
 - ii. Any carers
 - iii. Activities of daily living (ability to wash, dress and cook)
 - iv. Mobility, and immobility aids
 - v. Social/family support
 - vi. Do they think they're managing?
- 7. Travel history
- 8. Further social history maybe required depending on the type of presenting complaint for example:
 - vii. Respiratory presenting complaint
 - Ask about pets, dust exposure, asbestos, exposure to the farms, exposure to birds or if there are any hobbies
 - viii. Infectious to disease related
 - Ask for a full travel history including all occasions exposure to water, exposure to foreign food, tuberculosis risk factors, HIV risk factors, recent immunisations



SYSTEMS REVIEW 1. Run through a full list of symptoms from major systems: 2. Cardiovascular: chest pain, palpitations, peripheral oedema, paroxysmal nocturnal dyspnoea (PND), orthopnoea 3. Respiratory: Cough, shortness of breath (and exercise tolerance), haemoptysis, sputum production, wheeze 4. Gastrointestinal: Abdominal pain, dysphagia, heartburn, vomiting, haematemesis, diarrhea, constipation, rectal bleeding 5. Genitourinary: Dysuria, discharge, lower urinary tract symptoms 6. Neurological: Numbness, weakness, tingling, blackouts, visual change 7. Psychiatric: Depression, anxiety 8. General review: Weight loss, appetite change, lumps or bumps (nodes), rashes, joint pain SUMMARY 1. Provide a short summary of the history including: a. Name and age of the patient, presenting complaint, relevant medical history 2. Give a differential diagnosis 3. Explain a brief investigation and management plan SKILL/ACTIVITY PERFORMED SATISFACTORILY Signatures of Supervisor

Developed by

Dr Komal Atta

Director Medical Education
University Medical and Dental College
Faisalabad

Lt. Col. (R) Dr. Khalid Rahim Khan TI (M)

Director Medical Education & International Linkages
University of Health Sciences
Lahore



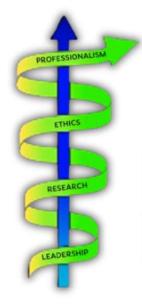


Volume:02



Modular Integrated Curriculum 2K23

Version 3.0



PERLS Expository Portfolio



Modular Integrated Curriculum 2K23

Version 3.0



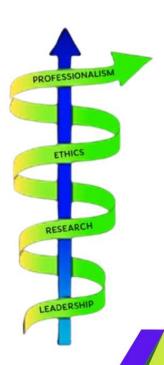
PERLS

Volume:02

PROFESSIONALISM ETHICS, RESEARCH LEADERSHIP SKILLS



PERLS-II Year-II





IMPLEMENTATION PLAN

This section includes the implementation strategy for the PERL Module. It is advised that the DME and facilitators from respective colleges involved in implementing PERLS should read this section carefully before initiating related instructional activities in respective colleges.

PORTFOLIO TEMPLATE

A portfolio template is hereby given with proposed activities for the colleges to use /modify as per their resources. Please note that Portfolio can be hard-bound or e-portfolio depending on the individual college's decision.

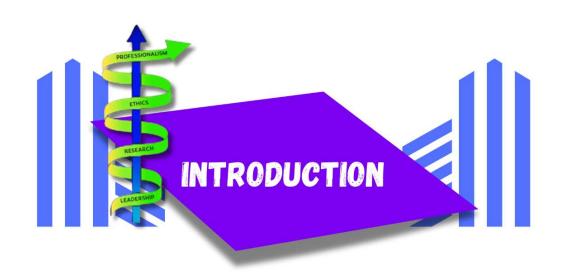
Developed by

Dr. Noor-i-Kiran Naeem

Head of Department of Medical Education ABWA Medical College, Faisalabad

Lt. Col. (R) Dr. Khalid Rahim Khan TI (M)
Director Medical Education & International Linkages
University of Health Sciences

Lahore



MODULE RATIONALE

The UHS PERL module is designed to equip medical students with essential competencies in Professionalism, Ethics, Research, and Leadership, aligning with the PMDC 7-Star Doctor (Professional, Ethical, Scholar, Leader, Communicator, Health Advocate, and Collaborator) framework. This framework emphasizes the multifaceted role of a physician, highlighting the need for a holistic approach to medical education. In an era where healthcare systems are constantly evolving, integrating these core areas is vital for developing well-rounded, responsible, and effective healthcare professionals.

1. Importance of Professionalism:

Professionalism is the cornerstone of medical practice, influencing patient trust and the overall quality of care. This module emphasizes the significance of professional behavior, including accountability, integrity, and respect for diversity, ensuring that students cultivate a strong ethical foundation as they progress through their medical education.

2. Ethical Decision-Making:

As future healthcare providers, students will face complex ethical dilemmas that require sound judgment and moral reasoning. This module focuses on key ethical principles, such as patient autonomy, equity, and justice in resource allocation, particularly in challenging areas like neoplasia and inflammation. Understanding these principles prepares students to advocate for their patients while navigating the intricate landscape of modern healthcare.

3. Research Competence:

Research plays a critical role in advancing medical knowledge and improving patient outcomes. By emphasizing evidence-based practice, this module encourages students to engage with scientific literature, develop robust literature search strategies, conduct research projects and apply research findings to clinical decision-making. This skill set is essential for fostering a culture of inquiry and continuous improvement within the healthcare profession.

4. Leadership Development:

Leadership is an integral part of effective healthcare delivery. This module prepares students to take on leadership roles, emphasizing teamwork, conflict resolution, and

effective communication. By fostering leadership skills, we aim to empower students to influence positive changes in their future workplaces and advocate for patient-centered care.

In summary, the UHS PERL module is designed to create a comprehensive learning experience that prepares medical students for the challenges and responsibilities they will face in their careers. By integrating Professionalism, Ethics, Research, and Leadership, we aim to cultivate competent, compassionate, and ethical healthcare professionals who are equipped to make informed decisions and lead with integrity in an ever-changing medical landscape.

MODULE LEARNING OUTCOMES

- Exhibit accountability, integrity, and respect for diversity in all aspects of medical practice, embodying the principles of professionalism in clinical and academic settings.
- Analyze and apply ethical principles related to patient care, including autonomy, beneficence, non-maleficence, and justice, particularly in challenging situations such as end-of-life decisions and resource allocation.
- Develop and implement effective literature search strategies, critically evaluate scientific literature, and synthesize findings to inform clinical decision-making and practice.
- Participate in a comprehensive research project, from formulating a research question to data collection and analysis, culminating in the production of a publishable manuscript that meets academic and ethical standards.
- Demonstrate leadership skills through effective communication, conflict resolution, and teamwork, fostering a collaborative environment that enhances patient care and academic performance.
- Recognize and address the social determinants of health, advocating for equity in healthcare access and outcomes for diverse patient populations.
- Engage in self-assessment and reflective practices to identify strengths and areas for improvement, creating actionable plans for personal and professional growth throughout their medical education.
- Utilize effective verbal and non-verbal communication skills to engage with patients, families, and colleagues, ensuring clear and compassionate exchanges that enhance understanding and trust.

SUBJECTS INTEGRATED IN THE MODULE

- 1. Professionalism
- 2. Ethics
- 3. Research
- 4. Leadership

LEARNING RESOURCES

1. Professionalism:

- Azam, M. (2021). Mind maps for medicine. Scion Publishing. https://scionpublishing.com/product/mind-maps-for-medicine/
- Bin Abdulrahman, K. A., Khalaf, A. M., Bin Abbas, F. B., & Alanazi, O. T. (2021). Study habits of highly effective medical students. *Advances in Medical Education and Practice*, 12, 627–633. https://doi.org/10.2147/AMEP.S309535
- Bandaranayake, R. C. (2013). Study skills. In K. Walsh (Ed.), Oxford textbook of medical education (pp. 244–254). Oxford University Press. https://doi.org/10.1093/med/9780199652679.003.0021
- American Board of Internal Medicine Foundation, American College of Physicians Foundation, & European Federation of Internal Medicine. (2005). Medical professionalism in the new millennium: A physician charter. Retrieved from https://www.abimfoundation.org/what-we-do/physiciancharter​:contentReference[oaicite:0]{index=0}
- Barnhoorn, P. C., Houtlosser, M., Ottenhoff-de Jonge, M. W., Essers, G. T. J. M., Numans, M. E., & Kramer, A. W. M. (2019). A practical framework for remediating unprofessional behavior and for developing professionalism competencies and a professional identity. *Medical Teacher, 41*(3), 303–308. https://doi.org/10.1080/0142159X.2018.1464133​:contentReference[oaicite:1]{in dex=1}
- Guraya, S. S., Guraya, S. Y., Harkin, D. W., Ryan, Á., Mat Nor, M. Z. B., & Yusoff, M. S. B. (2021). Medical Education e-Professionalism (MEeP) framework; From conception to development. *Medical Education Online*, 26(1), 1983926. https://doi.org/10.1080/10872981.2021.1983926​:contentReference[oaicite:2]{ind ex=2}
- Kirk, L. M. (2007). Professionalism in medicine: Definitions and considerations for teaching. *Baylor University Medical Center Proceedings*, *20*(1), 13–16. https://doi.org/10.1080/08998280.2007.11928225​:contentReference[oaicite:3]{in dex=3}

- Al-Eraky, M. M. (2015). Faculty development for medical professionalism in an Arabian context. [Doctoral Thesis, Maastricht University]. Maastricht University. https://doi.org/10.26481/dis.20150521ma​:contentReference[oaicite:0]{index=0}
- Online Journals and Reading Materials through HEC Digital Library Facility

2. Ethics:

- World Health Organization. (2015). Global health ethics: Key issues. World Health Organization. https://apps.who.int/iris/handle/10665/164576
- World Health Organization. (2011). Standards and operational guidance for ethics review of health-related research with human participants. World Health Organization. https://www.who.int/publications/i/item/9789241502948
- World Health Organization. (2023). WHO Code of Ethics. World Health Organization.
- Harvey, J. C. (n.d.). Clinical ethics: The art of medicine. In Military Medical Ethics, Volume 1, Chapter 3.
- National Bioethics Committee. (2017). Guidelines and teachers handbook for introducing bioethics to medical and dental students. Healthcare Ethics Committee (HCEC).
- Varkey, B. (2021). Principles of clinical ethics and their application to practice. Medical Principles and Practice, 30(1), 17-28. https://doi.org/10.1159/000509119
- Pakistan Medical and Dental Council. (2018). Professional ethics and code of conduct.
- Online Journals and Reading Materials through HEC Digital Library Facility

3. Research

- Medical Statistics. 2nd Ed. by R. Turkwood.
- Biddle, K., Blundell, A., & Sofat, N. (2023). Understanding clinical research: An introduction. Scion Publishing. https://scionpublishing.com/product/understanding-clinical-research/
- Harris, M., & Taylor, G. (2020). Medical Statistics Made Easy (4th ed.). Scion Publishing. https://scionpublishing.com/product/medical-statistics-made-easy-fourth-edition/
- Allen, A. K. (2012). Research skills for medical students. SAGE Publications, Inc. https://doi.org/10.4135/9781526436016
- Online Journals and Reading Materials through HEC Digital Library Facility

4. Leadership

- Wamboldt, R., & Loughran, N. (2017). Communication skills for OSCEs. Scion Publishing. https://scionpublishing.com/product/communication-skills-for-osces/
- Edmonstone, J. (2018). Leadership development in health care in low and middle-income countries: Is there another way? *International Journal of Health Planning and Management*, 33(4), e1193–e1199. https://doi.org/10.1002/hpm.2606​:contentReference[oaicite:0]{index=0}

- National Center for Healthcare Leadership. (2018). Health Leadership Competency Model 3.0. Chicago, IL: National Center for Healthcare Leadership. https://nchl.org​:contentReference[oaicite:0]{index=0}
- Chen T. Y. (2018). Medical leadership: An important and required competency for medical students. *Ci ji yi xue za zhi = Tzu-chi medical journal*, 30(2), 66–70. https://doi.org/10.4103/tcmj.tcmj_26_18



INTRODUCTION

The UHS PERL Module is designed to equip medical students with essential competencies in Professionalism, Ethics, Research, and Leadership. This guide provides facilitators with an overview of the module, instructional strategies, and resources to effectively engage students in their learning journey.

MODULE OVERVIEW

- Professionalism: Focus on developing professional behavior and attitudes.
- Ethics: Emphasis on understanding and applying ethical principles in healthcare.
- Research: Development of research skills and critical appraisal abilities.
- **Leadership**: Enhancement of leadership qualities and communication skills.

MODULE STRUCTURE

1. Professionalism

- **a.** Focus: Development of professional behavior and attitudes essential for medical practice.
- b. Key Topics:
 - i. Professional identity formation
 - ii. Accountability and integrity
 - iii. Respect for diversity

2. Ethics

- **a.** Focus: Understanding and applying ethical principles in healthcare.
- **b.** Key Topics:
 - i. Virtue ethics and moral character
 - ii. Informed consent and patient autonomy
 - iii. Bioethics and clinical ethics

3. Research

- a. Focus: Developing research skills and critical appraisal abilities.
- b. Key Topics:
 - i. Basics of academic writing
 - ii. Literature searches and reviews
 - iii. Evidence-based medicine and research methodologies

4. Leadership

- a. Focus: Enhancing leadership qualities and communication skills.
- b. Key Topics:
 - i. Team dynamics and conflict resolution
 - ii. Patient counseling and informed consent
 - iii. Work-life balance and management skills

MODULE IDEOLOGY

The UHS PERLs module is designed to provide a comprehensive and integrated approach to developing essential competencies in Professionalism, Ethics, Research, and Leadership for medical students throughout their undergraduate training.

Professionalism Module

The Professionalism module begins with the foundational attributes of a professional student or doctor, focusing on intrapersonal skills in the first year. As students progress to the second and third years, the emphasis shifts toward interpersonal skills relevant to various domains, culminating in the formation of a Professional Identity in the fourth year. This progression ensures that students develop not only self-awareness but also the ability to interact effectively and ethically with patients and colleagues.

Ethics Module

The Ethics module initiates discussions on virtue ethics, emphasizing the virtues and moral character expected of medical students and professionals. In the second year, students delve into bioethics, followed by clinical ethics and research ethics in the third and fourth years. This structure helps students navigate the complexities of ethical dilemmas in medical practice, ensuring they are prepared to make informed, compassionate decisions that respect patient autonomy and promote justice.

Research Module

The Research module begins with the basics of academic writing, introducing students to the structure of a manuscript and critical appraisal through Journal Club Meetings and presentations

in the first year. In the second year, the focus shifts to literature searches, summarization, and reviews, incorporating the use of artificial intelligence to enhance research capabilities. The third year introduces evidence-based medicine as a treatment guide in disease management, followed by research design, methodology, clinical audits, and patient safety, culminating in the development of a draft ethical approval proposal. This systematic approach equips students with the skills to conduct meaningful research and contribute to the advancement of medical knowledge.

Leadership Module

The Leadership module starts with personal qualities and communication skills in the first year, emphasizing the importance of effective interaction in healthcare settings. In the second year, the focus expands to teamwork dynamics, patient counseling, informed consent, conflict resolution, and work-life balance. The third year emphasizes management skills, including project management (aligned with research projects), entrepreneurship, and the use of innovation, such as AI in research and team leadership in healthcare setups. Finally, the fourth-year centers on professional identity, self-evaluation, digital transformation in healthcare, public health initiatives, health reforms, and advocacy. Throughout this module, mentoring sessions are integrated to provide role modeling and support, reinforcing the development of a strong professional identity among undergraduate MBBS students.

MODULE DEVELOPMENT AND VALIDATION

The UHS PERL module was developed through a scientific approach, involving the systematic identification of content via extensive literature searches, national and international guidelines, and recommendations from content contributors. This initial framework was presented to a panel of 10 invited experts in a modified e-Delphi round for validation.

During this process, the experts evaluated the module's content and provided constructive feedback, identifying areas for improvement. In the second round, a consensus was reached regarding the relevance of the module content, as well as its depth and scope tailored to the appropriate MBBS year.

Following the module development and validation, two independent reviewers were engaged to assess the sequencing and flow of the topics. Their review focused on ensuring logical coherence

and identifying any additional revisions necessary to enhance the module's clarity and effectiveness. Further, the review was requested from an early career doctor who had recently graduated from an affiliated medical college in order to involve their suggestions for improvement. This rigorous development and validation process ensures that the UHS PERL module meets the highest educational standards and effectively prepares medical students for their professional journey.

LEARNING OBJECTIVES EXPLAINATION

The learning objectives for the UHS PERL module are crafted to enhance students' comprehension and practical application of core competencies in Professionalism, Ethics, Research, and Leadership. Each objective consists of an **Initial Learning Objective** and an **Actionable Learning Objective**, guiding both instructional methods and portfolio assignments.

Example: Work-Life Balance (Leadership)

Learning Objective:

• Understand the importance of maintaining a healthy work-life balance, focusing on strategies for managing personal well-being while fulfilling professional commitments to ensure optimal mental and physical health.

Actionable Learning Objective:

 "Students will create a personal plan that outlines strategies for achieving work-life balance, including time management, self-care practices, and setting boundaries between personal and professional life."

Instructional Strategies:

- Use **interactive discussions** to explore the concept of work-life balance.
- Facilitate workshops where students can share experiences and strategies.
- Implement guided planning sessions where students can outline their personal plans with facilitator support.
- Encourage peer feedback sessions for students to share and refine their plans collaboratively.

Proposed Portfolio Entry:

• "Submit a reflection on your work-life balance plan. Include specific strategies you intend to implement to manage stress and maintain your well-being while meeting your academic and professional responsibilities."

Portfolio Guidance:

- Ensure students understand the importance of documenting their plans and reflections as a means to monitor their progress and make adjustments as needed.
- Provide a rubric that emphasizes clarity, depth of reflection, and practical application in their submissions.

DIVERSE INSTRUCTIONAL STRATEGIES TO FOSTER STUDENT-CENTERED LEARNING

To enhance student engagement and promote a deeper understanding of the material, the following instructional strategies can (not limited to) be employed:

- Active Learning: Incorporate activities that require students to actively participate, such as problem-solving exercises, team-based in learning, group discussions, and hands-on simulations.
- 2. **Collaborative Learning**: Utilize small group work to encourage peer interaction and knowledge sharing, fostering a sense of community and collaborative problem-solving.
- 3. **Flipped Classroom**: Assign readings or videos for students to review before class, allowing class time to focus on discussions and practical applications of the material.
- 4. **Case-Based Learning**: Present real-world scenarios for students to analyze, encouraging critical thinking and the application of theoretical knowledge to practical situations.
- 5. **Technology Integration**: Leverage digital tools and online platforms to facilitate interactive learning experiences, such as virtual simulations, discussion forums, and collaborative projects.
- 6. **Mentoring and Peer Support**: Encourage mentorship opportunities where students can receive guidance from peers or professionals, fostering a supportive learning environment.

PORTFOLIO ENTRY WITH PEEL CONCEPT

As part of the UHS PERL module, students will maintain a portfolio that incorporates the PEEL (Point, Evidence, Explanation, Link) concept for reflective entries:

1. **Point**: State the main idea or argument you want to discuss in your reflection or analysis.

- 2. **Evidence**: Provide supporting evidence or examples from your experiences, coursework, or relevant literature.
- 3. **Explanation**: Explain how the evidence supports your point, including its significance and implications for your learning.
- 4. **Link**: Connect your point to broader themes in the module or your overall personal and professional development.

Portfolio Guidance:

- Portfolio can be in hard bound or e-portfolio. A template for portfolio entry has been attached.
- Encourage students to use the PEEL framework to structure their reflections clearly and coherently. This will aid in their understanding of the material and enhance their ability to articulate their thoughts and learning experiences effectively.

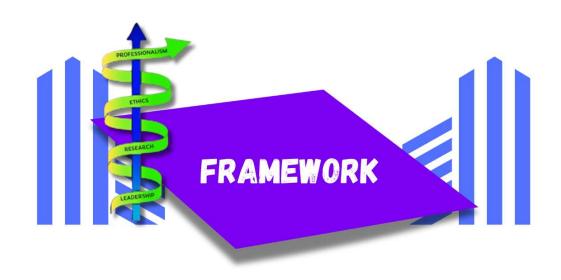
ROLE IN EVALUATION OF THE PERL MODULE

As a facilitator, your role in the evaluation of the UHS PERL module is crucial for ensuring its effectiveness and relevance. Key responsibilities include:

- 1. Monitoring Student Progress: Regularly assess student engagement and understanding through formative assessments, feedback, and participation in discussions and activities.
- 2. Collecting Feedback: Gather feedback from students regarding their learning experiences, instructional strategies, and the relevance of module content. This information is vital for continuous improvement.
- 3. Evaluating Learning Outcomes: Review the alignment of students' performances with the stated learning outcomes. Analyze assessment results to identify trends and areas needing improvement.
- 4. Reflecting on Teaching Practices: Engage in self-reflection and peer evaluation to assess your own teaching methods. Consider what strategies worked well and where adjustments may be needed to enhance student learning.
- 5. Implementing Changes: Based on evaluation findings, propose and implement changes to instructional methods, content delivery, or assessment strategies to better meet the needs of future cohorts.

CONCLUSION

As a facilitator of the UHS PERL module, your role is crucial in guiding students through the complexities of Professionalism, Ethics, Research, and Leadership. By utilizing diverse instructional strategies and fostering an engaging learning environment, you will help students develop the competencies necessary for their future roles as healthcare professionals.





| | GIT & NUTRITION-I | | | | | | |
|------|--|--|--|--|--|--|--|
| • | Sequence of Topics Me to their resources. Topic | | l Colleges are at liberty to manage ch Block | Total Hours = 7.5 | | | |
| Code | Domain | Topic | Topic Specific Learning Objectives | | | | |
| | Professionalism | Self-awareness & Improvement Planning | Appreciate the need to develop self-awareness by reflecting on personal strengths and areas for improvement, and create actionable improvement plans to enhance academic performance and professional development. Conduct a self-assessment to identify their strengths and weaknesses in academic and clinical tasks, and create a detailed improvement plan to address areas where growth is needed. | Submit a self-assessment report outlining your strengths and weaknesses, along with a personalized improvement plan that includes specific strategies and goals for enhancing your skills and knowledge. | | | |
| | Leadership | Role Modelling via Mentoring Session III | Participate in a mentoring session where to discuss their strengths and weaknesses with their mentor, receive feedback, and collaboratively create an action plan for personal and professional development. Share self-Assessment report with mentors for further guidance. | Submit a summary of your mentoring session, including feedback, areas identified for improvement, and the action plan you developed with your mentor to enhance your professional growth. | | | |
| | Ethics | Patient Confidentiality | Discuss the ethical principles of patient confidentiality, including the importance of | Submit a reflection on a case study involving patient confidentiality. | | | |

| | | • | protecting patient information and the legal and professional consequences of breaching confidentiality. Review a clinical scenario involving patient confidentiality and identify how the principles of confidentiality were maintained or breached, proposing strategies for improvement where necessary. | Discuss the actions taken to protect patient information and reflect on the ethical responsibilities of healthcare professionals in maintaining confidentiality. |
|------------|---|---|--|---|
| Leadership | Basics of Teamwork | • | Describe the roles and responsibilities of a team member in healthcare, including the importance of collegiality & effective information sharing Describe the stages of team dynamics Appraise how team dynamics influence performance and outcomes. Self-assessment as a team member/leader using e.g. The Blake and Mouton Managerial Grid Leadership Self-Assessment Questionnaire | Submit results of leadership self- assessment. |
| Research | Building Evidence-Based Arguments | • | Discuss the principles of constructing an evidence-based argument, including developing a clear research question or thesis, organizing the argument in a logical sequence, critically appraising and using relevant scientific | Submit a written argument on a medical topic, demonstrating how you structured your argument and incorporated evidence from scientific literature to support your claims. |

| | | RI | evidence, acknowledging counterarguments, ensuring coherence, and properly citing sources to support claims in medical writing and discussions. | |
|------|---|---------------------|---|--|
| • | Sequence of Topics Mer to their resources. Topic | | l Colleges are at liberty to manage ch Block | Total Hours = 4.5 |
| Code | Domain | Торіс | Specific Learning Objectives | Proposed Portfolio Entry |
| | Professionalism | Time Management | Discuss the importance of effective time management in medical education and practice, and develop strategies to prioritize tasks, manage academic responsibilities, and maintain a healthy worklife balance. Create a weekly schedule that prioritizes academic tasks, clinical work, and personal activities, demonstrating their ability to manage time effectively | Submit a time management plan outlining your weekly schedule, including study hours, clinical tasks, and personal time. Reflect on how this plan helps you balance your responsibilities and improve productivity. |
| | Ethics | Informed Consent | Discuss the ethical and legal principles of informed consent, including the patient's right to make autonomous decisions based on clear, accurate, and comprehensive information about their treatment options, risks, and benefits. Review a case scenario and practice obtaining informed consent, | Submit a reflection on a case where you practiced or observed the informed consent process. Discuss how the information was communicated to the patient and how patient autonomy was respected. |

| | | ensuring they provide clear explanations of the risks, benefits, and alternatives, and confirming patient understanding. |
|------------|---|---|
| Leadership | Patient Counselling about disease | Discuss the principles of effective patient counseling, focusing on clear and empathetic communication to explain disease conditions, and lifestyle modifications, ensuring patient understanding and engagement in their care. Practice counseling a simulated patient about a disease, using clear, empathetic communication to explain the diagnosis, treatment options, and necessary lifestyle changes, while ensuring the patient's understanding. Create and submit a poster illustrating the key steps involved in patient counseling for a specific disease, including how to explain the diagnosis, treatment options, and lifestyle modifications. Highlight strategies to ensure patient comprehension and engagement in the decision-making process. |





| ENDOCRINOLOGY & REPRODUCTION-I | | | | | | | |
|--------------------------------|--|--------------------------------------|--|--|--|--|--|
| - | Sequence of Topics Me to their resources. Topic | | Colleges are at liberty to manage h Block | Total Hours = 09 | | | |
| Code | Domain | Topic | Specific Learning Objectives | Proposed Portfolio Entry | | | |
| | Professionalism | Task Management & Productivity | Discuss the principles of effective task management and productivity, focusing on setting priorities, managing workloads, and maintaining efficiency in both academic and clinical settings. Create a task list for an academic week, prioritizing tasks based on deadlines and importance, and reflecting on strategies to enhance productivity and efficiency. | Submit a weekly task management plan, detailing how you organized and prioritized your tasks to maximize productivity. Reflect on how this approach helped improve your efficiency and ability to meet academic or clinical deadlines. | | | |
| | Research | Literature Search Strategy | Discuss the principles of developing a literature search strategy, including identifying relevant databases, using appropriate keywords, and refining search criteria to gather evidence for research purposes. Design and implement a literature search strategy for a given medical topic, selecting appropriate databases and refining search terms to find relevant articles. | Submit a summary of your literature search strategy, including the databases used, search terms, and filters applied. Reflect on how you refined your search to gather the most relevant and high-quality articles for your research. | | | |
| | Research | Literature Summary | Discuss steps for summarizing research findings and effectively organizing literature | Submit a completed literature matrix that includes a summary of key studies related | | | |

| | | enabling he comparison synthesis across students. Create matrix for topic, surfindings, methodol conclusion relevant | on and of information udies. a literature or a selected mmarizing key logies, and ons from articles to analysis and | to your chosen topic. Include columns for author, year, study design, findings, and relevance. |
|-----------------|--|--|--|--|
| Leadership | Taking Evidence based Informed Consent | Discuss p taking info in a mann incorporal based info ensuring p fully informatheir treat risks, and Practice informed a simulusing e information | orinciples of cormed consent per that tes evidence-cormation, patients are med about ment options, benefits. taking consent from lated patient, evidence-based on to explain cedure, risks, and res, ensuring patient's | Submit a reflection on a simulated informed consent session. Discuss how you communicated evidence-based information to the patient, how you ensured their understanding, and the importance of respecting their autonomy in the decision-making process |
| Professionalism | Respect for Diversity | Appreciation important respection healthcar sensitivity responsive patients' gender, a while | ce of g diversity in re, including y and veness to culture, age, and disabilities, applying s of inclusion | Create a simple poster or a one-page reflection outlining key strategies for respecting diversity in patient care. Include examples of how to communicate effectively with patients from different backgrounds and |

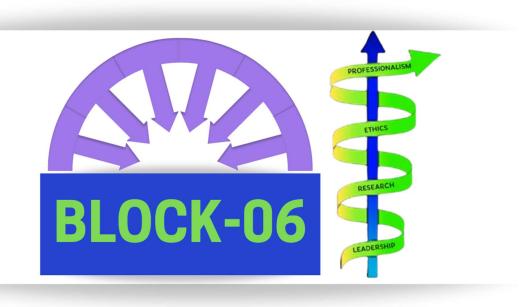
| | Leadership | Conflict Resolution | effective conflict resolution focusing on communication, negotiation, and collaboration to achieve positive outcomes. • Participate in a role- playing exercise to navigate a conflict scenario, practicing conflict resolution techniques such as active listening, empathy, and problem- solving. | Submit a reflection on the conflict resolution exercise. Discuss the strategies you used, how effective communication played a role, and what you learned about resolving conflicts in a healthcare environment. | |
|---------------|---|--|--|--|--|
| * Dyonood Cod | *Proposed Sequence of Topics Mentioned below. Medical Colleges are at liberty to manage | | | | |
| | • | าติonea beiow. เกเลดเดล s can switch within eac | | Total Hours = 06 | |
| Code | Domain | Торіс | Specific Learning Objectives | Proposed Portfolio Entry | |
| | Research | Literature Reviews | Discuss the purpose and methodology of conducting a literature review, including how to synthesize existing research, identify gaps in the literature, and establish a framework for future research. Conduct a literature review on a specific medical topic, summarizing key findings, identifying trends, and highlighting gaps in current research. | Submit a poster showing steps in conducting literature review. | |
| | Leadership | Work-Life Balance | Appreciate the importance of maintaining a healthy | Submit a reflection on your work-life balance plan. Include | |

| | | work-life balance, focusing on strategies for managing personal wellbeing while fulfilling professional commitments to ensure optimal mental and physical health. Create a personal plan that outlines strategies for achieving work-life balance, including time management, self-care practices, and setting boundaries between personal and professional life |
|-----------------|---|--|
| Professionalism | Digital representation | Discuss principles of digital representation in a professional context, focusing on how to effectively present an eportfolio, wiki page, or blog page that reflects one's skills, experiences, and professional identity. Create and present a digital representation of their professional achievements, utilizing platforms such as eportfolios, wiki pages, or blogs to showcase their skills, projects, and reflections. Submit a link to you e-portfolio, wiki page or blog page alonwith a brief reflection on the choices yo made in its designant and content. Discus how this digital representation align with you professional goal and identity. |
| Ethics | Patient autonomy in sensory disabilities | Discuss the ethical principles surrounding patient autonomy, particularly in the context of individuals with sensory disabilities, focusing on their right to make informed decisions about their healthcare. Analyze a case study involving a patient with Create presentation of infographic that highlights ke strategies for supporting patier autonomy individuals with sensory disabilities. Sensory disabilities Include information on effective |

| | communication techniques, adaptations to |
|---|--|
| support and respect the patient's autonomy while ensuring they have | understanding, and ways to ensure |
| access to the necessary information to make informed choices. | informed consent. |







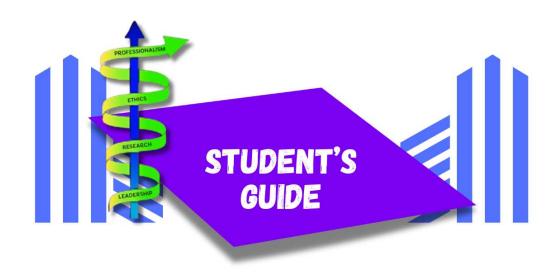
| | NEUROSCIENCES I | | | | |
|------|--|--------------------------------|---|--|--|
| • | Sequence of Topics Me to their resources. Topic | | Colleges are at liberty to manage h Block | Total Hours = 7.5 | |
| Code | Domain | Topic | Specific Learning Objectives | Proposed Portfolio Entry | |
| | Professionalism | Professional Accountability | Discuss the concept of professional accountability, emphasizing the importance of taking ownership of one's actions in patient care, academic responsibilities, and interactions with colleagues, including adherence to protocols and deadlines. | Submit a reflective journal entry discussing a situation where you failed to demonstrate professional accountability. Include details on how you took ownership of your actions, met deadlines, followed protocols, and engaged with colleagues to ensure the highest standards of care and professionalism. | |
| | Research | Literature Reviews | Conduct a literature review on a specific medical topic, summarizing key findings, identifying trends, and highlighting gaps in current research. | Submit a structured literature review that includes an introduction to the topic, a summary of key studies, an analysis of trends, and identification of research gaps. Reflect on the process of conducting the review and how it informs future research directions. | |
| | Ethics | End of Life Decision | Discuss the ethical principles surrounding end-of-life decisions, particularly the criteria for brain death, and the implications for patient | Submit a case analysis of a scenario involving brain death. Discuss the ethical challenges faced by healthcare providers | |

| | | care,family decisions, and organ donation. • Analyze a case involving a patient diagnosed with brain death, discussing the ethical considerations of end-of-life decisions, including family dynamics, communication, and the implications for organ donation. and families, the decision-making process, and how these decisions align with ethical principles in medicine. |
|------------|---|--|
| Leadership | Evidence-Based Decision making | Discuss the principles of evidence-based decision making, focusing on how to integrate the best available research evidence with clinical expertise and patient values to make informed decisions in healthcare settings. Apply evidence-based decision-making principles to a clinical case scenario, evaluating relevant research studies and integrating findings with clinical expertise and patient preferences to recommend a course of action. Submit a written analysis of a clinical case where you applied evidence-based decision-making principles. Discuss the research you reviewed, how you integrated it with clinical expertise, and how you considered patient values in your decision-making process. |
| Leadership | Role Modelling via Mentoring Session IV | Participate in a mentoring session where they will discuss their strengths and weaknesses with their mentor, receive feedback, and collaboratively create an action plan for personal Submit a summary of your mentoring session, including feedback, areas identified for improvement, and the action plan you developed with your mentor to enhance your professional growth. |

| | | INFLA | professional development MMATION | | |
|------|--|------------------------------------|--|---|--|
| • | *Proposed Sequence of Topics Mentioned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block Total Hours = 1.5 | | | | |
| Code | Domain | Торіс | Specific Learning Objectives | Proposed Portfolio Entry | |
| | Ethics | Equity + Resource Allocation | Discuss ethical principles of equity in resource allocation, particularly concerning patients with neoplasia (cancer) and inflammation-related conditions, and how these principles impact access to care and treatment options. Analyze a case involving resource allocation for patients with neoplasia or inflammation, discussing how equity principles were applied or challenged in determining access to treatments and interventions. | Submit a case study analysis addressing the ethical challenges of resource allocation for patients with neoplasia and inflammation. Discuss the implications of equity in access to care, how decisions were made, and reflect on potential improvements to ensure fair distribution of resources. | |







What your Seniors say

01

Phased Personal Development

02

Focus on Ethics

The ethics component emphasizes bioethics and research ethics. Including real-world case discussions and scenarios helps in solidifying ethical decision-making skills, providing students with practical understanding and insights into handling dilemmas faced in medical contexts.

04

Hands-On Mentoring

Given the challenges in research, hands-on mentoring is critical. Guidance helps ensure students can balance research with clinical duties effectively, aiding them in integrating theoretical knowledge into practical settings smoothly and competitively.

06

Continuous Feedback Loops

Embedded continuous mentoring and feedback mechanisms aid in professional identity development. These loops help students evaluate their progress and areas of improvement, fostering a learning environment conducive to personal and professional growth within the medical field.

The UHS PERLs module adopts a phased approach beginning with personal development and progressing toward professional identity formation. This logical progression helps cultivate a solid foundation and prepares students for their future roles as medical professionals.



UHS PERLs Module Overview by Early Career Doctor



O8
Impact on Career Competencies

The UHS PERLs module builds foundational competencies, preparing students for successful careers. Its innovative curriculum and practical focus ensure that graduates have the necessry skills and knowledge to compete globally and adapt to evolving healthcare demands.

03

Integration of Research skill building

The inclusion of the research module especially with capacity building and skill development is an innovative step that prepares students for the future. This exposure will equip them with contemporary skills essential for modern medical practices and competitive postgraduate competencies.

05

Leadership Training

The leadership segment covers teamwork, entrepreneurship, and public health, addressing diverse aspects crucial for modern medical practice. Prioritizing these skills ensures holistic development, making students well-rounded professionals prepared for dynamic healthcare environments.

07

Emphasis on Clinical Rotations

The module encourages active reflection during clinical rotations. This reflective practice aims to enhance skill application and real-time learning, ensuring that students are well-prepared to tackle the dynamic challenges they will face in real-world healthcare environments.

Dr.Zil-e-Fatima Naeem Medical Officer Government City Hospital, Toba Tek Singh, Punjab

INTRODUCTION

The UHS PERL Module is designed to equip medical students with essential competencies in Professionalism, Ethics, Research, and Leadership. This guide provides facilitators with an overview of the module, instructional strategies, and resources to effectively engage students in their learning journey.

MODULE STRUCTURE

5. Professionalism

- **a.** Focus: Development of professional behavior and attitudes essential for medical practice.
- b. Key Topics:
 - i. Professional identity formation
 - ii. Accountability and integrity
 - iii. Respect for diversity

6. Ethics

- **a.** Focus: Understanding and applying ethical principles in healthcare.
- b. Key Topics:
 - i. Virtue ethics and moral character
 - ii. Informed consent and patient autonomy
 - iii. Bioethics and clinical ethics

7. Research

- a. Focus: Developing research skills and critical appraisal abilities.
- b. Key Topics:
 - i. Basics of academic writing
 - ii. Literature searches and reviews
 - iii. Evidence-based medicine and research methodologies

8. Leadership

- a. Focus: Enhancing leadership qualities and communication skills.
- b. Key Topics:
 - i. Team dynamics and conflict resolution
 - ii. Patient counseling and informed consent

MODULE IDEOLOGY

The UHS PERLs module is designed to provide a comprehensive and integrated approach to developing essential competencies in Professionalism, Ethics, Research, and Leadership for medical students throughout their undergraduate training.

Professionalism Module

The Professionalism module begins with the foundational attributes of a professional student or doctor, focusing on intrapersonal skills in the first year. As students progress to the second and third years, the emphasis shifts toward interpersonal skills relevant to various domains, culminating in the formation of a Professional Identity in the fourth year. This progression ensures that students develop not only self-awareness but also the ability to interact effectively and ethically with patients and colleagues.

Ethics Module

The Ethics module initiates discussions on virtue ethics, emphasizing the virtues and moral character expected of medical students and professionals. In the second year, students delve into bioethics, followed by clinical ethics and research ethics in the third and fourth years. This structure helps students navigate the complexities of ethical dilemmas in medical practice, ensuring they are prepared to make informed, compassionate decisions that respect patient autonomy and promote justice.

Research Module

The Research module begins with the basics of academic writing, introducing students to the structure of a manuscript and critical appraisal through Journal Club Meetings and presentations in the first year. In the second year, the focus shifts to literature searches, summarization, and reviews, incorporating the use of artificial intelligence to enhance research capabilities. The third year introduces evidence-based medicine as a treatment guide in disease management, followed by research design, methodology, clinical audits, and patient safety, culminating in the development of a draft ethical approval proposal. This systematic approach equips students with

the skills to conduct meaningful research and contribute to the advancement of medical knowledge.

Leadership Module

The Leadership module starts with personal qualities and communication skills in the first year, emphasizing the importance of effective interaction in healthcare settings. In the second year, the focus expands to teamwork dynamics, patient counseling, informed consent, conflict resolution, and work-life balance. The third year emphasizes management skills, including project management (aligned with research projects), entrepreneurship, and the use of innovation, such as AI in research and team leadership in healthcare setups. Finally, the fourth-year centers on professional identity, self-evaluation, digital transformation in healthcare, public health initiatives, health reforms, and advocacy. Throughout this module, mentoring sessions are integrated to provide role modeling and support, reinforcing the development of a strong professional identity among undergraduate MBBS students.

MODULE DEVELOPMENT AND VALIDATION

The UHS PERL module was developed through a scientific approach, involving the systematic identification of content via extensive literature searches, national and international guidelines, and recommendations from content contributors. This initial framework was presented to a panel of 10 invited experts in a modified e-Delphi round for validation.

During this process, the experts evaluated the module's content and provided constructive feedback, identifying areas for improvement. In the second round, a consensus was reached regarding the relevance of the module content, as well as its depth and scope tailored to the appropriate MBBS year.

Following the module development and validation, two independent reviewers were engaged to assess the sequencing and flow of the topics. Their review focused on ensuring logical coherence and identifying any additional revisions necessary to enhance the module's clarity and effectiveness. Further, the review was requested from an early career doctor who had recently graduated from an affiliated medical college in order to involve their suggestions for improvement.

This rigorous development and validation process ensures that the UHS PERL module meets the highest educational standards and effectively prepares medical students for their professional journey.

ASSESSMENT AND EVALUATION

- **Portfolio:** Throughout the module, you will be required to maintain a portfolio that includes reflections, case analyses, and evidence of your learning experiences. This portfolio will serve as a demonstration of your growth and understanding of the module content.
- **Participation**: Engage actively in discussions, group work, and role-playing exercises to enhance your learning and application of the concepts.
- OSCE Exam: At the end of the module, you will participate in an Objective Structured
 Clinical Examination (OSCE) as a summative assessment. This exam will evaluate your
 practical skills, including communication, clinical reasoning, and the application of
 professionalism and ethical principles in simulated patient scenarios along with leadership
 and research skills.

EVALUATION: YOUR FEEDBACK

As part of the UHS PERL module, we value your feedback to continually improve the learning experience. Your insights will help us understand the effectiveness of the module and identify areas for enhancement.

FEEDBACK AREAS:

- 1. Module Content:
 - a. Was the content relevant and appropriate for your learning needs?
 - b. Were the topics covered comprehensively?
- 2. Teaching Methods:
 - a. Did the teaching methods (lectures, discussions, practical exercises) support your learning?
 - b. How effective were the mentoring sessions in reinforcing your understanding?
- 3. Assessments:

- a. Did the assessments (portfolio, OSCE exam) accurately reflect your knowledge and skills?
- b. Were the expectations for the assessments clear and achievable?

4. Resources:

- a. Were the provided resources (reading materials, online tools) helpful for your learning?
- b. Is there any additional resource you would suggest?

5. Overall Experience:

- a. What aspects of the module did you find most beneficial?
- b. What suggestions do you have for improving the module in the future?

FEEDBACK SUBMISSION:

Please provide your feedback using the following format to the Department of Medical Education in your College:

- Strengths: What worked well?
- Areas for Improvement: What could be improved?
- Additional Comments: Any other thoughts or suggestions?

Your feedback is essential for refining the UHS PERL module and ensuring it meets the needs of future students. Thank you for your participation.

PEEL PORTFOLIO TEMPLATE

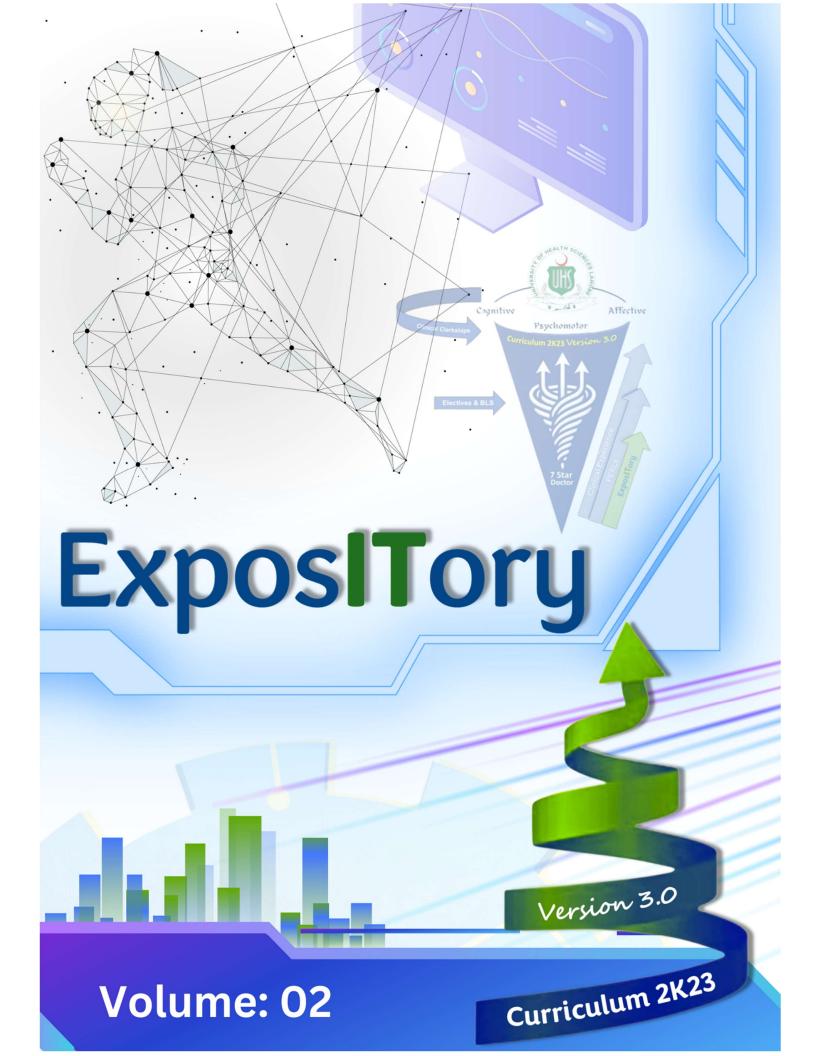
At the end of this guide, you will find the PEEL (Point, Evidence, Explanation, Link) portfolio template, which will help you structure your reflections and analyses effectively.

- 1. **Point**: State the main idea or point you want to discuss.
- 2. **Evidence**: Provide evidence or examples to support your point.
- 3. **Explanation**: Explain how the evidence relates to your point and its significance.
- 4. **Link**: Connect your point to broader themes in the module or your personal development.

CONCLUSION

The UHS PERL Module aims to equip you with the essential competencies needed to thrive as a future healthcare professional. Your engagement, critical thinking, and commitment to learning

will be key to your success in this module. Embrace the challenges and opportunities for growth and make the most of the available resources and support.





Module Rationale

To integrate Expository Writing with an Introduction to Information Technology (IT) course for undergraduate medical students, we can align the IT skills taught each year with the writing tasks and objectives. The aim is to enhance students' digital literacy and writing skills, which is crucial for modern medical practice.

This integrated spiral of Expository Writing and IT ensures that as students advance in their medical education, they also develop digital literacy skills. These skills complement their writing abilities and prepare them for modern medical practice, where digital communication, research, and data management are essential. By the end of the 4-year program, students will be proficient in writing and using technology to support their work as healthcare professionals.

Developed by

Dr. Ambreen KhalidAssociate Professor of Physiology

Lt. Col. (R) Dr. Khalid Rahim Khan TI (M)
Director Medical Education & International Linkages
University of Health Sciences
Lahore

Year 2: Expository Writing II - Advanced Argumentation and Critical Thinking + IT: Digital Research and Collaboration Tools

THEORY

| | Subject: Expository w | riting & IT | Total Hours =10 |
|------|--|---|---|
| Code | Specific Learning Outcome | Integrating Disciplines | Topics |
| | To evaluate the strengths and weaknesses of the written arguments& discern bias. To create a poster to present the critical appraisal of research articles. IT Skills: To use PowerPoint and other poster-making tools. To perform advanced internet research, use online collaboration tools (Google Docs for teamwork, Google Drive for file sharing), and learn management systems (LMS). Writing Application: To use critical appraisal templates and poster making tools. To collaborate on writing tasks in groups using | PERLS, Anatomy, Physiology & Biochemistry | Critical appraisal of research articles Poster preparation and presentation skills. Use of online collaboration tools (Google Docs, LMS) Basic plagiarism checks (free Al Tools for plagiarism checks) |

| | shared online platforms (e.g., editing documents in teams). | |
|----|--|--|
| 7. | To use plagiarism detection software (free Al Plagiarism detection tools) to maintain academic integrity in writing. | |



University of Health Sciences Lahore



Department of Medical Education & International Linkages







university of Health Sciences Lahore





Curriculum 2K23 Version 3.0



GASTROINTESTINAL AND NUTRITION I DATE FROM: DATE TO: CHECKED BY:

| Roll No: | | | |
|--------------------------------------|---|--|--|
| Assignment Topic: | | | |
| Date: | | | |
| | Submit a self-assessment report outlining your strengths and weaknesses, along with a | | |
| personalized improvem and knowledge. | nent plan that includes specific strategies and goals for enhancing your skills | | |
| and knowledge. | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| Facilitator Remarks: | | | |
| racilitator Remarks: | | | |
| | | | |

| Roll No: | | | |
|-------------------------|---|--|--|
| Assignment Topic: | | | |
| Date: | | | |
| | Submit a summary of your mentoring session, including feedback, areas identified for improvement, and the action plan you developed with your mentor to enhance your professional growth. | | |
| and the action plan you | developed with your mentor to enhance your professional growth. | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| Facilitator Remarks: | | | |
| | | | |

| Roll No: | |
|-------------------------|---|
| Assignment Topic: | |
| Date: | |
| | a case study involving patient confidentiality. Discuss the actions taken to |
| | tion and reflect on the ethical responsibilities of healthcare professionals in |
| maintaining confidentia | llity. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |

| Roll No: | |
|-------------------------|------------------------|
| Assignment Topic: | |
| Date: | |
| Submit results of leade | rship self-assessment. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| E | |
| Facilitator Remarks: | |
| | |

| Roll No: | |
|-------------------------|---|
| Assignment Topic: | |
| Date: | |
| Submit a written argur | ment on a medical topic, demonstrating how you structured your argument |
| and incorporated evide | ence from scientific literature to support your claims. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |



Curriculum 2K23 Version 3.0



| | MODULE: RENAL-I |
|-------------|-----------------|
| DATE FROM: | |
| DATE TO: | |
| CHECKED BY: | |

| Roll No: | |
|----------------------|---|
| Assignment Topic: | |
| Date: | |
| | nent plan outlining your weekly schedule, including study hours, clinical tasks, flect on how this plan helps you balance your responsibilities and improve |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |

| Roll No: | |
|----------------------|--|
| Assignment Topic: | |
| Date: | |
| | a case where you practiced or observed the informed consent process. mation was communicated to the patient and how patient autonomy was |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |

| Roll No: | |
|------------------------|---|
| Assignment Topic: | |
| Date: | |
| disease, including how | oster illustrating the key steps involved in patient counseling for a specific to explain the diagnosis, treatment options, and lifestyle modifications. ensure patient comprehension and engagement in the decision-making |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |





| MODULE: I | ENDOCRINOLOGY & REPRODUCTION-I |
|---------------|--------------------------------|
| DATE FROM: | |
| DATE TO: | |
| CHECKED BY: _ | |

| Roll No: | |
|-------------------------|--|
| Assignment Topic: | |
| Date: | |
| | nanagement plan, detailing how you organized and prioritized your tasks to |
| | Reflect on how this approach helped improve your efficiency and ability to |
| meet academic or clinic | cal deadlines. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |

| Roll No: | |
|--|---|
| Assignment Topic: | |
| Date: | |
| Submit a summary of y and filters applied. Ref quality articles for your databases used, search | your literature search strategy, including the databases used, search terms, flect on how you refined your search to gather the most relevant and high-research. Submit a summary of your literature search strategy, including the h terms, and filters applied. Reflect on how you refined your search to gather high-quality articles for your research. |
| | |
| Facilitator Remarks: | |

| Roll No: | |
|------------------------|--|
| Assignment Topic: | |
| Date: | |
| | erature matrix that includes a summary of key studies related to your chosen |
| topic. Include columns | for author, year, study design, findings, and relevance. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |
| . admitator Homania. | |
| | |

| Roll No: | |
|-------------------------|--|
| | |
| Assignment Topic: | |
| Date: | |
| evidence-based informa | a simulated informed consent session. Discuss how you communicated ation to the patient, how you ensured their understanding, and the importance nomy in the decision-making process |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |
| i acilitator Nelliarks. | |

| Roll No: | |
|------------------------|---|
| Assignment Topic: | |
| Date: | |
| Create a simple poster | or a one-page reflection outlining key strategies for respecting diversity in |
| patient care. Include | examples of how to communicate effectively with patients from different |
| backgrounds and ensu | re that care is inclusive and equitable. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |
| | |

| Roll No: | |
|--------------------------|--|
| Assignment Topic: | |
| Date: | |
| | xercise. Discuss the strategies you used, how effective communication played |
| a role, and what you lea | arned about resolving conflicts in a healthcare environment. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |
| . asimator Romantor | |
| | |





| MODULE | : HEAD AND NECK & SPECIAL SENSES |
|---------------|----------------------------------|
| DATE FROM: | |
| DATE TO: | |
| CHECKED BY: _ | |

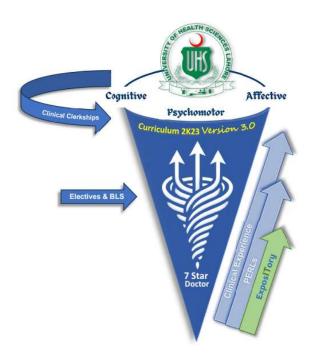
| Roll No: | |
|------------------------|---|
| Assignment Topic: | |
| Date: | |
| Submit a poster showir | ng steps in conducting literature review. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |

| Roll No: | |
|----------------------|--|
| Assignment Topic: | |
| Date: | |
| | n your work-life balance plan. Include specific strategies you intend to stress and maintain your well-being while meeting your academic and lities. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |

| Roll No: | |
|----------------------|--|
| Assignment Topic: | |
| Date: | |
| | portfolio, wiki page, or blog page along with a brief reflection on the choices in and content. Discuss how this digital representation aligns with your identity. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |

| Roll No: | |
|--------------------------|---|
| Assignment Topic: | |
| Date: | |
| in individuals with sens | or infographic that highlights key strategies for supporting patient autonomy ory disabilities. Include information on effective communication techniques, and ways to ensure informed consent. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |





| | MODULE: NEUROSCIENCES-I |
|-------------|-------------------------|
| DATE FROM: | |
| DATE TO: | |
| CHECKED BY: | |

| Roll No: | |
|---------------------------|--|
| Assignment Topic: | |
| Date: | |
| Submit a reflective journ | nal entry discussing a situation where you failed to demonstrate professional details on how you took ownership of your actions, met deadlines, followed ged with colleagues to ensure the highest standards of care and |
| | |
| Facilitator Remarks: | |

| Roll No: | |
|------------------------|---|
| Assignment Topic: | |
| Date: | |
| studies, an analysis o | erature review that includes an introduction to the topic, a summary of key f trends, and identification of research gaps. Reflect on the process of and how it informs future research directions. |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |

| Roll No: | |
|---------------------------|--|
| Assignment Topic: | |
| Date: | |
| | of a scenario involving brain death. Discuss the ethical challenges faced by |
| | nd families, the decision-making process, and how these decisions align with |
| ethical principles in med | aicine. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |
| | |
| | |

| Roll No: | | | | |
|---|---|--|--|--|
| Assignment Topic: | | | | |
| Date: | | | | |
| Submit a written analysis of a clinical case where you applied evidence-based decision-making | | | | |
| | research you reviewed, how you integrated it with clinical expertise, and how | | | |
| you considered patient | values in your decision-making process. | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Facilitator Remarks: | | | | |
| | | | | |
| | | | | |

| Roll No: | |
|-------------------------|---|
| Assignment Topic: | |
| Date: | |
| | rour mentoring session, including feedback, areas identified for improvement, |
| and the action plan you | u developed with your mentor to enhance your professional growth. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |
| | |





| | MODULE: INFLAMMATION |
|-------------|----------------------|
| DATE FROM: | |
| DATE TO: | |
| CHECKED BY: | |

| Roll No: | | | | |
|---|---|--|--|--|
| Assignment Topic: | | | | |
| Date: | | | | |
| | nalysis addressing the ethical challenges of resource allocation for patients | | | |
| with neoplasia and inflammation. Discuss the implications of equity in access to care, how decisions were made, and reflect on potential improvements to ensure fair distribution of resources. | | | | |
| were made, and reneet | on potential improvements to ensure fail distribution of resources. | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Facilitator Remarks: | | | | |
| | | | | |

| Roll No: | |
|-------------------------|---|
| Assignment Topic: | |
| Date: | |
| | on end-of-life decisions, particularly regarding ventilator use, and propose an |
| ethically sound approac | ch to decision-making. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |
| | |





| MODULE: Exp | ository Writing II Advanced Writing Skills, |
|-----------------|---|
| Critical Thinki | ng, and Use of Digital Collaboration Tools. |
| | |
| DATE EDONA | |
| DATE FROM: | |
| DATE TO: | |
| CHECKED BY: | |

| Roll No: | |
|--|--|
| Assignment Topic: | Critical Appraisal |
| Date: | |
| Write a report of crit weaknesses, and biase | ical appraisals of selected research articles, evaluating their strengths, es using a structured template. |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Facilitator Remarks: | |

| Roll No: | | | |
|---|--|--|--|
| Assignment Topic: | Poster Creation for Research Appraisal | | |
| Date: | | | |
| Reflect on the design process and tools used (e.g., PowerPoint, Canva) to make your poster. | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| Facilitator Remarks: | | | |
| | | | |

| Roll No: | | | | |
|--|-------------------------------------|--|--|--|
| Assignment Topic: | Collaborative Project Documentation | | | |
| Date: | | | | |
| Collaboratively write and submit an essay using an online platform, documenting the process of group editing and discussions held within the document. | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Facilitator Remarks: | | | | |

| Roll No: | | | | | |
|---------------------------|--|--|--|--|--|
| Assignment Topic: | Internet Research Exercise | | | | |
| Date: | | | | | |
| | port documenting an advanced internet research activity, showcasing gathered | | | | |
| information from reliable | e sources and citing these sources using citation software. | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Facilitator Remarks: | | | | | |
| | | | | | |

Skill Acquisition Workshops





Modular Integrated Curriculum 2K23

Version 3.0

Workshop Schedule for MBBS students

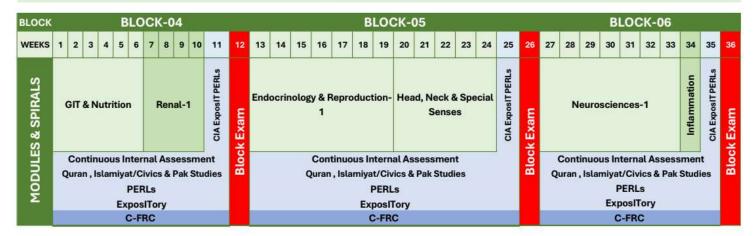
The Following **Skill Acquisition Workshops** are included in the "Modular Integrated Curriculum 2K23 *version* 3.0":

| Sr. No. | Course Name | Academic Year | Duration | Eligibility |
|------------|---------------------------------------|---|----------|---|
| 1. | Basic Life Support | 1 st Year / 2 nd Year | 2 days | Eligibility requirement for appearing in the 4 th Professional Examination |
| 2. | Advanced Life Support | 3 rd Year / 4 th Year | 1 day | Eligibility requirement for appearing in the Surgical Clerkship examination |
| 3. | Cardiac First Response | 3 rd Year / 4 th Year | 1 day | Eligibility requirement for appearing in the Medicine Clerkship examination |
| 4. | Trauma first responders | 3 rd Year / 4 th Year | 1 day | Eligibility requirement for appearing in the Surgical Clerkship examination |
| 5. | Emergency Neonatal Resuscitation | 3 rd Year / 4 th Year | 1 day | Eligibility requirement for appearing in the Pediatrics Clerkship examination |
| 6. | Emergency Obstetrics Resuscitation | 3 rd Year / 4 th Year | 1 day | Eligibility requirement for appearing in the Gynecology / Obstetrics Clerkship Examination |



MODULAR INTEGRATED CURRICULUM 2K23 VERSION 3.0, VOLUME-02

YEAR-II PLANNER



Note: Weeks allocated for Summer and Winter Break will be adjusted in the academic calender by the institution



