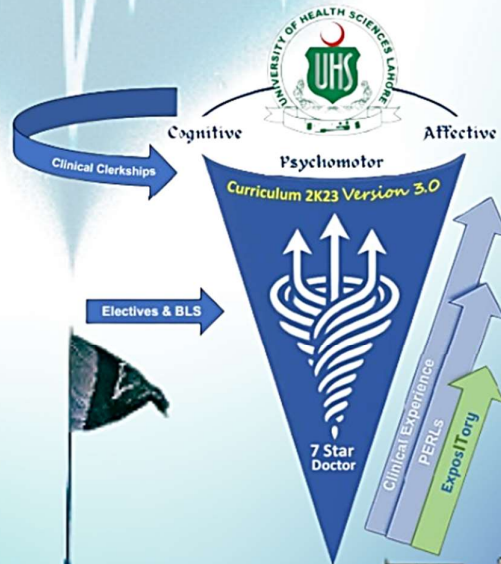




# Modular Integrated Curriculum 2K23

## Volume 03

Version 3.0

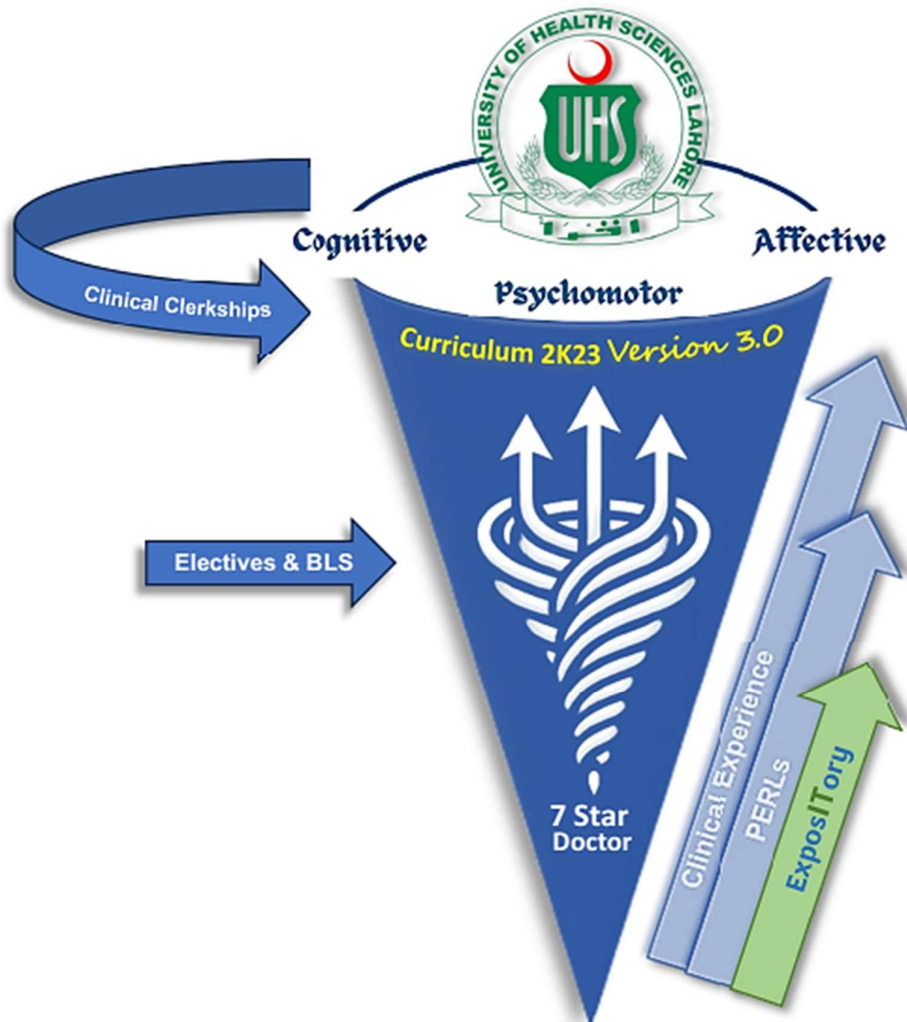


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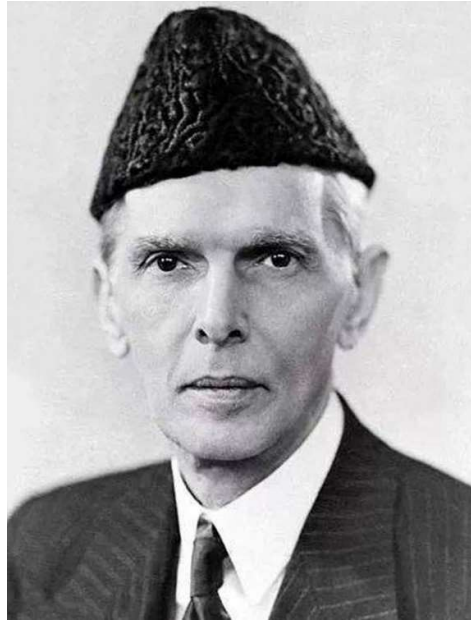


# Modular Integrated Curriculum 2K23

*version 3.0*



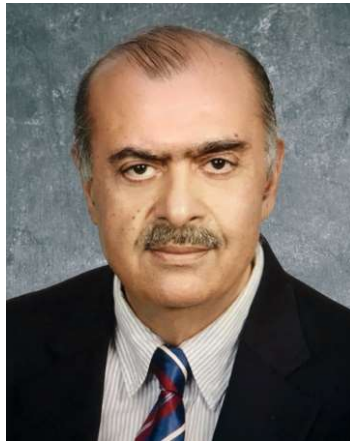




Without education it is complete darkness and with education it is light. Education is a matter of life and death to our nation. The world is moving so fast that if you do not educate yourselves, you will be not only completely left behind, but will be finished up.

**Quaid e Azam Muhammad Ali Jinnah**

Islamia College Lahore 1945



By the grace of Allah, the modular integrated curriculum is about to enter its third year of implementation. It has been a significant paradigm shift for the educational approach for all the affiliated medical colleges. It has given more depth to the instructional strategies at the institutional level. University of Health Sciences has given more autonomy to the affiliated colleges by virtue of an increase in the assessment capacity by the colleges. All the faculty members of different disciplines have been contributing at the time of curricular development as well as along the implementation period through their constructive feedback.

University of Health Sciences is cognizant of all the global trends, educational best practices and technological innovations. Our departments make a meticulous approach to develop curricula and adopt practices which can enable our students for all these challenges ahead. We are fully aware of the dynamic demands of healthcare nationally and internationally. Our faculty, researchers and statutory bodies categorically embrace any evolving paradigms.

University of Health Sciences respects the diversity and ideologies of its affiliated colleges. The curriculum document and its implementation has previously also accommodated and acknowledged this diversity. It is a matter of pride that all the affiliated colleges have excelled more than the expected outcomes mentioned in the first version of Curriculum 2K23.

The next challenge at hand is the clinical training of the students. They are in the process of developing skills and clinical competencies to be prepared for the forthcoming clerkship years. The Curriculum 2K23 version 3.0 has elaborate details for creating conducive learning and clinical environments. We look forward to a similar collaborative spirit by the colleges for a more robust clinical training with applied relevance and preparation for global practices.

In addition to the clinical trainings, these years have two other important facets of Community and Family Health. Curriculum 2K23 version 3.0 will provide an educational platform for developing competencies pertaining to these disciplines. The future graduates of our affiliated colleges will be professionally competent with broader horizons to be effective healthcare professionals.

I congratulate the Medical Educationists of the Working Group, Subject Leads, Faculty Members and Department of Medical Education UHS for conforming the Curriculum 2K23 to my vision for an outcome-based, cognitively enhanced, rightly skilful and practically apt healthcare professionals.

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



It is with great pride and excitement that we are presenting the third version of our modular integrated curriculum. Curriculum 2K23 is a testament to our unwavering commitment to nurturing the next generation of healthcare professionals equipped to thrive in a dynamic and challenging world.

In a rapidly evolving medical landscape, where scientific breakthroughs and patient-centered care redefine our practices daily, it is imperative that our curriculum reflects both innovation and tradition. This new program has been designed with the holistic development of our students in mind, emphasizing not only clinical excellence but also ethical practice, research aptitude, leadership skills, and community engagement.

This curriculum is a roadmap to excellence and service. The knowledge and skills the students acquire, will contribute meaningfully to the health and well-being of society, embodying the true spirit of University of Health Sciences Lahore

**Prof Nadia Naseem**  
Pro Vice Chancelor  
University of Health Sciences Lahore



**Curriculum 2K23 version 3.0** has been meticulously crafted using Kern's Six-Step Approach to Curriculum Development, ensuring a structured, comprehensive, and outcome-focused design process. The strategic approach involved conducting stakeholder engagement, defining clear objectives, selecting educational strategies, all converging to a well-rounded curriculum. All the revamps done are in line with the feedback based on the implementation process thus keeping the contextual focus pertinent to our healthcare system.

The iterative process of design and development has principally involved the Working Group-Clinical comprising of Medical Educators, subject experts, faculty leads, and policy makers from University of Health Sciences. This collaboration enabled a curriculum that not only adheres to global medical education standards but also reflects the local healthcare context. We look forward to fostering a clinical culture where students develop critical thinking, professional competence, work ethics, and psychomotor skills.

Our iteration for *version 3.0* was to incorporate novel elements such as community-oriented educational practice, family medicine, bio-risk management, expository writing, basic IT training, clinical entrepreneurship, minimum service delivery standards, and a structured approach to skill acquisition mapping. Family medicine has been embedded to promote comprehensive patient care and primary healthcare.

**Curriculum 2K23 version 3.0's** robust framework is designed to empower affiliated medical colleges to tailor their instructional strategies in alignment with their unique institutional ideologies and available resources. This flexibility encourages educational diversity while maintaining a unified set of core competencies across the board. Through this curriculum, each institution can craft its own distinctive learning experience while adhering to the overarching goals and standards set forth by the university.

**Curriculum 2K23 version 3.0** will In sha **Allah** shape competent, compassionate, and community-conscious physicians ready to meet the demands of modern healthcare.

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





### **Vision Statement**

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

### **Mission Statement**

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



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**CONFERRERS & DEVELOPING TEAM**





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8	Prof. Ahsan Waheed Rathore Vice Chancellor, University of Health Sciences, Lahore
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### SYNDICATE MEMBERS

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**MBBS YEAR-3/PHASE III CURRICULUM 2K23 *version 3.0***

**SUBJECT SPECIALISTS**

**ANATOMY**

1	Prof Iffat Badar
2	Prof. Dr Nargis Ashraf
3	Prof. Dr. Quddus-ur-Rehman
4	Prof. Sarah Khalid
5	Prof Alvia Batool
6	Prof Nausheen Raza
7	Dr Yasmin Bashir
8	Dr. Uruj Zehra

**BIOCHEMISTRY**

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13	Mr. Imran Hameed
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5	Dr, Ahmad zeeshan
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4	Prof. M. Maqsood
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3	Dr. Saima Pervaiz
4	Dr. Jalil Khan
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<b>RADIOLOGY</b>	
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2	Prof Zaheer Akhtar
<b>RHEUMATOLOGY</b>	
1	Dr. Saira Elain Anwer Khan
<b>HEMATOLOGY</b>	
1	Prof Asif Naveed
<b>DERMATOLOGY</b>	
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2	Prof Khawar Khurshid
3	Prof Uzma Ahsan
4	Prof Zahida Rani
5	Prof Atif Shehzad
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2	Dr. Saima Batool
3	Dr. Fur Haider
<b>PERLs / Portfolio &amp; Expository</b>	
1	Dr. Noor-i-Kiran Naeem
2	Dr. Saima Chaudhry
3	Lt. Col (R) Dr. Khalid Rahim Khan TI(M)
4	Prof Iram Manzoor
5	Prof Amir Bashir
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7	Prof Hina Ahmad
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15	Dr. Uzma Kauser
16	Dr Zil-e-Fatima Naeem
17	Dr. Saqib Rabbani

### CURRICULUM 2K23 WORKING GROUP

1	Prof Alia Bashir
2	Prof. Musarrat ul Hasnain
3	Prof Dr. Shahid Sarwar
4	Prof. Dr. Anila Jaleel
5	Prof. Dr. Iram Manzoor
6	Prof Naureen Omar
7	Dr. Syed Hassan Shoaib
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24	Dr. Abeera Fatima
<b>CURRICULUM STEERING COMMITTEE</b>	
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3	Prof. Alia Bashir
4	Prof. Waris Farooka
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17	Dr. Syed Hassan Shoaib
18	Dr. Sobia Nawaz
19	Dr. Noor-I-Kiran Naeem
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)**

1	Lt. Col. (R) Dr. Khalid Rahim Khan TI (M)
2	Prof. Sumera Ehsan
3	Dr. Lamia Yusuf
4	Dr. Farah Rehman
5	Dr. Midhat Salman
6	Dr. Saqib Rabbani
7	Dr. Rameen
8	Dr. Qurrat ul Ain
9	Ms. Shehla Noor
10	Mr. Faisal Imran
11	Mr. Aiman Shahzad
12	Mr. Luqman
13	Mr. Mubashar Arshad
14	Mr. Rashid Ali

# MODULES INCHARGE

1	Foundation II & EBM	Dr. Abeer Anjum
2	General & Clinical Pharmacology	Dr. Remsha Mustafa
3	Hematopoetic, Immunity & Transplant	Dr Nighat Nadeem
4	Forensic Medicine and Toxicology I, II & III	Dr. Rafia Minhas
5	Musculoskeletal & Locomotion II	Dr. Noor-i-Kiran Naeem
6	Infectious Disease	Dr. Nadeem Razaq
5	Neoplasia	Dr. Qurrat ul Ain Mehfooz
6	Cardiovascular-II	Dr. Ayesha Sadiq
7	Respiratory II	Dr Kainat Javed
8	Community Medicine & Family Health I & II	Prof. Dr. Iram Manzoor
9	Family Medicine	Prof. Dr. Iram Manzoor
10	Ophthalmology	Dr. Sobia Nawaz
11	Behavioral Sciences	Dr. Saira Rahim
12	Neurosciences	Dr Fatima Naumeri
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11	GIT & Nutrition II	Dr. Remsha Mustafa
12	Otorhinolaryngology	Dr Naureen Omar
13	Endocrinology & Reproduction II	Dr. Noor-i-Kiran Naeem
14	Maternal & Child Health	Dr. Alia Bashir
15	Renal II	Dr. Abeer Anjum
16	Dermatology	Dr. Abeera Fatima
17	PERLs & Portfolio	Dr. Noor-I-Kiran Naeem
18	ExposITory	Dr. Ambreen Khalid
19	CFR-C	Dr. Komal Atta



## **CURRICULUM LEADS**

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

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

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

<b>MODULES COORDINATORS</b>	
1	Dr. Midhat Salman
2	Dr. Rameen
3	Ms. Shehla Noor
4	Mr. Aiman Shahzad

<b>WRITE UP, RESEARCH, EVALUATION &amp; ANALYSIS</b>	
1	Lt. Col (R) Dr. Khalid Rahim Khan TI (M)
2	Dr. Noor-i-Kiran Naeem
3	Dr Komal Atta
4	Dr Ambreen Khalid
5	Dr. Lamia Yusuf
6	Dr Rameen
7	Dr Abeer Anjum
8	Mr. Aiman Shahzad
9	Dr Midhat Salman
10	Ms. Shehla Noor

<b>Focal Coordinator &amp; Creative Design</b> <i>Version 3.0</i>	
1	Ms. Shehla Noor
<b>Administrative Support</b>	
1	Mr. Luqman Javaid
2	Mr. Mubashir Arshad
3	Mr. Rashid Ali



**SECTION-02**





# University of Health Sciences Lahore



**VOLUME:03**

# Preamble Curriculum 2K23 Version 3.0

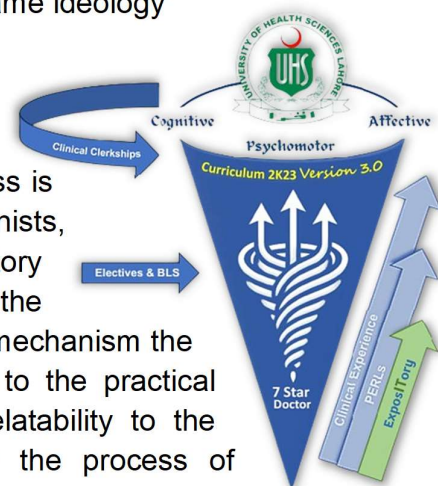


**Curriculum 2K23** has entered its third year of development and design, **Alhamdulillah**. The curriculum is currently being implemented in all the affiliated medical colleges of **University of Health Sciences Lahore**. The curriculum is a Modular Integrated curriculum with a spiral format. It has significant elements for affective and psychomotor training in addition to enhancing the cognitive base for diverse learning skills.

## Development & Design

**Vice Chancellor UHS** envisioned an outcome-base which can ensure that our graduates are cognitively enhanced, rightly skilful and practically apt for the professional and practical challenges ahead. All three phases reflect the same ideology

Right since its inception the principal focus has been to contextualize the content and the learning experiences mentioned in the document, to be based on the stakeholders' requirements. An extensive iterative process is followed in every phase where the medical educationists, subject experts, healthcare leaders and regulatory professionals all contribute, analyze and/or review the content of the curriculum development. By virtue of this mechanism the contextualization of the subjects within the curriculum to the practical aspects is ensured. Another overarching context is relatability to the affiliated college implementation. This is ensured as the process of development is principally done with diverse representation from different affiliated medical colleges.



The second phase and third phase followed the same methodology of design and development. This has further potentiated the identification of the learning needs, instructional strategies and assessment methodologies. The second phase defined distinctly the pre-clinical competency framework. The attainment of these competencies has enabled the learner to step into the clinical years with preparedness and aligned skill set.

The third phase of design and development of **Curriculum 2K23** is primarily about transitioning of the learners to clinical years. This is about broadening our learner's psychomotor base and aligning it with the cognitive components in a more practical and purposeful manner. Diversity of learning practices has also been offered for practice and implementation at the college levels.

A robust mechanism for feedback has always existed as an integral component of **Curriculum 2K23** which has a claim of being a contextualized live document. Chapter 12 of **Curriculum 2K23 version**

## Feedback & Revamp

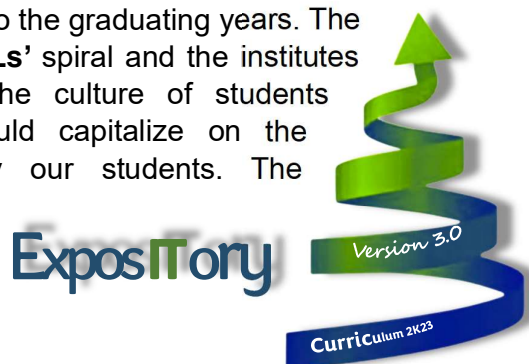
2.0 elaborated explicitly the process of feedback. This feedback process was effectively utilized by many affiliated colleges, faculty members, medical educationists and students. All the feedback with possible solutions received were analyzed and processed for recommended amendments in the current version. These solutions if found feasible, implementable and in line with the curricular requirements by the respective subject experts have been included in the **Curriculum 2K23 version 3.0**. We suggest that respective colleges may engage the community representatives for identifying healthcare needs which have to be further incorporated into the curriculum as the document evolves in the subsequent years.

**Curriculum 2K23 version 3.0** has a lot of components which **Clinical Years** transitions the learner for clinical competence. This segment, of the entire spectrum of five years, is also the conduit for the forthcoming clerkships. Third year also has a strong backdrop of Community orientated medical education and entry to the primary healthcare approach through the module of family medicine. So principally the educational approach is transitioning from cognitive to clinical. A detailed outline in the minimum requirements is represented through the psychomotor skills development section in the curriculum and that has been mapped with the C-FRC through its logbook entries.

Development of a '**conducive clinical culture for students**' has been categorically addressed in the next chapter. Despite making suggestions as how to roll out the clinical trainings mentioned in the next chapter it is expected that significant diversity will be practiced by different institutions through the trainings, documentation and skill acquisition of the students. The faculties of respective colleges will professionally express their mettle of training as they develop and execute the clinical trainings. Robust training mechanism with an intact element of patient safety remains the hallmark of an esteemed medical institute.

Vice Chancellor UHS envisioned an outcome-base for **New Components** cognitively enhanced, rightly skillful and practically apt yield of professionals. **Curriculum 2K23 version 3.0** has been designed by the developing medical educationists and subject experts with elements which can make a graduate more practical and relevant to the applied aspects of practice. With the backdrop of this vision newer elements have been included in the curriculum.

A new '**ExposITory Spiral**' has been added to the curriculum. The '**ExposITory Spiral**' is an integrated spiral for developing the expository writing skills and use of IT and other technologies by the students as they advance into the graduating years. The '**ExposITory Spiral**' runs closely with the '**PERLs**' spiral and the institutes can utilize both these spirals to enhance the culture of students researching. Our instructional strategies should capitalize on the enhancing pace of technological usage by our students. The '**ExposITory Spiral**' can be implemented in a futuristic manner to utilize advancements of AI. Only formal training of usage of AI and related technology will enable an 'ethical' practice.





**University of Health Sciences** being a pivotal institution in the healthcare landscape of the country ensures that all its graduates are well versed with the existing legalities and norms. Graduates need a formal understanding of the existing regulations of practice. The '**Minimum Service Delivery Standards**' or practice as defined by the government regulatory authorities are included in the module of Community Medicine and Public Health. The students will also be sent to community and family medicine related rotations to understand the practical, legal and ethical principles in practice.

Inculcation of a culture of safety and professional responsibility in our future graduates required that a component of **Bio risk management** should be added. This would enhance the student's insight to biosafety and make them regulatory compliant.

In the current years and with a backdrop of healthcare academia the colleges are in a unique position that they acquire a leading position through acquiring communities which fall in the catchment area. Community oriented trainings can be mutually beneficial for the dependents and learners jointly. The required ambit for such initiatives can be based by the department of **Community Medicine and Public Health**.

**Family Medicine** has been included for the first time in the undergraduate medical curriculum. This enables to prep up our graduates for the primary and secondary healthcare facilities. The module of **Family Medicine** has didactic and rotational components. Medical colleges can integrate the rotation with other disciplines to impart better understanding of the integral position of **Family Medicine** for our healthcare system.

**PERLs Module** has also entered its third year of implementation. However, the implementation of this module had significant challenges and feedback. All these were analyzed, and it has been revamped for better understanding and adoptability. More specific outcomes with more explicit methodologies of content delivery have been incorporated in the **portfolio/e-portfolio**. However, the cardinal principle of PERLs module still exists that all institutions can diversely acquire the required outcomes developing the defined traits in their students. This diversity is based on resources available, faculty strengths and the institutional ideology. The instruction of usage of PERLs module has been revised and explicitly mentioned in the relevant section.



**Clinical Entrepreneurship** has been included as a component of Community Medicine. This will provide platform for an enterprising mindset of the graduates. **Health Economics and Clinical Entrepreneurship** are also concepts which are being suggested for the forthcoming electives and can be included at the institutional level.

**Curriculum 2K23** increased the percentage of internal assessment that contributed to summative assessment, and thus potentiating the role of the Medical Colleges. **Curriculum 2K23 version 3.0** has re-addressed the assessment plan. In accordance with the assessment plan new nodes of assessment has been incorporated which are inclusive of continuous internal assessment, professionalism, class quiz, attendance and EOR-assessments. The programmatic assessment will give a more comprehensive approach to the faculty for better evaluation and provide learning opportunities continuously. The medical colleges will be able to utilize this programmatic

## Assessment

assessment more effectively. The year long commitment of students having exemplary attendance is rewarded with additional marks. The all-new programmatic assessment plan is also in line with the layout prescribed by **PM&DC**.

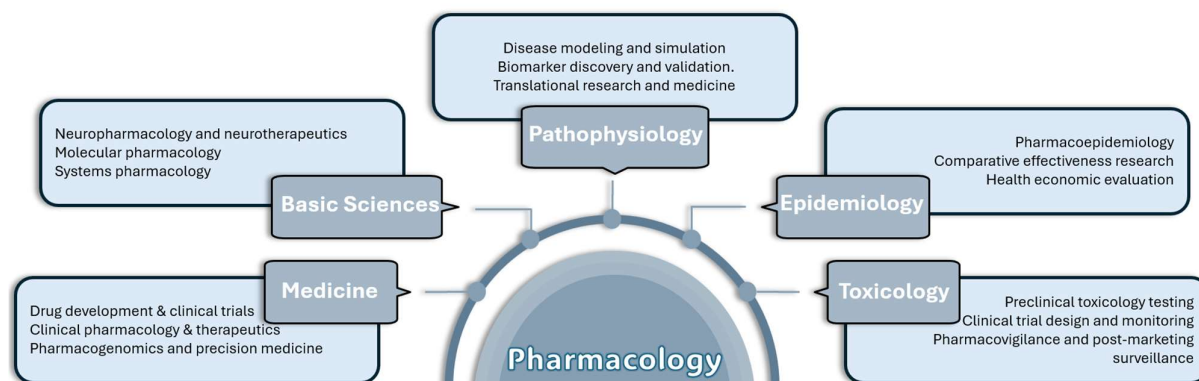
**EOR-Assessment** is a mode of assessment which can ensure skill and competency acquisition for all the three clinical years. The medical colleges are at liberty to develop and submit their own respective EOR-Assessment plans along with the assessment methodologies adopted. The methodologies which have been recommended by UHS are mentioned in the relevant section. It is also recommended that the colleges should enhance the stakes of the module-specific assessment in a manner that they are linked to the block examination assessments.

The facade of **Curriculum 2K23** may range for different colleges based on the strategy of their implementation. The effectiveness of the curricular components is rooted in the mechanism of implementation that a college may adopt based on its strengths, resources, faculty commitment, and institutional ideology. The curriculum is not prescriptive and respects the institutional ideologies. **Curriculum 2K23 version 3.0** also gives latitudes through its PERLs module, range of instructional techniques, diversity in clinical assessments and a robust internal assessment weightage. A detailed description of how the clinical years should be strategized by the college Academic Council, is given in the next chapter.

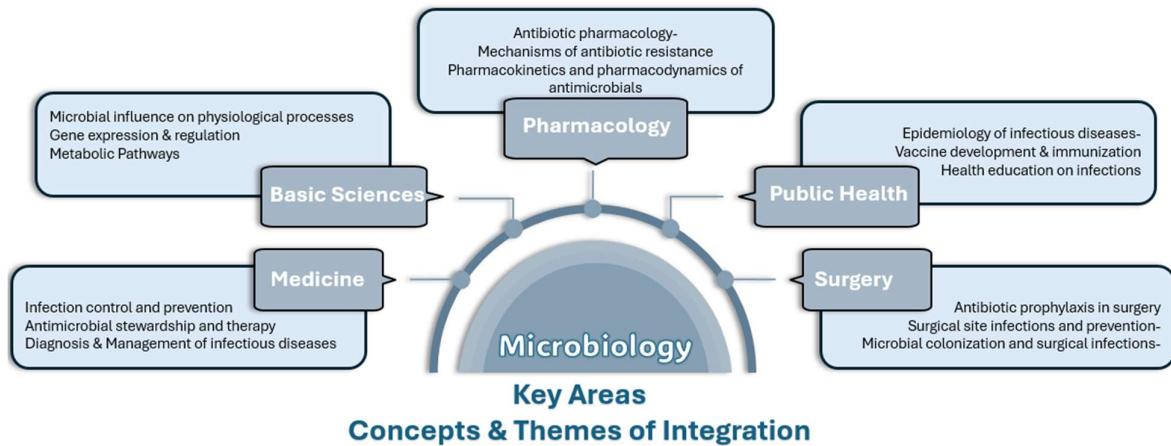
## Implementation

**Curriculum 2K23 version 3.0** has been designed meticulously to ensure that the faculty members individually or collectively can exercise their educational wisdom and experiential practices for their training strategies. The **Curriculum 2K23 version 3.0** despite being an ‘integrated’ curriculum gives latitude to the faculty to develop their respective instructional strategies with their own thematic approach for integration. The content has been mentioned with recommendations for the integrating subjects. However, the choice or pattern of integrating discipline is not limited to the ones mentioned in the tables. They can be varied and diversified based on the faculty strengths, diversity of faculty members and training points. A detailed mapping of the themes and sub-themes can be undertaken at the departmental level to execute the ‘integration’ in a more effective manner. A couple of examples for mapping of themes are as follows:

## Integration & Implementation



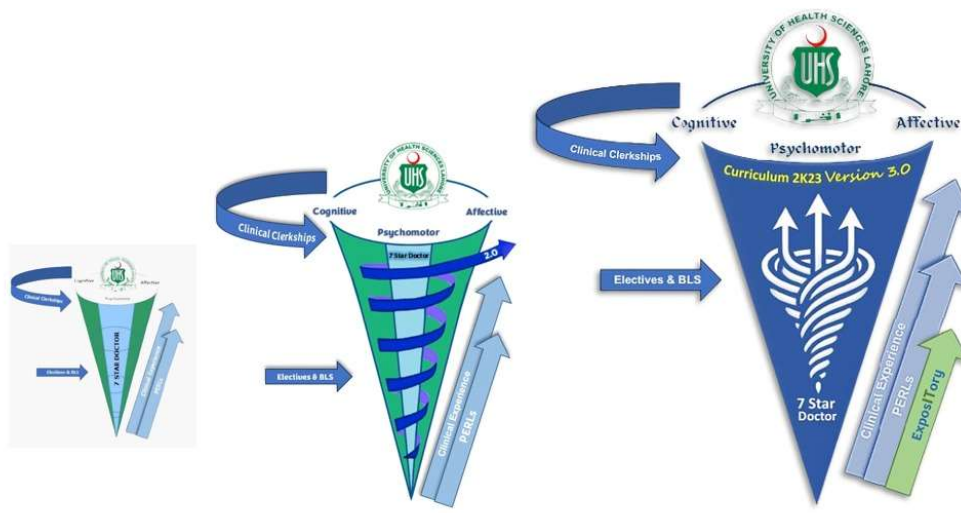
**Key Areas**  
**Concepts & Themes of Integration**



Integrated assessment through MCQs and SEQs can be based on these mappings after successful implementation of integration.

For phase III, three groups of individuals need to be acknowledged. Firstly, a new **Working Group-Clinical** was nominated by **Vice Chancellor UHS**, who managed all the previously established protocols but with relevance to the forthcoming clinical year challenges. The systems thinking practice of our **Working Group-Clinical** combined with the design thinking of our **subject experts, lead faculty members and professors** at our affiliated medical colleges made the **Curriculum 2K23 version 3.0 possible, Alhamdulillah**. A latent group of key players need to be categorically acknowledged for their endless efforts and silent contributions. Third group of key players are the professionals of **Department of Medical Education** who work all year long to develop, design, manage feedback, analyze feedback, formulate postulates for inclusion in the next phase and finally publish the next version of **Curriculum 2K23**.

## Acknowledgment





Student engagement lies at the heart of the **University of Health Sciences'** newly revamped medical undergraduate **Modular Integrated Curriculum 2K23**.

Enhancing students' engagement for learning is also in line with the David Harden's SPICES model's student centeredness.

**Curriculum 2K23** advocates active student engagement for the institutional instructional planning.

Effective student engagement encompasses three fundamental themes: setting direction for students, commitment of students for learning and facilitation of student learning. To cultivate these, certain components must be inculcated to address the context of the curriculum, competencies and outcomes. This would ultimately lead to the adoption of diverse instructional strategies for successful implementation.

Setting Direction for Students entails guiding learners through their educational path, clinical skill acquisition and affective training with structured support and mentorship. Colleges can employ diverse instructional strategies based on their local situations. Collaborative learning techniques and technology-enhanced learning are the in-vogue elements of instruction. These can be incorporated for student learning. However, all the techniques are to be backed explicitly by Clear guidance for the desired educational outcomes. **Curriculum 2K23** is well structured and aligned for the cause of setting direction of the student. All the contextual tangents are also covered. Same clarity of direction for the outcomes is required at the institutional level. Only this clarity will navigate the student for professional and academic the ownership of his/her learning process and educational autonomy.



Commitment of Students is nurtured by fostering a strong sense of purpose and ownership in their learning process. By aligning educational experiences with clear competencies and outcomes, students understand the expectations and skills they need to master. **Curriculum 2K23** has an elaborate account of these outcomes and competencies. Now it is the institutional prerogative to implement and endorse this alignment. This direction will motivate and make the learner commit to set personal learning goals, engage deeply with content mentioned, and continually embrace feedback. Faculty are urged to provide timely, formative feedback and create a supportive learning environment that inspires dedication and perseverance.

Facilitation of Student Learning involves creating an environment where students are empowered to take charge of their educational journey. Faculty members are encouraged to deliver the context of the curriculum that reflects real-world scenarios and clinical relevance, allowing students to connect theoretical knowledge with practical application. Students should enhance critical thinking and be active participants of their learning process.

Through this multi-faceted approach, the University of Health Sciences ensures that students of all the affiliated and constituent institutes are not just passive recipients of knowledge but active participants in their educational development, prepared for the challenges of modern medical practice, national requirements and global employability.



**Quest for medical mastery is paved with epistemic curiosity,  
educational engagement, and relentless pursuit of knowledge. A  
learner grows with every challenge**

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



# Creating a Conducive Clinical Culture *for the students*

Curriculum 2K23 *version 3.0*

Students of **Modular Integrated Curriculum 2K23 *version 3.0*** are stepping into the third year of their training which is **Clinical Culture**

the transition from **basic sciences** to the **clinical sciences**. The paradigm of integration itself preps the learner for a more convenient transition to the clinical years. However, institutions and the clinical departments are suggested to make the learning experience during these years more conducive, hands-on and with a synergistic approach to develop sound affective traits for the promising professionals. The core values of the institutions should ultimately be reflected through the professional practices of the graduating doctors. **A substantive clinical culture would nurture, support, and challenge students to become skilled, compassionate, and ethical healthcare professionals with an uncompromised patient safety and care. A clinical culture roots from the committed values, professionals' behaviours and approach based on care.**

The aim is to educate a comprehensive understanding of the set of professional, clinical and behavioural expectations. **Students are expected to be professional in their conduct.** The entire clinical faculty serves as the role model for the students. Existing professional practices would serve as the declared institutional standards. So, a deliberate and categorical workup regarding setting a conducive environment of clinical learning backed by meticulous clinical behaviors must be undertaken by all professionals, of all tiers, always. **Aim**

Developing a robust clinical culture needs an **Institutional Commitment** institutional ideology which must be declared, endorsed, adopted and implemented by all tiers. A mechanism must be devised to commit to these details. A few of the recommended steps are:

- Principal along with the Clinical Faculty Heads should commit to develop the comprehensive plan in accordance with the competencies described in **Curriculum 2K23 *version 3.0***.
- The annual planning should ensure that all the batches be given enough learning opportunities to acquire the required competencies during their rotations, irrespective of the sequence of the wards attended.
- Department of Medical Education should be managing the completion of assigned tasks and timely submission of the logbooks.

- The Academic Council and DME will develop and design **the ‘Clinical Rotation Plan’** in accordance with the available resources, number of students, infrastructure, and the annual planner.
- All Clinical faculty heads & HODs will be **responsible** for the specific competencies / tasks / skills relevant and specific to their discipline, and workplace which must be acquired by the students as they rotate through the wards/skill labs/simulation center.
- All Clinical faculty heads & HODs will ensure that a respective plan for the students’ skill acquisition is developed and designed in accordance with the competencies / tasks / psychomotor skills mentioned in **Curriculum 2K23 version 3.0**.
- All clinical faculty heads & HODs must be aware of the specific competencies / tasks / psychomotor skills mentioned in **Curriculum 2K23 version 3.0** , when they plan and execute the **‘Competencies acquisition map’** and **‘EOR-Assessments’** , specific to their disciplines.
- **EOR-Assessment** plan will be in accordance with the annual rotation plan.
- **EOR-Assessment** methodologies will be jointly decided by the clinical faculty heads and HODs keeping them uniform for all rotations
- Department of Medical Education will ensure compliance with and alignment of :
  - Clinical training structure
  - Rotation plan
  - Competencies acquisition maps of different disciplines
  - EOR-Assessments plan
  - **Curriculum 2K23 version 3.0** ,



**Skill acquisition mapping is to be designed to guide students in tracking their competencies, aiding self-reflection and targeted improvement.**

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

Clinical teaching is to be **structured**, based on different institutional factors. All will be accounted for as planning for creating a conducive environment is undertaken and as the structure of delivery is defined. The essential components for this plan are :



Providing and embracing feedback are both **Individualized Feedback** integral components for developing and delivery of a cultural change. A conducive clinical culture cannot be established without a mechanism of feedback for the students at the workplace.

- All HODs should engage in an individualized feedback process for individual students during their rotations.
- Acquisition of competency or development of skill is to be monitored by the clinical faculty. Constructive feedback is the only approach to monitor and train the students for better psychomotor skill attainment.
- The HOD should ensure that as different learners require different frequency of practice before the skill is acquired. The logbook is designed to support a repetitive practice approach before skill acquisition is endorsed.

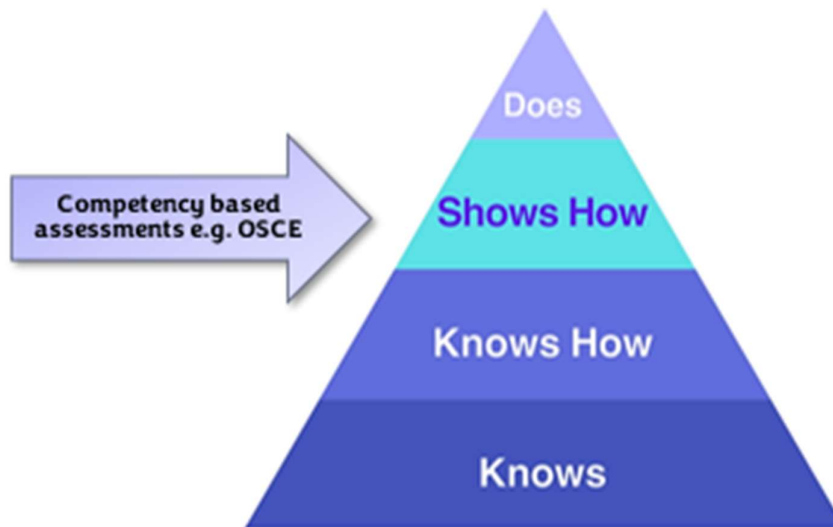
Faculty Training being an essence for any paradigm shift or cultural change necessitates it to be a part at this juncture also. DMEs can specify the need and niche for the training requirements. Every institute, thus developing their own faculty training plan.

## Faculty Training

- Clinical faculty should be encouraged to engage the students for safe practices. Keeping the clinical environment safe for the end-user, '**Patient Safety**' is mandatory and requires a categorical approach by the college leads
- Principals and DMEs are encouraged to organize faculty training as regards to standardize the **workplace-based assessment methods** for all the clinical faculty.



- DMEs should organize training workshops for the different workplace-based assessments techniques for formative and summative assessments. They can include but may not be limited to:
  - Reflective practices
  - OSCE
  - Mini CEX
  - Case based discussions
  - One Minute preceptors
- The clinical assessment should transition based on the 'Miller's triangle of clinical competence'.



Other facets of creating a conducive environment are to be catered for. Collaborative aspects of teamwork and maintaining a non-threatening environment makes the pace of work and direction of efforts aligned for a better professional environment. **Environment**

- A visible coordination among all tiers of clinical professionals should exist.
- Interprofessional respect and collaboration should be ensured by the Clinical HODs. Most of colleges currently are training sites for Nursing and Allied Health students as well.
- Opportunities for peer assisted learning can be encouraged. This can be achieved by facilitating student-HO interactivity and student-student interactivity.
- Institutional policy regarding workplace harassment should be explicitly available for all tiers of healthcare professionals and students.
- Student and doctor's burnout should be catered for categorically. A **fatigue mitigation** plan should be available.
- Standards for patient safety should be visibly adopted.
- Student health and safety protocols should also be exercised and standards publicized.

A few recommendations for an effective clinical rotation plan are as follows. However, they are not **Implementation**

prescriptive and maybe adopted partially or fully depending on the plausibility of institutional implementation.

- No batch should exceed more than 15 students.
- Every Batch should be managed by one responsible focal person.
- Every batch should also have a designated faculty member for the day-to-day affairs for the duration of the rotation.
- Attendance of each individual student should be monitored on daily basis.
- Formative assessment for the students all along the duration of the rotation.
- **EOR Assessment** which will be endorsed as summative assessment in the internal assessment and sent to the UHS at the end of each block
- Active Learning and active participatory approach by the students should be ensured.
- Regular Case presentations followed by clinical discussions.
- Radiology, labs, instruments, sutures, drains to be discussed as well
- **Prescription inference cards** should be filled and submitted during the ward rotations.
- Psychomotor skills should be observed and conducted by students under close supervision of a senior faculty member.
- Interactive learning, reflective practices is a learning methodology which can be inculcated for clinical trainings.
- Feedback practices as formative and continuous internal assessment should be a norm.
- Clinical and procedural skills teachings taught on manikins should be structured
- Always ensure compliance to the ethical standards by all students.
- Student clothing should be professional during the rotations.

To create a conducive clinical culture for the students and to standardize the professional practices the recommendations for explicit documentation and policy formulation by an affiliate medical college may include but are not limited to:

- Vision statement
- Mission statement
- Core Values
- SOPs of common procedures, triage, emergency scenarios etc.
- Code of Ethics
- Professional Qualities for all Clinical Rotations
- Harassment policy
- Fatigue mitigation protocols
- Mental health reaches out program
- Disciplinary policy
- EOR Assessment framework
- Student feedback protocols

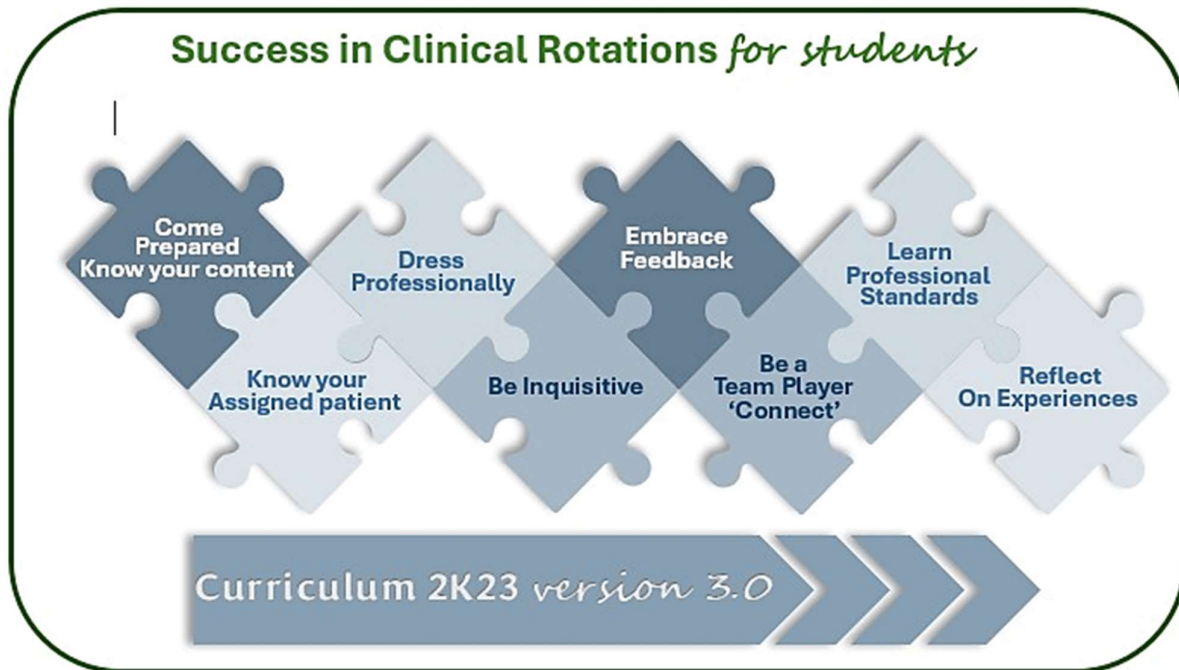
## Policy Workup



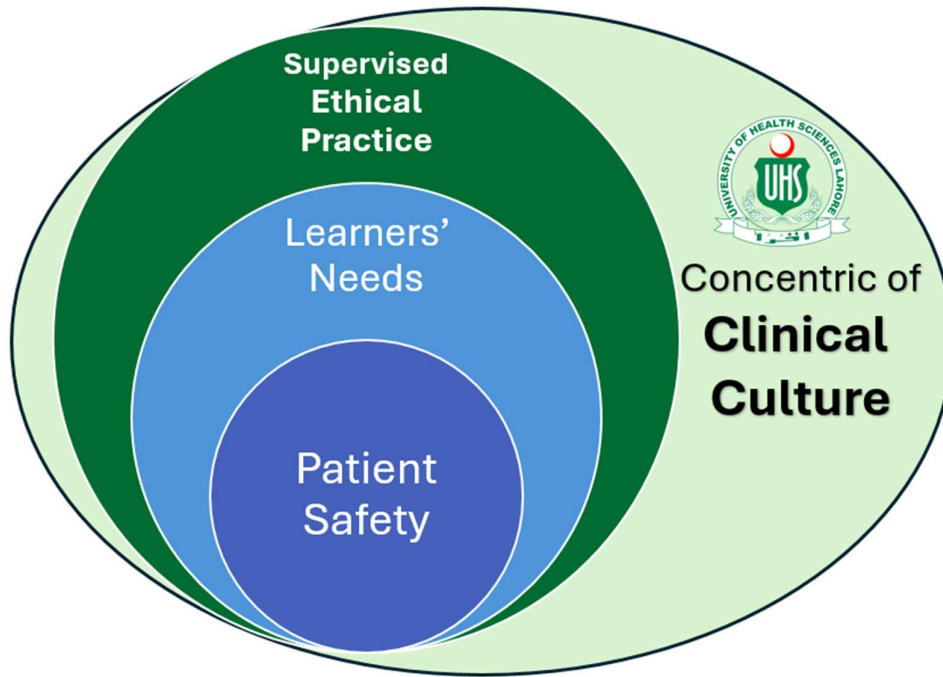
- Study guides

All institutions should develop separate guides for the students for their clinical years rotations. A suggested model of work or/and code of ethics with guiding principles.

## Students Guide



Developing a sound clinical culture for the students' learning with a backdrop of safeguarding the patients right to treatment, privacy, integrity and safety will remain the hallmark of implementation of **UHS Model for Clinical Culture** Curriculum 2K23



**A substantive clinical culture would nurture, support, and challenge students to become skilled, compassionate, and ethical healthcare professionals with an uncompromised patient safety and care. A clinical culture roots from the committed values, professionals' behaviours and clinical approach based on patient-centric care.**

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

## An example of a Rotational Plan

At the start of the year the checklists will look like:

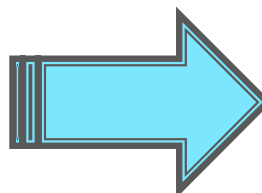
Block 1	Block 1	Block 1	Block 1	Surg & Allied	Surg & Allied	Surg & Allied	EOR Assessment
Block 1	Block 1	Block 1	Block 1	Surg & Allied	Surg & Allied	Surg & Allied	
Block 2	Block 2	Block 2	Block 2	Surg & Allied	Surg & Allied	Surg & Allied	EOR Assessment
Block 2	Block 2	Block 2	Block 2	Med & Allied	Med & Allied	Med & Allied	
Block 3	Block 3	Block 3	Block 3	Med & Allied	Med & Allied	Med & Allied	EOR Assessment
Block 3	Block 3	Block 3	Block 3	Med & Allied	Med & Allied	Med & Allied	

The requirement is to have

1. At least one third of the checkboxes ticked out based on the pattern of rotation plan designed by the DME relevant to existing wards and number of students.
2. At least one **EOR-Assessment** taken

An Example Only

Example continued next page



**An example:**

By the end of Block 1

Batch Alpha's logbook may look like this after fulfilling the above-mentioned requirements

Block 1 ✓	Block 1	Block 1 ✓	Block 1	Surg & Allied ✓	Surg & Allied ✓	Surg & Allied ✓	EOR Assessment ✓
Block 1	Block 1 ✓	Block 1 ✓	Block 1	Surg & Allied ✓	Surg & Allied ✓	Surg & Allied ✓	
Block 2	Block 2	Block 2	Block 2	Surg & Allied	Surg & Allied	Surg & Allied ✓	EOR Assessment
Block 2	Block 2	Block 2	Block 2	Med & Allied	Med & Allied	Med & Allied	
Block 3	Block 3	Block 3 ✓	Block 3	Med & Allied	Med & Allied	Med & Allied	EOR Assessment
Block 3	Block 3 ✓	Block 3 ✓	Block 3	Med & Allied	Med & Allied	Med & Allied	

Whereas Batch Bravo's logbook may look like this after fulfilling the above-mentioned requirements

*An Example Only*

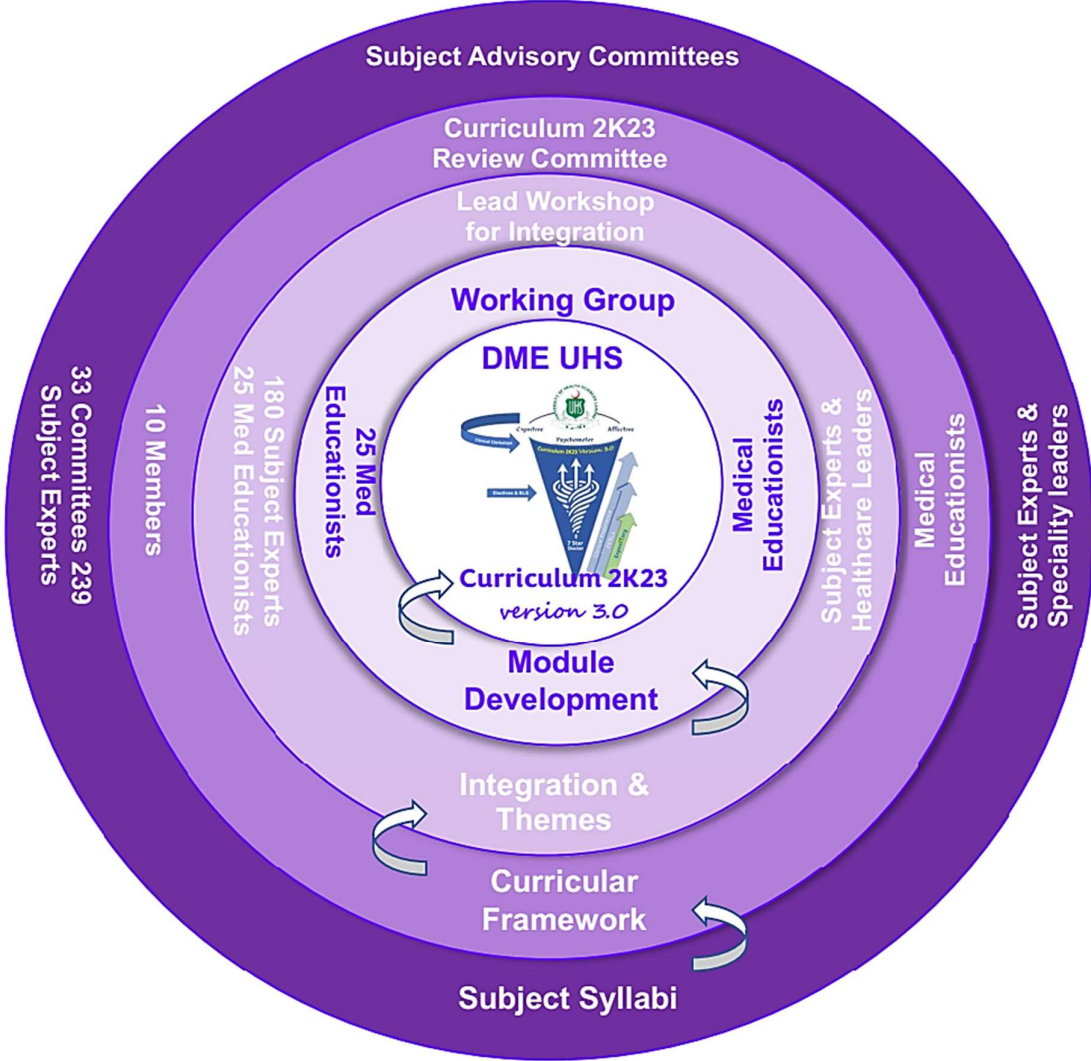
Block 1	Block 1 ✓	Block 1	Block 1 ✓	Surg & Allied	Surg & Allied	Surg & Allied	EOR Assessment
Block 1 ✓	Block 1	Block 1	Block 1 ✓	Surg & Allied	Surg & Allied	Surg & Allied	
Block 2 ✓	Block 2 ✓	Block 2	Block 2	Surg & Allied	Surg & Allied	Surg & Allied	EOR Assessment
Block 2	Block 2	Block 2 ✓	Block 2	Med & Allied ✓	Med & Allied	Med & Allied	
Block 3	Block 3	Block 3	Block 3	Med & Allied ✓	Med & Allied ✓	Med & Allied ✓	EOR Assessment ✓
Block 3	Block 3	Block 3	Block 3	Med & Allied ✓	Med & Allied ✓	Med & Allied ✓	

However, by the end of the year, before appearing for the University Assessment ALL the batches will have logbooks and **EOR-Assessments** like this

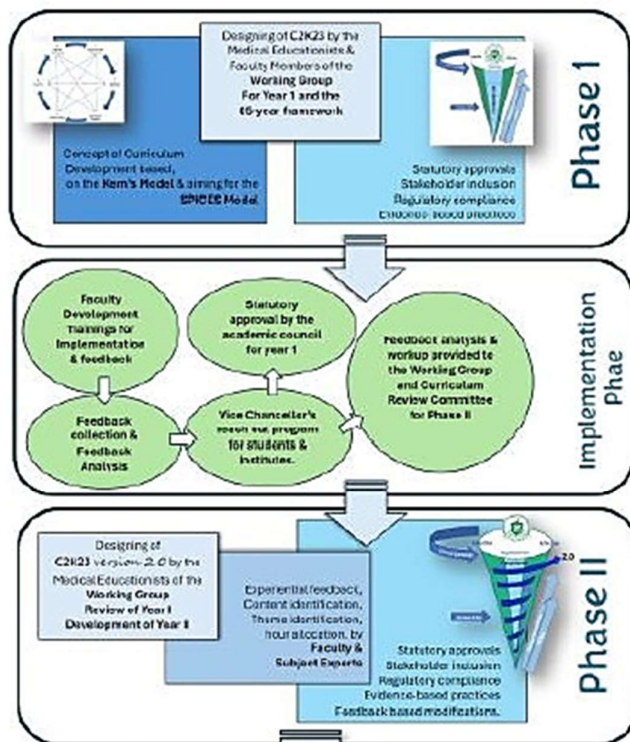
Block 1✓	Block 1✓	Block 1✓	Block 1✓	Surg & Allied✓	Surg & Allied✓	Surg & Allied✓	<b>EOR Assessment</b>  ✓
Block 1✓	Block 1✓	Block 1✓	Block 1✓	Surg & Allied✓	Surg & Allied✓	Surg & Allied✓	
Block 2✓	Block 2✓	Block 2✓	Block 2✓	Surg & Allied✓	Surg & Allied✓	Surg & Allied✓	<b>EOR Assessment</b>  ✓
Block 2✓	Block 2✓	Block 2✓	Block 2✓	Med & Allied✓	Med & Allied✓	Med & Allied✓	
Block 3✓	Block 3✓	Block 3✓	Block 3✓	Med & Allied✓	Med & Allied✓	Med & Allied✓	<b>EOR Assessment</b>  ✓
Block 3✓	Block 3✓	Block 3✓	Block 3✓	Med & Allied✓	Med & Allied✓	Med & Allied✓	

An Example Only

# Iterative Model of Curriculum Development by UHS





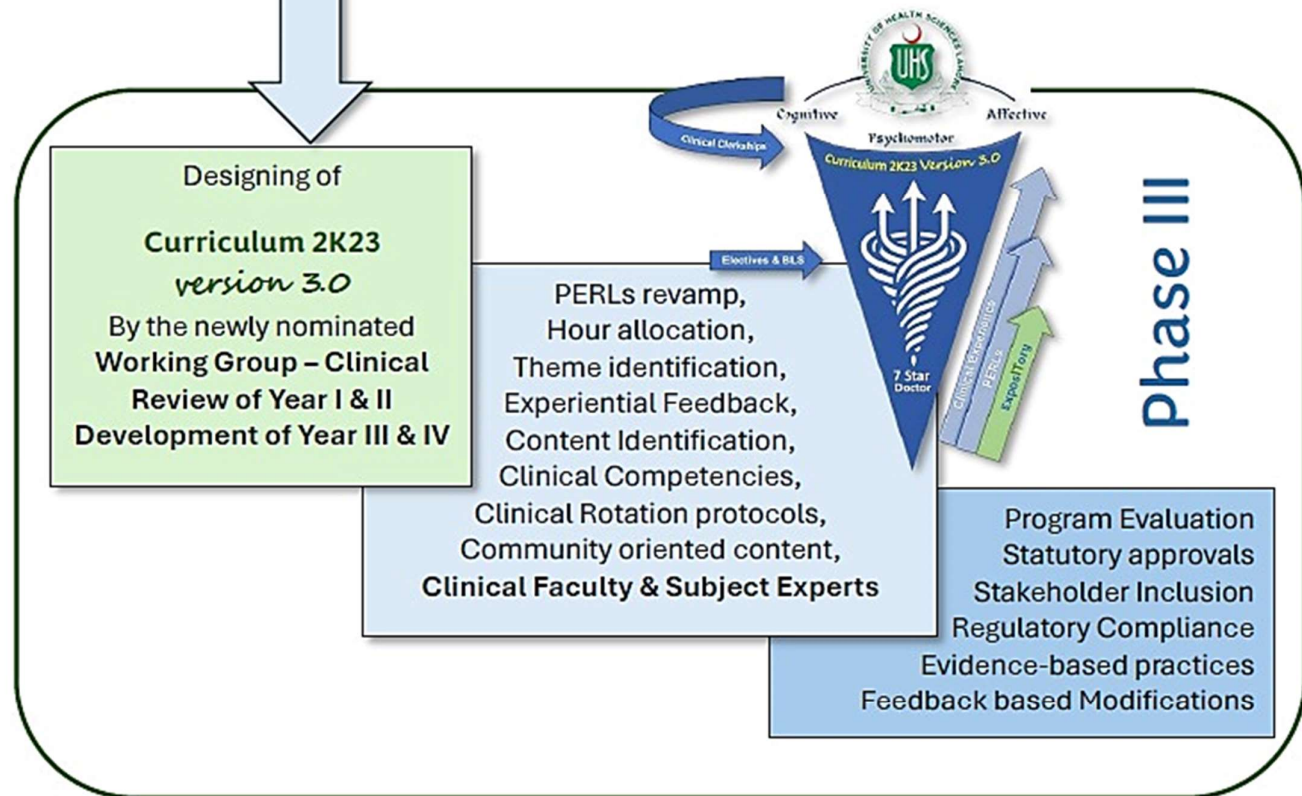


# Curriculum 2K23

*version 3.0*

Development, Deliberations and Designing

## Transitioning to Clinical Years



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

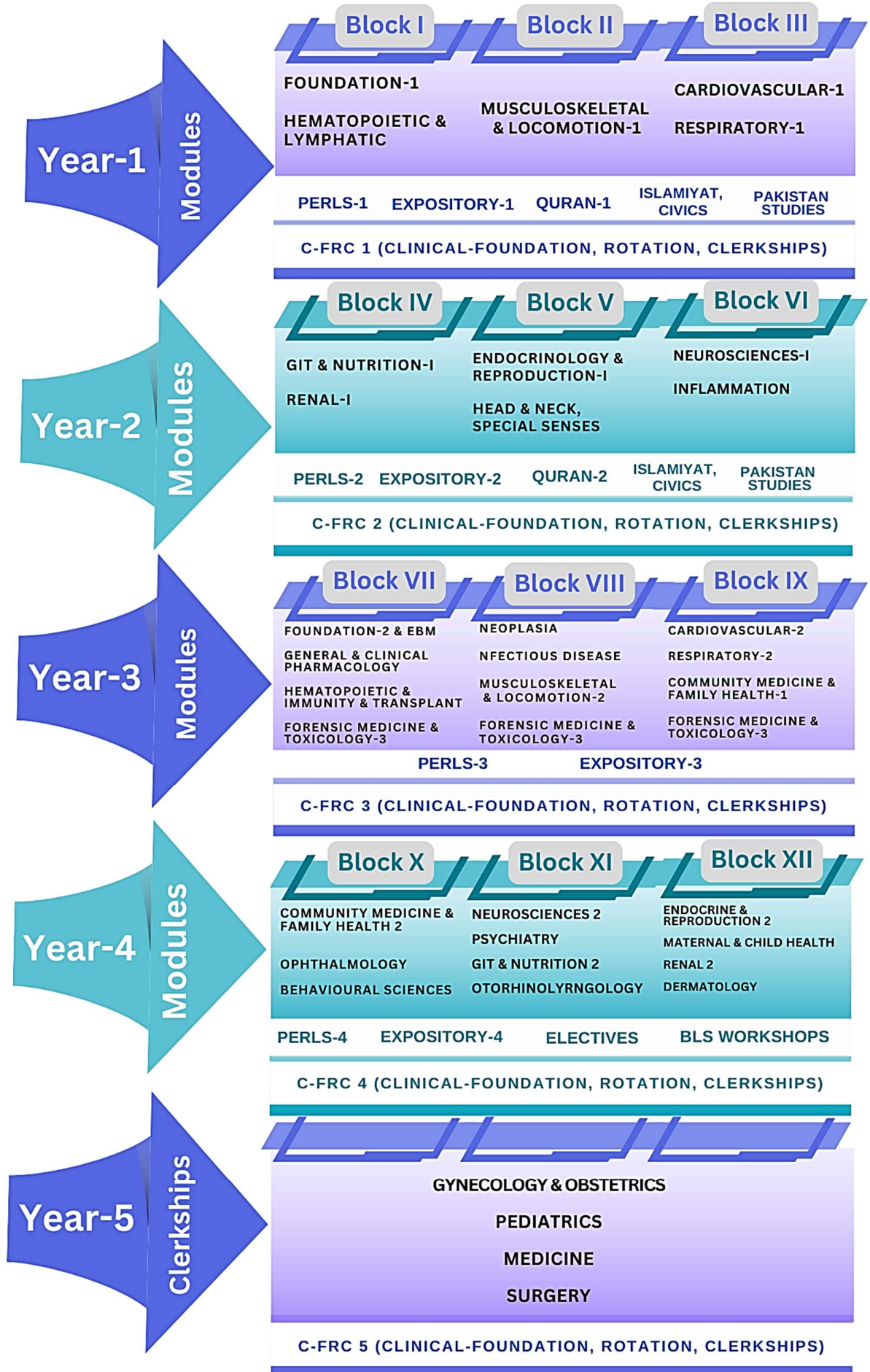




# **CURRICULUM FRAMEWORK**



# Curriculum 2K23 Version 3.0 Framework







# **LIST OF ABBREVIATIONS**



## LIST OF ABBREVIATIONS

Abbreviations	Subjects
<b>A</b>	Anatomy
<b>ABCDE</b>	Airway, Breathing, Circulation, Disability, Exposure
<b>ABG</b>	Arterial Blood Gas
<b>ACS</b>	Acute Coronary Syndromes
<b>Ag</b>	Aging
<b>AKI</b>	Acute Kidney Injury
<b>ALT</b>	Alanine Transaminase
<b>AMI</b>	Acute Myocardial Infarction
<b>AMP</b>	Adenosine Monophosphate
<b>ANA</b>	Antinuclear Antibody
<b>ANCA</b>	Antineutrophil Cytoplasmic Antibodies
<b>ANS</b>	Autonomic Nervous System
<b>AO</b>	Association of Osteosynthesis
<b>APTT</b>	Activated Partial Thromboplastin Clotting Time
<b>ARDS</b>	Acute Respiratory Distress Syndrome
<b>ARVC</b>	Arrhythmogenic Right Ventricular Cardiomyopathy
<b>ASD</b>	Atrial Septal Defect
<b>AST</b>	Aspartate Aminotransferase
<b>ATLS</b>	Advanced Trauma Life Support
<b>Au</b>	Autopsy
<b>AUC</b>	Area Under The Curve
<b>AV</b>	Atrioventricular
<b>B</b>	Biochemistry
<b>BhS</b>	Behavioral Sciences
<b>BHU</b>	Basic Health Unit
<b>BSL</b>	Biological Safety Level
<b>C</b>	Civics
<b>C-FRC</b>	Clinical-Foundation Rotation Clerkship
<b><i>C. burnetii</i></b>	<i>Coxiella burnetii</i>
<b><i>C. neoformans</i></b>	<i>Cryptococcus neoformans</i>
<b><i>C. pneumoniae</i></b>	<i>Chlamydia pneumoniae</i>
<b><i>C. psittaci</i></b>	<i>Chlamydia psittaci</i>

<b><i>C. trachomatis</i></b>	<i>Chlamydia trachomatis</i>
<b>CA</b>	Cancer
<b>CABG</b>	Coronary Artery Bypass Grafting
<b>CAD</b>	Coronary Artery Disease
<b>CBC</b>	Complete Blood Count
<b>CCR5</b>	Cysteine-Cysteine Chemokine Receptor 5
<b>CD31</b>	Cluster of Differentiation 31
<b>CD34</b>	Cluster of Differentiation 34
<b>CD4</b>	Clusters of Differentiation 4
<b>CF</b>	Cystic Fibrosis
<b>CK</b>	Creatine Kinase
<b>CK</b>	Creatine Kinase
<b>CLED</b>	Cystine Lactose Electrolyte Deficient
<b>CLL</b>	Chronic Lymphocytic Leukemia
<b>CM</b>	Community Medicine
<b>CML</b>	Chronic Myelogenous Leukemia
<b>CMV</b>	Cytomegalovirus
<b>CNS</b>	Central Nervous System
<b>CO</b>	Carbon Monoxide
<b>CO<sub>2</sub></b>	Carbon Dioxide
<b>CODIS</b>	Combined Dna Index System
<b>COPD</b>	Chronic Obstructive Pulmonary Disease
<b>COVID-19</b>	Corona Virus Disease 2019
<b>COX</b>	Cyclooxygenase
<b>CPR</b>	Cardio Pulmonary Resuscitation
<b>CR</b>	Clinical Rotation
<b>CRP</b>	C- Reactive Protein
<b>CSF</b>	Cerebrospinal Fluid
<b>CT</b>	Computed Tomography
<b>CT</b>	Computerized Tomography
<b>CV</b>	Cardiovascular
<b>CVA</b>	Cerebral Vascular Accident
<b>CVDs</b>	Cardiovascular Diseases
<b>CVS</b>	Cardiovascular System
<b><i>D. medinensis</i></b>	<i>Dracunculus Medinensis</i>
<b>DALY</b>	Disability-Adjusted Life Year



<b>DCIS</b>	Ductal Carcinoma <i>in situ</i>
<b>DCM</b>	Dilated Cardiomyopathy
<b>DCMLS</b>	Dorsal Column Medial Lemniscus System
<b>DLC</b>	Differential Leukocyte Count
<b>DMARDs</b>	Disease-modifying antirheumatic drugs
<b>DNA</b>	Deoxy Ribonucleic Acid
<b>DOTS</b>	Directly Observed Treatment Short-course
<b>DTP</b>	Diphtheria, Tetanus, Pertussis
<b>DVI</b>	Disaster Victim Identification
<b>DVT</b>	Deep Vein Thrombosis
<b><i>E. coli</i></b>	<i>Escherichia coli</i>
<b>ECF</b>	Extra Cellular Fluid
<b>ECG</b>	Electrocardiography
<b>ECG</b>	Electocardiogram
<b>ECP</b>	Emergency contraceptive pills
<b>ED50</b>	Median Effective Dose
<b>EEG</b>	Electroencephalogram
<b>EIA</b>	Enzyme Immunoassay
<b>ELISA</b>	Enzyme Linked Immunosorbent Assay
<b>EnR</b>	Endocrinology & Reproduction
<b>ENT</b>	Ear Nose Throat
<b>EPI</b>	Expanded Programme on Immunization
<b>ER</b>	Emergency Room
<b>F</b>	Foundation
<b>FAST</b>	Focused Assessment with Sonography in Trauma
<b>FEV1</b>	Forced Expiratory Volume 1
<b>FM</b>	Family Medicine
<b>For</b>	Forensics Medicine
<b>FPIA</b>	Fluorescent Polarization Immunoassay
<b>FS</b>	Forensic Serology
<b>FSc</b>	Forensic Science
<b>FVC</b>	Forced Vital Capacity
<b>GCS</b>	Glasgow Coma Scale
<b>GFR</b>	Glomerular Filtration Rate
<b>GIT</b>	Gastrointestinal tract
<b>GL-MS</b>	Gas Liquid Mass Spectrometry

<b>GLC</b>	Gas Liquid Chromatography
<b>GLP</b>	Good Laboratory Practice
<b>GMP</b>	Guanosine Monophosphate
<b>GO</b>	Gynecology and Obstetrics
<b>GP</b>	General Practitioner
<b>GPE</b>	General Physical Examination
<b>GTO</b>	Golgi Tendon Organ
<b>Gynae &amp; Obs</b>	Gynecology and Obstetrics
<b>H &amp; E</b>	Hematoxylin and Eosin
<b><i>H. influenzae</i></b>	<i>Haemophilus influenzae</i>
<b><i>H. pylori</i></b>	<i>Helicobacter pylori</i>
<b>HAI</b>	Healthcare Associated Infections
<b>HbC</b>	Hemoglobin C
<b>HbS</b>	Sickle Hemoglobin
<b>HbSC</b>	Hemoglobin Sickle C Disease
<b>HCL</b>	Hydrochloric Acid
<b>HCM</b>	Hypertrophic Cardiomyopathy
<b>HHV</b>	Human Herpesvirus
<b>HIT</b>	Hematopoietic, Immunity and Transplant
<b>HIV</b>	Human Immunodeficiency Virus
<b>HL</b>	Hematopoietic & Lymphatic
<b>HLA</b>	Human Leukocyte Antigen
<b>HMP</b>	Hexose Monophosphate
<b>HNSS</b>	Head & Neck and Special Senses
<b>HPLC</b>	High Pressure Liquid Chromatography
<b>ICF</b>	Intra Cellular Fluid
<b>ID</b>	Infectious Diseases
<b>IE</b>	Infective Endocarditis
<b>IL</b>	Interleukin
<b>ILD</b>	Interstitial Lung Disease
<b>IN</b>	Inflammation
<b>INR</b>	International Normalized Ratio
<b>INSTIs</b>	Integrase Strand Transfer Inhibitors
<b>IPV</b>	Inactivated Poliovirus Vaccine
<b>IUD</b>	Intrauterine Device
<b>IUGR</b>	Intra Uterine Growth Restriction

<b>JVP</b>	Jugular Venous Pulse
<b>L</b>	Law
<b>LD50</b>	Median Lethal Dose
<b>LDH</b>	Lactate Dehydrogenase
<b>LSD</b>	Lysergic acid diethylamide
<b>M</b>	General Medicine
<b>MALT</b>	Mucosa Associated Lymphoid Tissue
<b>MBBS</b>	Bachelor of Medicine, Bachelor of Surgery
<b>MCH</b>	Mean corpuscular hemoglobin
<b>MCHC</b>	Mean Corpuscular Hemoglobin Concentration
<b>MCV</b>	Mean Corpuscular Volume
<b>MHO 2001</b>	Mental Health Ordinance 2001
<b>MoA</b>	Mechanism of action
<b>MRI</b>	Magnetic resonance imaging
<b>MS</b>	Musculoskeletal
<b>MSD</b>	Musculoskeletal disorders
<b>MSDS</b>	Minimum Service Delivery Standards
<b>MSK</b>	Musculoskeletal
<b>N</b>	Neoplasia
<b>NEAA</b>	Non-Essential Amino Acids
<b>NK cells</b>	Natural Killer Cells
<b>NMJ</b>	Neuro Muscular Junction
<b>NNRTIs</b>	Non-nucleoside Reverse Transcriptase Inhibitors
<b>NRTIs</b>	Nucleoside Reverse Transcriptase Inhibitors
<b>NS</b>	Neurosciences
<b>NSAIDs</b>	Non-steroidal Anti-Inflammatory Drugs
<b>O</b>	Ophthalmology
<b>OA</b>	Osteoarthritis
<b>OPC</b>	Organophosphate
<b>OPV</b>	Oral poliovirus vaccine
<b>Or</b>	Orientation
<b>Orth</b>	Orthopaedic
<b>P</b>	Physiology
<b><i>P. jiroveci</i></b>	<i>Pneumocystis jiroveci</i>
<b>Pa</b>	Pathology
<b>PAD</b>	Peripheral Artery Disease

<b>PAF</b>	Platelet Activating Factor
<b>PBL</b>	Problem Based Learning
<b>PCI</b>	Percutaneous Coronary Intervention
<b>PCR</b>	Polymerase Chain Reaction
<b>PDA</b>	Patent Ductus Arteriosus
<b>PDGF</b>	Platelet Derived Growth Factor
<b>Pe</b>	Pediatrics
<b>PEM</b>	Protein Energy Malnutrition
<b>PERLs</b>	Professionalism, Ethics, Research, Leadership
<b>PET</b>	Positron Emission Tomography
<b>Ph</b>	Pharmacology
<b>pH</b>	potential Hydrogen
<b>PI</b>	Personal Identity
<b>PID</b>	Pelvic inflammatory disease
<b>PIs</b>	Protease in hibitors
<b>PMC</b>	Pakistan Medical Commission
<b>PMDC</b>	Pakistan Medical and Dental Council
<b>PMI</b>	Post-Mortem Interval
<b>PNS</b>	Peripheral Nervous System
<b>PPD</b>	Paraphenylenediamine
<b>PPE</b>	Personal Protective Equipment
<b>Psy</b>	Psychiatry
<b>PT</b>	Prothrombin Time
<b>PVC</b>	Premature Ventricular Contraction
<b>PVD</b>	Peripheral Vascular Diseases
<b>QALY</b>	Quality-Adjusted Life Year
<b>QI</b>	Quran and Islamiyat
<b>R</b>	Renal
<b>Ra</b>	Radiology
<b>RA</b>	Rheumatoid Arthritis
<b>RBCs</b>	Red Blood cells
<b>RCM</b>	Restrictive Cardiomyopathy
<b>RDA</b>	Recommended Dietary Allowance
<b>Re</b>	Respiratory
<b>RF</b>	Rheumatoid factor
<b>RFLP</b>	Restriction Fragment Length Polymorphism

<b>Rh</b>	Rheumatology
<b>RHC</b>	Rural Health Center
<b>RIA</b>	Radioimmunoassay
<b>RMP</b>	Resting Membrane Potential
<b>RNA</b>	Ribonucleic Acid
<b>RTA</b>	Road Traffic Accident
<b>S</b>	General Surgery
<b><i>S. pneumonia</i></b>	<i>Streptococcus pneumoniae</i>
<b>SA</b>	Sinoatrial
<b>SCC</b>	Squamous-cell carcinoma
<b>Se</b>	Sexology
<b>Sec</b>	Section
<b>SIDS</b>	Sudden Infant Death Syndrome
<b>SLE</b>	Systemic Lupus Erythematosus
<b>SOP</b>	Standard Operating Procedure
<b>TB</b>	Tuberculosis
<b>TBI</b>	Traumatic Brain Injury
<b>TCA</b>	Tricarboxylic acid cycle
<b>TCBS</b>	Thiosulphate Citrate Bile salts Sucrose
<b>TD50</b>	Median Toxic Dose
<b>TGA</b>	Transposition of the Great Arteries
<b>Th</b>	Thanatology
<b>TLC</b>	Thin Layer Chromatography
<b>TNF</b>	Tumor Necrotic Factor
<b>TNM</b>	Tumour, Node, Metastasis
<b>TOF</b>	Tetralogy of Fallot
<b>Tox</b>	Toxicology
<b>Tr</b>	Traumatology
<b>TSI</b>	Triple Sugar Iron
<b>USG</b>	Ultrasonography
<b>UTI</b>	Urinary Tract Infections
<b>UV</b>	Ultraviolet
<b>VAP</b>	Ventilator-Associated Pneumonia
<b>Vd</b>	Volume of Distribution
<b>VEGF</b>	Vascular Endothelial Growth Factor
<b>VSD</b>	Ventricular Septal Defect

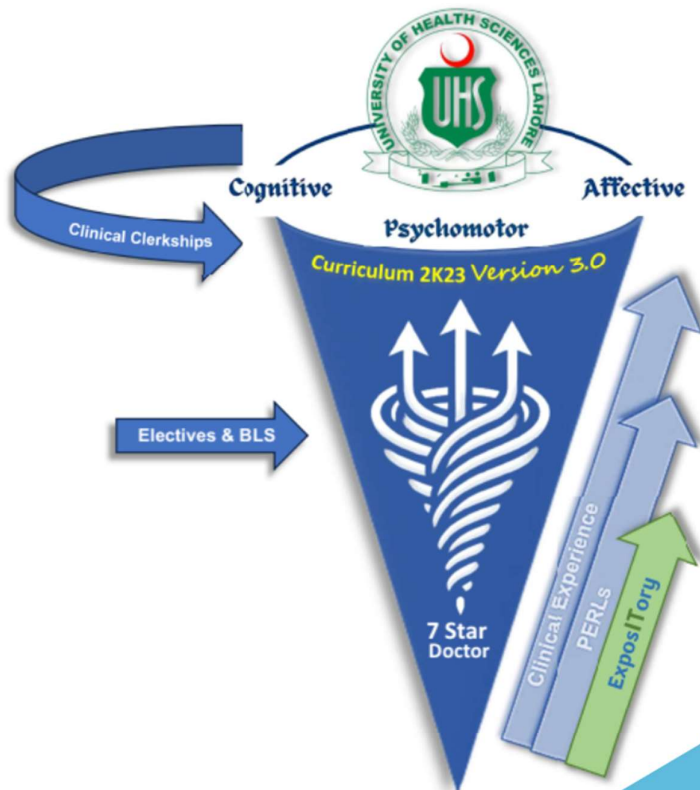
<b><i>W. bancroft</i></b>	<i>Wuchereria bancroft</i>
<b>WBCs</b>	White Blood Cells
<b>WHO</b>	World Health Organization
<b>ZN Staining</b>	Ziehl-Neelsen Staining





# Modular Integrated Curriculum 2K23

## Year-3



Version 3.0

VOL:03

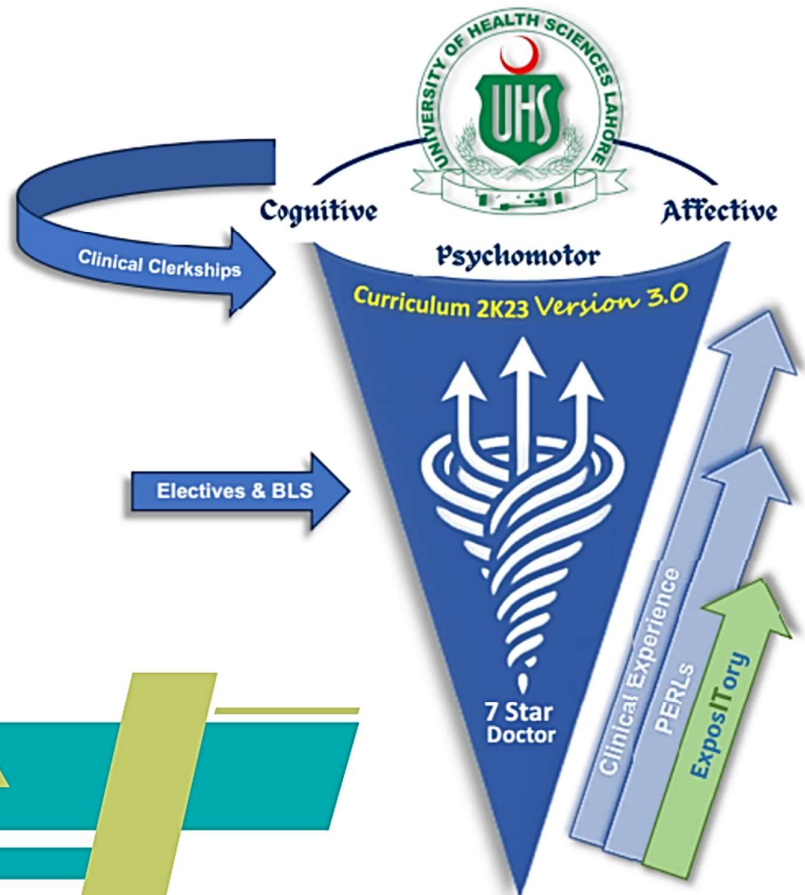




# Modular Integrated Curriculum 2K23

*version 3.0*

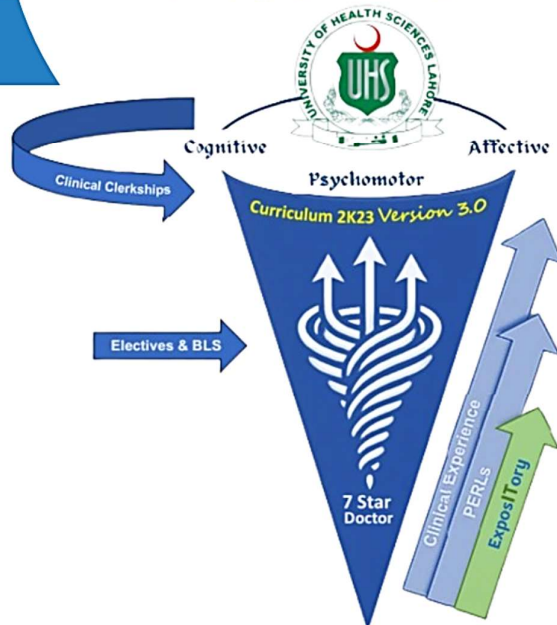
## BLOCK-07





# MODULE-12 FOUNDATION-I & EBM

## Modular Integrated Curriculum 2K23 *version 3.0*



## MODULE RATIONALE

The Foundation 2 module is designed to build upon and consolidate the foundational knowledge acquired in the earlier years of medical education, particularly from the Foundation-I module. As students transition into their clinical years, it is crucial to reinforce and deepen their understanding of basic medical sciences to support the integration of new, clinically relevant concepts.

This module serves as a bridge, revisiting core topics in general Pharmacology, Pathology, and Forensic medicine with an emphasis on their clinical applications. By doing so, it ensures that students develop a more comprehensive understanding, which is vital for the advanced study of organ systems in subsequent modules (e.g., CVS 2, Respiratory-2, GIT-2, Neurosciences-2, and Reproduction 2). Mastery of these topics is essential before students can effectively approach the complexities of clinical scenarios.

The revisiting of these concepts throughout the curriculum ensures a robust and integrated understanding, laying a solid foundation for clinical competence.

## MODULE OUTCOMES

- **Apply Integrated Knowledge of Basic and Clinical Sciences:** Synthesize concepts from general Pharmacology, Pathology, and Forensic Medicine to better understand the physiological and pathological processes underlying common clinical conditions. Correlate the foundational knowledge of disease mechanisms with their clinical presentations in Surgery and Medicine.
- **Demonstrate Competency in Core Pharmacological Principles:** Understand and explain the pharmacokinetics and pharmacodynamics of commonly used drugs in clinical practice. Analyze drug interactions, adverse effects, and therapeutic uses in various organ systems, including cardiovascular, respiratory, gastrointestinal, and neurological systems.
- **Interpret Pathological Findings:** Interpret key pathological processes such as inflammation, infection, neoplasia, and tissue repair in the context of disease progression. Apply knowledge of histopathology and laboratory medicine in diagnosing common diseases seen in clinical practice.
- **Apply Forensic Medicine Principles in Clinical Contexts:** Demonstrate understanding of medicolegal aspects of medical practice, including documentation, consent, patient rights, and legal responsibilities. Analyze and interpret findings relevant to forensic medicine, such as injury patterns, cause of death, and toxicology, and understand their clinical significance.

- **Develop Surgical and Medical Clinical Reasoning:** Utilize foundational knowledge to assess and plan appropriate management strategies for common surgical and medical conditions. Integrate surgical principles with an understanding of anatomy and pathology to explain clinical presentations and operative approaches.
- **Practice Patient Safety Principles:** Identify potential risks to patient safety in clinical settings, including medication errors, procedural risks, and diagnostic mistakes. Apply strategies to mitigate risks and promote patient safety, including adhering to clinical guidelines, infection control measures, and communication best practices.
- **Demonstrate Ethical and Professional Conduct:** Recognize the importance of ethical decision-making and professionalism in both clinical practice and forensic medicine. Engage in responsible clinical practice, demonstrating accountability, integrity, and respect for patient autonomy and confidentiality.
- **Employ Critical Thinking and Problem-Solving Skills:** Use clinical reasoning to solve complex problems related to pharmacological treatment plans, pathological diagnoses, and surgical management. Analyze case scenarios that integrate knowledge across multiple subjects, drawing from basic and clinical sciences to reach accurate clinical conclusions.
- **Communicate Effectively in Multidisciplinary Teams:** Demonstrate the ability to collaborate and communicate clearly with peers and healthcare professionals from various specialties. Present clinical findings, diagnoses, and management plans effectively in both written and verbal formats, ensuring clarity and precision.

## **SUBJECTS INTEGRATED IN THE MODULE**

1. Pathology
2. General pharmacology
3. Community medicine
4. Forensic Medicine
5. Patient Safety
6. Surgery
7. Medicine
8. Psychiatry

## 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 first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



## THEORY

### GENERAL PHARMACOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 17	
		INTEGRATING DISCIPLINE	TOPIC
F2-Ph-001	Define Pharmacology, different branches of Pharmacology, Drug Nomenclature and Pharmacopoeias	Pharmacology	Introduction
F2-Ph-002	Identify the Sources & Active Principles of Drugs with Clinical Applications of Active Principles.  Describe different sources of drugs.  Tabulate differences between fixed oils and volatile oils as sources of drugs.		Sources of drugs and active principles
F2-Ph-003	Summarize definitions of various pharmacokinetic and pharmacodynamic parameters		Parameters
F2-Ph-004	Name various routes of drug administration.  Discuss the advantages & disadvantages of various routes of drug administration.  Describe the factors that influence the route of administration of a drug.  Understand the Clinical Relevance of the Selection of Routes of Administration.		Routes of Administration
F2-Ph-005	Enlist the different processes by which drugs are transported across cell membranes.  Describe and differentiate each transport process.		Permeation
F2-Ph-006	Describe drug absorption.		Pharmacology

	<p>Describe drug-based factors affecting rate and extent of drug absorption.</p> <p>Predict the relative permeation of a clinically useful weak acid or a weak base from knowledge of its pKa, the pH of the medium using the Henderson Hasselbalch equation.</p> <p>Determine percentage of drug ionized or unionized when placed in a certain Ph media.</p> <p>Explain ion trapping.</p> <p>Describe patient-based factors affecting rate and extent of drug absorption.</p> <p>Describe the Clinical Significance of Drug Absorption.</p>		
F2-Ph-007	<p>Define Bioavailability.</p> <p>Describe factors affecting bioavailability.</p> <p>Define Area under the curve (AUC).</p> <p>Explain first pass elimination.</p> <p>Explain extraction ratio.</p> <p>Understand that how bioavailability and the first pass effect, affect the different Clinical conditions.</p> <p>Explain bioequivalence and therapeutic equivalence.</p>	Pharmacology	Bioavailability and first pass effect
F2-Ph-008	Define drug distribution.	Pharmacology	Distribution



	<p>Describe the distribution of a drug through various body compartments.</p> <p>Explain selective distribution.</p> <p>Describe factors affecting distribution of a drug.</p> <p>Explain volume of distribution (Vd) and how to calculate Vd. understand the clinical significance of Vd</p> <p>Explain the characteristics of a drug that is bound to plasma proteins.</p> <p>Describe the clinical consequences of displacement of a drug from plasm protein binding.</p>		
F2-Ph-009	<p>Explain metabolism and biotransformation.</p> <p>Describe the aims and outcomes of metabolism and biotransformation.</p> <p>Explain a 'prodrug'</p> <p>Enlist and describe characteristics of Phase 1 and Phase 2 reactions of biotransformation.</p> <p>Describe microsomal and non-microsomal biotransformation reactions.</p> <p>Describe the microsomal oxidation system.</p> <p>Explain Hoffman's elimination.</p> <p>Describe factors affecting metabolism &amp; biotransformation.</p>	Pharmacology	Metabolism and biotransformation

	<p>Describe the clinical significance of enzyme induction and enzyme inhibition with their examples.</p> <p>Describe the clinical significance of metabolism &amp; biotransformation.</p> <p>Describe clinical significance of enterohepatic recycling of drugs.</p>		
F2-Ph-010	<p>Define Plasma Half-Life, and Understand the concept of plasma half-life.</p> <p>Describe factors affecting half-life and clinical significance of plasma half-life.</p> <p>Understand the concept of drug clearance.</p> <p>Describe factors affecting drug clearance.</p> <p>Explain the Clinical Significance of different values of Drug Clearance.</p> <p>Explain steady state plasma concentration.</p> <p>Explain Clinical Significance of Steady State plasma concentration.</p> <p>Define &amp; Explain Elimination and Orders of Elimination – First &amp; Zero Order Kinetics with examples.</p> <p>Describe Clinical Significance of First &amp; Zero Order Kinetics.</p>	Pharmacology	Elimination

	<p>Tabulate differences between First order kinetics and Zero Order Kinetics.</p> <p>Define, explain &amp; calculate maintenance dose and loading dose using appropriate formula.</p>		
F2-Ph-011	<p>Describe drug excretion.</p> <p>Enlist routes of drug excretion.</p> <p>Describe processes of drug excretion through the kidneys.</p> <p>Describe factors affecting glomerular filtration &amp; tubular reabsorption.</p> <p>Describe the Clinical Significance of Glomerular Filtration, Active Tubular Secretion and Passive Tubular Reabsorption of Drugs</p>	Pharmacology	Excretion

### GENERAL PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 06	
		INTEGRATING DISCIPLINE	TOPIC
F2-Pa-001	<p>Define mutation and classify different types</p> <p>Describe the features and examples of the following</p> <ol style="list-style-type: none"> <li>i. Autosomal dominant disorders</li> <li>ii. Autosomal recessive disorders</li> <li>iii. X-linked disorders</li> </ol> <p>Give brief account of steps of PCR and types of PCR</p>	Pathology	Genetics
F2-Pa-002	<p>Give brief account of;</p> <ol style="list-style-type: none"> <li>i. Marfan syndrome</li> <li>ii. Ehlers-Danlos syndrome</li> <li>iii. Down syndrome</li> <li>iv. Klinefelter syndrome</li> <li>v. Turner syndrome</li> </ol>	Pathology	Genetic syndromes

	Define karyotyping and enlist the karyotyping of above-mentioned syndromes		
F2-Pa-003	To know the difference between gram positive and negative cell wall.  How it affects the choice of antibiotic	Pharmacology	Comparison of Gram-positive and negative Bacterial cell wall structure, how bacteria differ from viruses
<b>MICROBIOLOGY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 09</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
F2-Pa-004	Classify gram-positive and negative cocci.  Classify gram +ve and gram –ve rods.  Classify spirochetes and atypical bacteria.  Classify culture media and describe blood, chocolate, McConkey, nutrient, CLED, TCBS, TSI, citrate & urease media. Blood culture. seaboard agar.  Define conjugation, transduction, transformation and describe mechanisms of antimicrobial resistance.  Define colonization resistance and enlist normal flora of skin, gut, respiratory tract, and vagina.  Classify DNA viruses and RNA viruses. Classify medical mycoses fungi. Classify medically important parasites.	General Microbiology	Microbiology

## FORENSIC MEDICINE

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
F2-For-001	Describe Forensic Medicine & its various branches.	Forensic Medicine & Jurisprudence	Introduction to the subject of Forensic Medicine
F2-For-002	Describe evidence, its types & recording of evidence	Jurisprudence	Chain of evidence
F2-For-003	Describe the importance of diagnosis of death		Introduction to Thanatology
F2-For-004	Describe the WHO format of the death certificate.		Death certificate

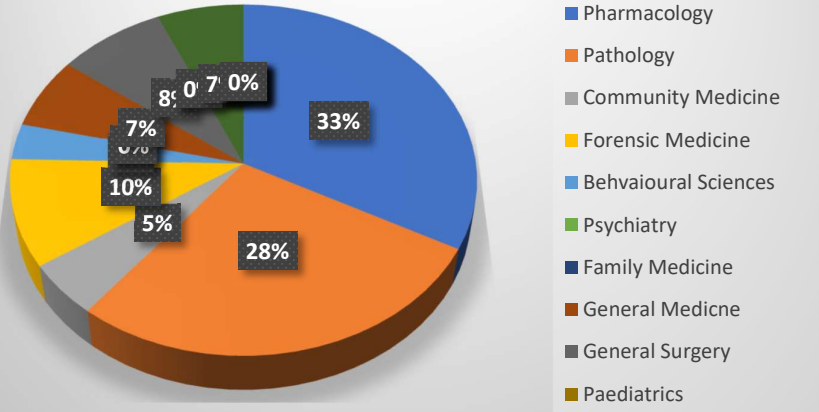
<b>COMMUNITY MEDICINE</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 03</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
F2-CM-001	Define Health. What are health dimensions?	Medicine	Concept & health disease
	What are the good health indicators?		
	Calculate and interpret health indicators of Public Health Importance.		
<b>PATIENT SAFETY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 04</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
F2-PS-001	Explain why patient safety is a critical concern in healthcare and how it impacts the quality of patient care.	Clinical subjects	What is patient safety
F2-PS-002	Students should understand the relationship between human factors and patient safety		Applying human factors is important for patient safety
<b>GENERAL SURGERY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 03</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
F2-S-001	Describe the basics of Wound Healing & tissue repair	Pathology	Wound Management
F2-S-002	Classify Burns & its management	Gen surgery	Burns
F2-S-003	Identify hemorrhage & shock in Trauma patient.	Emergency medicine	Shock & hemorrhage

<b>GENERAL MEDICINE</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
F2-M-001	Signs, symptoms, and differentials of common bacterial diseases.	Medicine	Bacterial diseases
F2-M-002	Signs, symptoms, and differentials of common viral diseases.		Viral diseases
<b>PSYCHIATRY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
F2-BhS-001	Define health behavior and discuss the importance of behavioral sciences in medical practice.	Behavioral sciences	Introduction to Health Behavior and Its Determinants
	Identify biological, psychological, and social factors that influence health behaviors and decision-making.		
	Discuss key behavioral change models (e.g., Health Belief Model, Theory of Planned Behavior) and their application in patient care.		
<b>PRACTICAL / LAB WORK</b>			
<b>FORENSIC MEDICINE</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 04</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
F2-For-009	Describe trace evidence & its types	Forensic Medicine	Trace evidence
F2-For-010	Types of fingerprints		Dactylography Recording of evidence
	Recording of dying declaration		

F2-For-011	Take written informed consent for various procedures		Consent form
<b>PATHOLOGY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
F2-Pa-005	To perform steps of gram staining. How this staining will help to choose antibiotics.	Pathology	Use of Microscope & Gram staining
<b>PHARMACOLOGY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 03</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
F2-Ph-012	Calculations of drug dosing (e.g., IV infusion) & dose of children.	Pharmacology	Calculation
F2-Ph-013	Calculations (Mean, Mode, Median, Standard Deviation, and Standard Error), and Metrology.		Drug dosing
<b>CLINICAL ROTATIONS / COMMUNITY HEALTHCARE</b>			
<b>SURGERY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
F2-S-004	Enlist Suture types & techniques	Surgical Emergency Integrate General Surgery	Basic Surgical Skills
F2-S-005	Classify Wound Dressings & its protocols		Wound Management
<b>MEDICINE</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
F2-M-003	History taking skills	Gen medicine	History taking
F2-M-004	Approach to patient	Gen medicine	General physical examination



# Foundation II & EBM



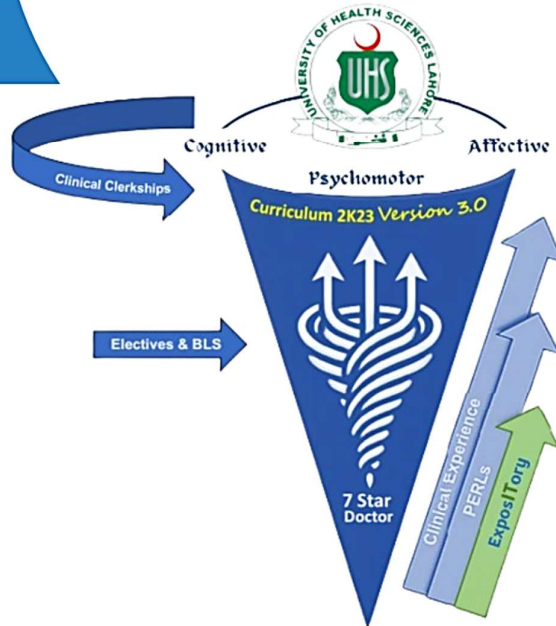
Module Weeks	Recommended Minimum Hours
02	61





# MODULE-13 GENERAL & CLINICAL PHARMACOLOGY

Modular Integrated  
Curriculum 2K23  
*version 3.0*



## MODULE RATIONALE

The General & Clinical Pharmacology module consists of General Pharmacology and Autonomic Nervous System Pharmacology. It is designed to emphasize on various pharmacodynamic processes, drug interactions, and adverse drug reactions, all of which are integral in understanding how the drugs work and how they are used in clinical practice.

Additionally, it highlights the role of pharmacogenetics in drug responses and explores the phases of drug development, providing students with the basic knowledge necessary for safe, effective, and personalized pharmacological interventions in clinical practice.

The Autonomic Pharmacology module introduces third-year medical students to the pharmacological principles of the autonomic nervous system (ANS), which regulates essential involuntary functions such as heart rate, blood pressure, digestion, and respiratory function. The module covers both the cholinergic and adrenergic systems, providing a strong foundation for understanding how drugs interact with these systems to treat diseases/conditions. Given the wide-ranging clinical applications of autonomic drugs, this module plays a critical role in bridging basic pharmacology with clinical medicine, particularly in fields like cardiovascular, gastrointestinal, and respiratory medicine.

## MODULE OUTCOMES

- Explain the fundamentals of pharmacodynamics and how drugs interact with biological systems and their mechanism of action. Describe dose-response relationships, drug efficacy, and potency.
- Recognize therapeutic windows and factors influencing drug response.
- Apply pharmacodynamic principles to predict drug effects and optimize therapy.
- Understand different types of drugs that act on the autonomic nervous system and their clinical usage.

## SUBJECTS INTEGRATED IN THE MODULE

1. Pharmacology & Therapeutics
2. Biochemistry
3. Physiology
4. Behavioural Sciences
5. General Medicine

## 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 first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



## THEORY

### PHARMACOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 58	
		INTEGRATING DISCIPLINE	TOPIC
GPh-Ph-001	Define Pharmacodynamics, Affinity, Efficacy, Potency	Pharmacology	Pharmacodynamics
	Explain Agonists, partial agonists, inverse agonists, bias, allosteric agonists, and modulators with examples.		
	Define Spare receptors and give clinical importance.		
	Elaborate Transmembrane signaling pathways		
	Name the Effectors controlled by G-proteins		
	Describe various Drug-antagonism types with examples		
	Define Median Effective (ED50), Median Toxic (TD50) & Median Lethal Dose (LD50) and its clinical relevance		
	Define the Therapeutic index and give its clinical importance.		
	Define the Therapeutic window and give its clinical importance.		
	Compare & discuss the information derived from Graded and Quantal dose-response curves.		
	Explain the significance of Semi-log Transformation.		
	Define Desensitization, Tachyphylaxis, Tolerance, Resistance, Super sensitivity, Hypersensitivity, Superinfection, Iatrogenic effect, and Idiosyncrasy, and give examples.		
	Describe the Phenomenon of down-regulation of receptors.		
Describe Pharmacogenetics and give examples.			

	Illustrate various phases of Drug development.		
GPh-Ph-002	List the cholinergic receptors and recall their site of action and 2 <sup>nd</sup> messenger system.	Biochemistry & Physiology	Autonomic Pharmacology Cholinergic System
	Classify cholinergic agonists and antagonists.		
	Discuss the pharmacological actions / systemic effects of cholinergic agonists and antagonists.	Physiology	
	Outline the clinical uses and adverse effects of Cholinomimetics.		
	Differentiate between myasthenic crisis and cholinergic crisis.	Medicine	
	Give the outline of the management of Myasthenia gravis.		
	Role of pharmacology in Alzheimer's disease.		
	Role of Pharmacology in treatment of Glaucoma	Ophthalmology	
	Discuss the management of Organophosphate (OPC) poisoning	Medicine	
	Describe the process of "aging" in OPC poisoning and its management		
	Discuss the Therapeutic Uses of Antimuscarinics		
	Role of anticholinergic drugs in the management of Parkinson's disease		
	Enlist the Toxicity and contraindications of Atropine along with their rationale.		
Enlist the Toxicity and Management of Nicotine Poisoning			
Enlist the Toxicity and Management of Mushroom Poisoning			
GPh-Ph-003	Enlist the adrenergic receptors and recall their site of action and 2 <sup>nd</sup> messenger system.	Physiology and Biochemistry	Autonomic Pharmacology (Adrenergic System)
	Classify adrenergic agonists		
	Recall the general characteristics of catecholamines.	Biochemistry	

	Compare the structural characteristics of catecholamines & non-catecholamines		
	Discuss the pharmacological actions / systemic effects of direct and indirect-acting adrenergic agonists.	Physiology	
	Enlist the therapeutic uses, adverse effects, and contraindications of direct-acting adrenergic agonists.		
	Classify alpha blockers		
	Elaborate the clinical uses of alpha-blockers.	Medicine	
	Discuss the adverse effects of alpha-blockers.		
	Classify Beta-blockers		
	Explain the clinical indications of beta antagonists		
	Enlist their adverse effects.		
	Compare and contrast the characteristics of Reserpine and Guanethidine.		
	Explain the pharmacological actions of ganglion blockers.		
	Discuss epinephrine reversal		
	Expand on the pharmacology of drugs that balance sympathetic and parasympathetic activity. (like clonidine and methyldopa)		
	Use of Artificial Intelligence (AI) in understanding and modulating the autonomic nervous system		
	Use of AI to improve pharmacotherapy for conditions like hypertension and chronic heart failure		

## BIOCHEMISTRY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
GPh-B-001	Describe the features of Signal transduction. Describe different types of second messengers Differentiate the G protein and non-G protein mediated	Biochemistry	Signal Transduction & Second Messengers



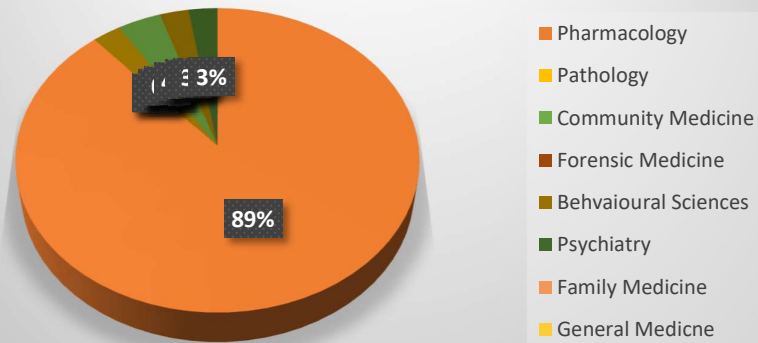
<b>PHYSIOLOGY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
GPh-P-001	Describe the types of adrenergic and cholinergic receptors and their functions. Explain the effects of sympathetic and parasympathetic on various organs/systems of the body	Medical physiology	Autonomic Nervous System
<b>BEHAVIOURAL SCIENCES</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
GPh-BhS-001	Describe common ethical dilemmas in drug trials & pharmaceutical industry.	Behavioural sciences	Ethical dilemmas
<b>PRACTICAL / LAB WORK</b>			
<b>PHARMACOLOGY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 12</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
GPh-Ph-004	Preparation on Normal Saline, dextrose Saline and 1000 ml of O.R.S. in water	Pharmacology	Drug preparation and dispensing
	To prepare and dispense doses of carminative mixture		
	To prepare and dispense 100 ml of 0.1 % KMnO4 solution using a stock solution		
	To prepare and dispense 4 doses of APC Powder		
	To prepare and dispense 12 g of Sulphur ointment B-P 10%		
GPh-Ph-005	Analysis and interpretation of Drugs (Acetylcholine, Atropine Adrenaline, Propranolol) on animal through	Pharmacology	

	online videos / simulations / graphs / practical performance.		Autonomic Nervous System	
	Analysis and interpretation of different Concentrations of Acetylcholine on Rabbit's Ileum through online videos / simulations / graphs / practical performance.			
	Analysis and interpretation of drug Antagonism Between Acetylcholine and Atropine on Rabbit's Ileum through online videos / simulations / graphs / practical performance.			
	Analysis and interpretation of Drugs (Pilocarpine, Adrenaline, Atropine, Homatropine, Proparacaine) on Rabbit's Eye through online videos / simulations / graphs / practical performance.			

**PATIENT SAFETY**

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 03	
		INTEGRATING DISCIPLINE	TOPIC
GPh-PS-001	Understanding of the terms error, slip, lapse, mistake, violation, near miss and hindsight bias	Pharmacology	Learning from errors to prevent harm
GPh-PS-002	Learn and practice ways to improve the safety of medication use.		

## General & Clinical Pharmacology



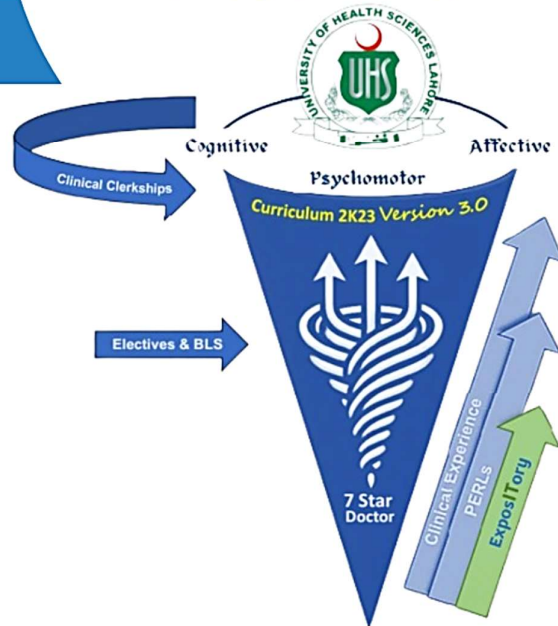
Module Weeks	Recommended Minimum Hours
2.25	79





# MODULE-14 HEMATOPOIETIC, IMMUNITY & TRANSPLANT

## Modular Integrated Curriculum 2K23 *version 3.0*



## MODULE RATIONALE

The study of hematopoietic immunity and transplantation is critical for 3rd-year MBBS students as it forms the foundation for understanding the pathological basis for immune function, blood disorders, and the life-saving field of organ and tissue transplantation. This module integrates immunology, hematology, and clinical medicine, providing students with essential knowledge, skills and behavior about hematopoietic stem cells, immune responses, and their role in diseases like leukemia, lymphoma, and immunodeficiencies.

Understanding graft rejection, immunosuppression, and transplant-related complications prepares students to manage clinical cases involving blood transfusions, organ transplants, and autoimmune diseases. In addition, it integrates key concepts from pharmacology, general medicine, surgery and ethics, preparing students for future clinical practice, decision-making, and research in advanced therapies like immunotherapy and bioengineered organs.

The module also emphasizes the ethical and legal considerations of organ donation, helping students navigate the complexities of modern transplantation medicine.

## MODULE OUTCOMES

- Describe the process of hematopoiesis including sites of blood cell formation in embryonic and adult stages.
- Describe the differentiation of stem cells into various mature blood cell lines
- Classify the key factors and signaling pathways for haemopoietic stem cell development and maintenance.
- Describe the characteristics of various blood cell, including erythrocytes, leukocytes and platelets.
- Explain the various hematological disorders such as inherited and acquired anemias, acute and chronic leukemias, Hodgkin and Non Hodgkin lymphomas and coagulation disorders in terms of inheritance, etiology, classification, pathogenesis, clinical features, diagnosis and prognosis.
- Explain and interpret the data of inheritance, etiology, classification, pathogenesis, clinical features, diagnosis and prognosis of Primary & Secondary Polycythemia and other myeloproliferative neoplasms.
- Interpret the patient and laboratory/radiological data of various hematological disorders such as inherited and acquired anemias, acute and chronic leukemias, Bone Marrow Failure Syndromes, Hodgkin and Non-Hodgkin lymphomas and coagulation disorders in terms of inheritance, etiology, classification, pathogenesis, clinical features, diagnosis and prognosis.

- Classify and explain mechanisms which can cause neutropenia/agranulocytosis, eosinophilia, lymphocytosis, neutrophilia and basophilia
- Differentiation between infective and malignant causes of leukocytosis with special reference to infectious mononucleosis, acute and chronic non-specific lymphadenitis.
- Explain and interpret the data of multiple myeloma with respect to etiology, pathogenesis, morphology, clinical features and diagnosis.
- Explain and apply knowledge of different drugs used to treat anemias, polycythemias, coagulation disorders, myeloproliferative disorders and bone marrow failure syndromes.
- Explain ABO and Rhesus blood groups, their clinical importance and method of group typing.
- Explain and identify common indications of blood products (red cells, platelets and plasma) in different clinical scenarios.
- Explain and interpret the data regarding hazards of blood transfusion and apply methods of their prevention in different clinical scenarios.
- Describe concepts of immune system and different immunities as passive, active, innate and adaptive
- Compare and contrast the various immune cell
- Elaborate the primary (bone marrow and thymus) and secondary (Spleen, lymph nodes and MALT {mucosa associated lymphoid tissue}) lymphoid organs.
- Analyze the mechanisms of antigen recognition/presentation and interpret the data regarding the related diseases.
- Describe the processes involved in antibody production and B cell role in humoral immunity.
- Describe the complement activation pathways and interpret the data regarding their role in immune response to infections, autoimmunity, transplant rejection and immune deficiency diseases.
- Explain and interpret the data regarding clinical aspects of hypersensitivity reactions (infectious diseases and autoimmune diseases).
- Describe the principles of organ and tissue transplantation including the various types as allograft, isograft etc.
- Identify the common organs/tissue transplanted such as kidneys, liver, cornea, lung etc.
- Understand the role of Human Leukocyte Antigen (HLA) system and tissue matching.
- Illustrate the pharmacological drugs used in immunosuppression along with their mechanism of action.
- Explain the different types of rejection as hyperacute, acute and chronic.

- Apply knowledge of haemopoietic, immune and transplant principles to clinical scenarios along with management of hematological disorders and transplant patients
- Explain recent advancements in haemopoietic stem cell research, immunotherapy and transplantation techniques.
- Describe the ethical considerations such as consent, national and international laws governing organ donation and transplantation.
- Identify the future challenges in field of transplantation such as bioengineered organs.

### **SUBJECTS INTEGRATED IN THE MODULE**

1. Pharmacology & Therapeutics
2. General Medicine
3. General Surgery
4. Biochemistry

## 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.
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## THEORY

### HEMATOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 39	
		INTEGRATING DISCIPLINE	TOPIC
HIT-H-001	Describe the stages in formation of red blood cells (RBCs), white blood cells (WBCs), platelets	Hematology	Hematopoietic system
	Correlate hematopoiesis with various hematopoietic growth factors along with normal bone marrow morphology		
	Identify normal values of RBC, WBC, hemoglobin level, packed cell volume, MCH, MCV, MCHC and platelet count.		
	Classify and interpret the anemias on basis of morphology and underlying pathogenesis of RBC production		
	Describe and interpret data related to causes, clinical features, clinical presentation and diagnosis of hypochromic anemia, megaloblastic anemia, anemia of chronic disease, Hereditary Spherocytosis, aplastic anemia and hemolytic anemias	Hematology	
	Give biochemical explanation for megaloblastic anemia in subjects suffering from deficiency of vitamin B <sub>9</sub> and B <sub>12</sub> .		
	Give biochemical explanation for microcytic anemia in subjects suffering from deficiency of vitamin B <sub>6</sub> , vitamin B <sub>2</sub> , vitamin C, vitamin A, and iron.		
Elaborate the biochemical mechanism underlying hemolysis in subjects suffering from deficiency of pyruvate kinase and glucose-6-phosphate dehydrogenase.			

Elaborate the biochemical mechanism underlying hemolysis in subjects suffering from hereditary spherocytosis and elliptocytosis.		
Give biochemical explanation for hemolysis in subjects suffering from vitamin E deficiency.		
Describe the clinical manifestations, clinically differentiating features and clinical course of patient with anemia.	Hematology	
Recognize symptoms driving surgical decisions such as jaundice, pallor and fatigue that may require surgical intervention especially splenectomy	General Surgery	
Evaluate physical signs for surgical planning as splenectomy particularly in cases where splenic sequestration or hypertension exacerbates hemolysis		
Monitor patient's post-splenectomy for recurrent symptoms like jaundice or anemia, which may suggest incomplete resolution or complications requiring surgical or medical management		
Describe and interpret data related to etiology, pathogenesis, clinical types and diagnosis of thalassemia with emphasis on incidence, common mutations, associated psychosocial problems and prevention	Hematology	
Clearly differentiate between quantitative and qualitative hemoglobinopathies.	Biochemistry	
Elaborate the genetic basis and inheritance of important types of quantitative hemoglobinopathies (alpha and beta thalassemia's).		
Elaborate the genetic basis and inheritance of important types of qualitative hemoglobinopathies (HbS, HbC, HbSC).		
Explain how does electrophoresis help in confirming the diagnosis of various types of qualitative hemoglobinopathies (HbS, HbC, HbSC).		

	Enlist the inherited and acquired causes of methemoglobinemia's and elaborate the consequences.		
	Describe and interpret the data inheritance, clinical features, lab diagnosis of Von Willebrand's disease, Hemophilia A&B and Polycythemia	Hematology	
	Give explanation for hemorrhages in subjects suffering from vitamin K and vitamin C deficiency.	Biochemistry	
	Elaborate mechanisms which can cause neutropenia/agranulocytosis	Hematology	
	Explain how does deficiency of glucose-6-phosphate translocase result in neutropenia and recurrent infections.	Biochemistry	
HIT-H-002	Differentiate between infective and malignant causes of leukocytosis with special reference to infectious mononucleosis, acute and chronic non-specific lymphadenitis		
	Explain and interpret the data of Non-Hodgkin's lymphoma in terms of classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis.	Hematology	
	Explain and interpret the data of Hodgkin's lymphoma in terms of classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis.		Lymphoid system
	Explain the pathophysiology of gastric lymphomas including the type (eg. MALT and diffuse large B-cell lymphoma), role of H. pylori infection		
	Identify the clinical features and diagnostic modalities (eg. Endoscopy, biopsy and imaging) and differential diagnosis of gastric lymphomas inpatients presenting with gastrointestinal symptoms	General Surgery	
HIT-H-003	Explain and interpret the data of acute and chronic leukemias with respect to classification, etiology, pathogenesis, clinical features, diagnosis, staging and prognosis.	Hematology	Haemopoietic system

Describe the clinical manifestations, clinically differentiating features and clinical course of patient with leukemia.	General Medicine	
Explain and interpret the data of multiple myeloma with respect to aetiology, pathogenesis, morphology, clinical features, diagnosis, staging and prognosis		
Explain and interpret the data of disseminated intravascular coagulation with respect to classification, aetiology, pathogenesis, morphology, clinical features, diagnosis, prognosis and management.	Hematology	
Classify anticlotting drugs: Compare their usefulness in venous and arterial thromboses Describe the mechanisms of action, clinical uses and adverse effects of anticoagulants Compare Unfractionated heparin, LMW heparins and oral anticoagulants	Pharmacology	
Compare and contrast the mechanism of action, clinical uses, and toxicities of the oral anticoagulants (warfarin, rivaroxaban, and dabigatran). Explain the pharmacokinetic and pharmacodynamic drug interactions of Warfarin		
Describe the mechanisms of action, clinical uses and adverse effects of antiplatelet drugs Illustrate where the 4 major classes of antiplatelet drugs act Differentiate between Clopidogrel and Ticlopidine		
Discuss the mechanism of action, clinical uses, adverse effects and contraindications of Thrombolytics Tabulate differences between Streptokinase & recombinant tissue plasminogen activators.	Pharmacology	
Enumerate hematopoietic growth factors, explain their mechanism of action, uses and adverse effects.		
Explain and interpret the data with respect to causes of decreased production and decreased survival of platelets in terms of classification, etiology,	Hematology	

	pathogenesis, morphology, clinical features, diagnosis, prognosis and management.		
	Interpretation of coagulation profile in the assessment of bleeding disorders		
	Describe the clinical manifestations, clinically differentiating features of patients with bleeding tendency.	General Medicine	
	List the drugs used to treat bleeding disorders	Pharmacology	
HIT-H-004	Understand the ABO and Rhesus blood groups their clinical importance and method of group typing	Hematology	Blood Transfusion
	Explain and identify common indications of blood products (red cells, platelets and plasma) and hazards of blood transfusion and methods of their prevention in different clinical scenarios		
	Enlist changes that take place in the biochemical composition of stored blood. Give significance of rejuvenation.	Biochemistry	

### GENERAL PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 10	
		INTEGRATING DISCIPLINE	TOPIC
HIT-Pa-001	Describe clinical aspects of innate and acquired immunity, active and passive immunity	General Pathology	Immunology
	Classify the types of cells taking part in immune response (Phagocytes, T cells, B cells & NK cells) and apply data in their clinical importance		
	Correlate complement activation pathways with their role in immune response to infections, autoimmunity, transplant rejection and immune deficiency disease		
	Elaborate MHC and their role in clinical diseases		
	Understand the types and apply the knowledge in clinical aspects of antibodies		
HIT-Pa-002	Classify immunosuppressants and antibodies with their mechanism of action, clinical uses, and toxicities	Pharmacology	Hematopoietic system

	Identify the major cytokines and other immunomodulating agents and know their clinical applications.		
HIT-Pa-003	Understand the clinical aspects of hypersensitivity reactions and interpret the data related to these conditions (infectious diseases and autoimmune disease)	General Pathology	Immunology
HIT-Pa-004	Describe types of transplant rejection & Graft vs Host disease and apply the knowledge in different clinical scenarios		Pharmacology
	Role of pharmacology in organ transplant		
	Overview of prophylactic treatments of Post-Transplant Infections, such as antiviral drugs (e.g., valganciclovir for CMV) and antifungal medications		
	Describe clinical aspects of auto immunity and autoimmune disease and apply the knowledge in different clinical settings.	General Pathology	

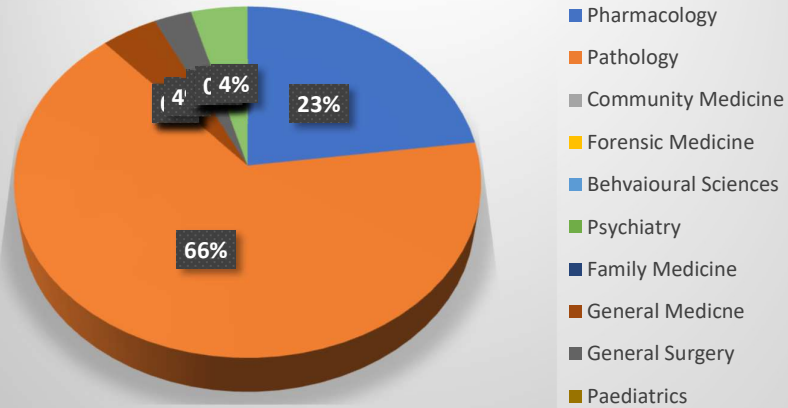
### PRACTICAL / LAB WORK

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 15		
		INTEGRATING DISCIPLINE	TOPIC	
HIT-H-005	Perform CBC on analyzer and interpret the report.	Hematology	Hematopoietic and Lymphoid System	
HIT-H-006	Analyze RBC indices, Platelet Indices and WBC parameters.		Hematology	Hematopoietic System
	Perform PT, APTT and Bleeding Time. Interpret the reports			
	Perform Blood Group and Cross Match, interpret the reports.			
	Identify normal blood cells.			
Identify common malignant disorders e.g. CML, CLL, Acute Leukemias.				

HIT-Pa-005	Interpret the data of ELISA for different tests related to immunology.	Immunology	Immunology
HIT-Pa-006	Interpret the data of Graft rejection, Graft versus host disease.		Transplant
<b>CLINICAL ROTATIONS / COMMUNITY HEALTHCARE</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 06</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
HIT-H-007	Administer Blood Products x3	Hematology	Blood Transfusion
	Clinical Audit for indications and transfusion reactions x3		



## Hematopoietic, Immunity, Transplant



Module Weeks	Recommended Minimum Hours
02	70



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**Modular Integrated  
Curriculum 2K23**  
*version 3.0*

**MODULE-15**

**Forensic Medicine  
& Toxicology-I**

## MODULE RATIONALE

The Forensic Medicine and Toxicology Module 1 prepares the medical graduate to handle the complexities of life and death and the medico-legal cases they encounter in their early career as doctors. The Autopsy training provides them with diagnostic skills for determining the cause of death, personal identity is essential for disaster victim identification, and medico-legal cases involving unidentified bodies. The death indicators and certification of death are important in their clinical practice. Introducing these topics in the 3rd year builds a strong foundation for handling medico-legal cases; ensuring students are ready to navigate the complexities of death-related issues in their future careers.

## MODULE OUTCOMES

- Explain the concept of death and its medico-legal aspect
- Discuss the indicators of death
- Describe the inter-relationship of cause, mechanism, mode, and manner of death
- Determine the parameters of personal identification in living and dead
- Describe the types, objectives, rules, and techniques of autopsy
- Discuss the post-mortem artifacts and their medic-legal significance
- Discuss the methodologies and techniques employed for personal identification.
- Describe the methods of age certification

## SUBJECTS INTEGRATED IN THE MODULE

1. Anatomy
2. Biochemistry
3. Pathology
4. Medicine

## 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.
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## THEORY

### THANATOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 05	
		INTEGRATING DISCIPLINE	TOPIC
For-Th-001	Define life and death.	Integration with Medicine	Death and life
	Describe views about death of different authorities.		
	Differentiate between somatic and molecular death.		
	Diagnose a case of death clinically.		
	Describe the legal procedure of disposal of a dead body-known /unclaimed		
	Describe brain death.		
	Explain criteria of diagnosis of brain death		
	Enlist guiding principles to diagnose a case of brain death		
	Describe the medico legal importance of brain stem death.		
	Summarize ethical, legal and moral considerations related with organ transplant and brain death		
	Differentiate between Death and Apparent/Suspended Animation		
Describe different clinical conditions simulating with suspended animation			
For-Th-002	Classify post-mortem changes.	Forensic Medicine, Pathology & Chemical Pathology	Post-mortem changes - (Immediate early and late)
	Classify post-mortem changes.		
	Describe immediate signs of somatic death		
	Explain early eye changes after death		
	Explain Post-mortem Cooling of Dead body (Algor Mortis) and its medicolegal implications.		
	Describe methods of recording the temperature of a dead body.		

	Explain cooling curve of a dead body.		
	State different formulas applied for calculating body temperature after death.		
	Summarize factors affecting Algor Mortis		
	Explain Postmortem Lividity and its mechanism of development.		
	Explain its Medicolegal implications.		
	Summarize factors affecting post-mortem lividity.		
	Differentiate Postmortem Lividity from Congestion and Bruise		
	Explain Rigor Mortis and its mechanism of development.		
	Describe its Medicolegal implications.		
	Summarize factors affecting Rigor Mortis		
	Summarize conditions simulating Rigor Mortis		
	Distinguish Rigor Mortis from Cadaveric Spasm and instantaneous rigor		
	Enlist late changes after death		
	Explain the process of putrefaction.		
	Describe different stages of putrefaction.		
	Summarize factors affecting putrefaction		
	Describe forensic entomology and its role in the estimation of post mortem interval		
	Summarize the procedure to collect specimens of forensic entomology		
	Draw and label graphic representation of post-mortem changes.		
	Infer the importance of putrefaction in toxicological analysis		
	Describe the process of Mummification		
	Describe the process of adipocere formation		
For-Th-003	Summarize the biochemical changes in blood, vitreous humour and CSF after death	Biochemistry	Bio chemical changes, after death.
	List of different parameters to determine PMI.		Estimation of

For-Th-004	Describe rate method and concurrent methods to estimate PMI.	Forensic Medicine	Post-mortem interval
For-Th-005	Define sudden death	Medicine	Sudden death
	Summarize common causes of sudden death		
For-Th-006	Differentiate between modes, manner cause and mechanism of death.		Mechanism, manner, cause, modes of death,
For-Th-007	Define and classify post mortem artefacts	Forensic medicine	Post-mortem artefacts
	Explain medico legal significance of artefacts.		
For-Th-008	Discuss the use of flow-cytometry in forensic medicine.		Flow-cytometry
For-Th-009	Define sudden infant death syndrome	Medicine	Sudden infant death syndrome (SIDS)
	Explain causes of sudden infant death syndrome and its pathological findings		
<b>AUTOPSY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 6</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
For-Au-001	Define autopsy	Forensic medicine	Autopsy, Its types and objectives.
	Summarize types of autopsies		
	Compare the differences of medical and medico legal autopsy.		
	Enlist objectives of autopsy		
	Enlist Essentials of autopsy		
For-Au-002	Compare and contrast four death investigation systems i. Coroner s system, ii. Medical examiner system, iii. Continental system, iv. Procurator fiscal system in Scotland.		Global systems of death investigations
For-Au-003	Define autopsy protocol. i. Preliminary documents required for ii. autopsy,		Autopsy Protocol



	<ul style="list-style-type: none"> <li>iii. Bio data.</li> <li>iv. Identification</li> <li>v. External examination</li> <li>vi. Internal examination</li> <li>vii. Conclusion.</li> <li>viii. Documentation.</li> </ul>		
	Differentiate between narrative and numerical autopsy protocol.		
For-Au-004	Describe primary autopsy incisions, secondary autopsy incisions and tertiary autopsy Incisions		Autopsy incisions
	Explain autopsy incisions to dissect neck, heart, brain, spinal cord, limb and bone marrow		
	Explain incisions to reveal pneumothorax, DVT, Fat embolism and pulmonary embolism		
For-Au-005	Describe 4 autopsy techniques- Letulle, Ghon, Virchow and Rokitansky		Autopsy techniques
For-Au-006	Describe the viscera with quantity to be taken for toxicological analysis		Collection of viscera at autopsy
	Describe the viscera with quantity to be taken for histopathological analysis.		
	Explain preservatives used for autopsy samples.		
	Demonstrate the preservation of different viscera to be sent to analyst.		
	Explain the autopsy protocol for collection/recovery, preservation, labelling and dispatch of biological and non-biological material		
For-Au-007	Describe standard autopsy suite		Essential of autopsy suite
	Summarize the requirements of autopsy room		
For-Au-008	Summarize the hazards of autopsy		Hazards of autopsy
For-Au-009	Define Negative autopsy		Negative autopsy
	Explain the causes of negative autopsy		

For-Au-010	Define exhumation		Exhumation
	Enlist the objectives of exhumation		
	Explain the procedure of exhumation		
	Enlist the specimens collected in exhumation		
	Enlist the limitations of exhumation		
	Summarize the precautions during exhumation		
For-Au-011	Summarize the objectives of autopsy on mutilated dead body/fragmentary remains	Anatomy	Examination of fragmentary / Mutilated / Skeletal remains
<b>PERSONAL IDENTITY</b>			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 05	
		INTEGRATING DISCIPLINE	TOPIC
For-PI-001	Define Personal Identity	Forensic Medicine	Personal Identity
	Describe types of personal identity		
	List the purpose of identification in Living & dead		
	Briefly describe the parameters of Personal Identity in living and dead		
	Describe different methods of determining personal identity		
	Enumerate surest methods to determine personal identity for identification		
	Enlist the ages of medico-legal importance for civil & criminal responsibility		
For-PI-002	Determine the age of a living person for medico-legal Purpose		Age determination
	Determine the age of a fetus regarding its length, weight & morphological features		
	Determine the age of an examinee from appearance & union of ossification centres of different bone		
	Identify the sequence of appearance of ossification		

	activity in intrauterine life.		
	Relate the medico-legal importance of bones in the identification		
For-PI-003	Determine the sex of an individual by carrying out anatomical, chromosomal investigations	Anatomy	Sex determination
	Diagnose the disorders of sexual development		
	Describe the Medico Legal Importance of Sex Determination		
	Enlist limitations of sex determination in Dead		
For-PI-004	Describe the process of estimation of age from primary, secondary & mixed dentition	Forensic Medicine	Forensic Odontology
	Describe different methods for age estimation from odontology		
	Enlist the information obtained from dental examination		
	Relate medico legal importance of identification with odontology		
For-PI-005	Determine Race of a person from different parameters		Race determination
For-PI-006	Determine stature of a person by different methods.		Stature estimation
For-PI-007	Describe anthropometry with reference to age Determination		Anthropometry
For-PI-008	Classify fingerprint patterns according to Galton's classification.		Dactylography
	Explain different methods of recording fingerprints.		
	Describe the advantages & medico legal importance of Dactylography		
	Define Poroscopy / Locards method		
For-PI-009	Describe the role of DNA Fingerprinting in identification.	Pathology	DNA Profiling
	Enlist the samples required for DNA profiling in medicolegal cases		
	Enumerate the medicolegal importance of DNA Fingerprinting		

For-PI-010	Identify different methods of identification in case of mutilated, burnt and decomposed dead bodies	Forensic Medicine	Mass Disaster Identification
	Apply the international SOP of disaster Victim Identification (DVI) in mass disaster		

### PRACTICAL / LAB WORK

#### THANATOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 06	
		INTEGRATING DISCIPLINE	TOPIC
For-Th-010	Demonstrate the immediate, early and late changes after death in a corpse.	Forensic Medicine	Autopsy
	Calculate time since death on the basis of findings noted in the corpse		
For-Au-011	Prepare a death certificate of cause of death according to WHO guidelines	Medicine	WHO guidelines of death certificate

#### AUTOPSY

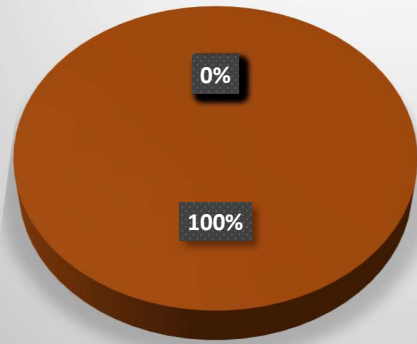
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 05	
		INTEGRATING DISCIPLINE	TOPIC
For-Au-012	Demonstrate correct report writing	Forensic medicine	Autopsy report
For-Au-013	Observe the procedure of autopsy examination and dissection		autopsy
For-Au-014	Demonstrate the correct method of preservation and dispatch of specimens for histopathological and toxicological analysis	Pathology	Biological material

#### PERSONAL IDENTITY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 05	
		INTEGRATING DISCIPLINE	TOPIC
For-PI-011	Identify the person for different medico-legal cases (age determination, sex determination)	Forensic medicine	Personal identification

	Take fingerprints by plain and rolling method and classify according to Galton's Classification		
	Estimate & certify the age of a person for medico-legal purposes		
For-PI-012	Identify the bite marks and perform their analysis		Bite marks analysis
For-PI-013	Estimate the age of the person from the oral examination of the teeth	Forensic medicine	Age & sex determination
	Interpret the findings from x-rays of bones for appearance and union of ossification centres for age determination		
	Identify the sex and age from morphological features of different bones.		

# Forensic Medicine & Toxicology I



- Pharmacology
- Pathology
- Community Medicine
- Forensic Medicine
- Behavioural Sciences
- Psychiatry
- Family Medicine
- General Medicine

Module Weeks	Recommended Minimum Hours
01	32

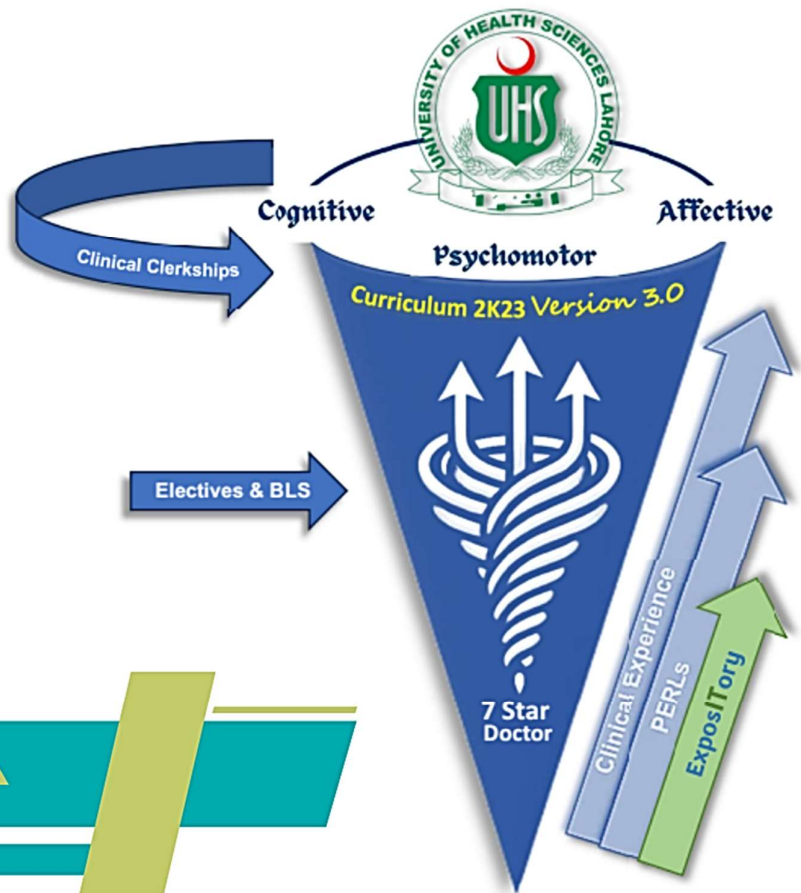




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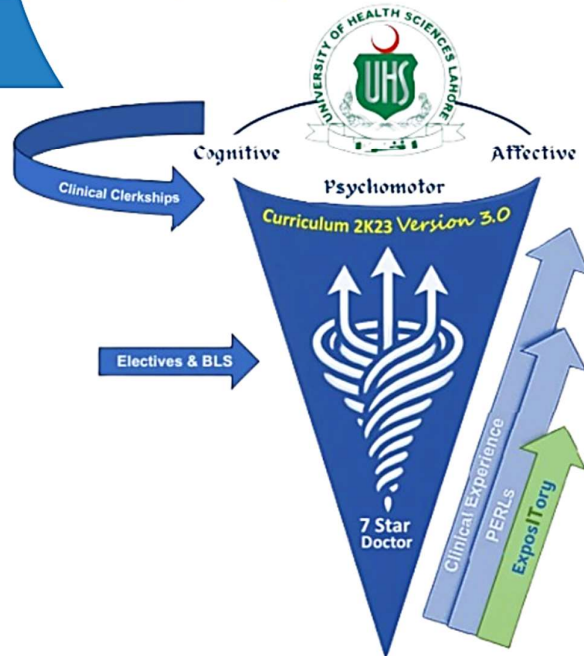
## BLOCK-08





# MODULE-16 NEOPLASIA

Modular Integrated  
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## MODULE RATIONALE

Neoplasia module is essential to provide MBBS students with the knowledge and skills abilities necessary to comprehend the biological, clinical, and public health aspects of cancer. this module provides the foundation for effective cancer diagnosis, management, and prevention, it guarantees that our future doctor is well prepared to address one of the most pressing healthcare challenges of our time.

Aim of this module is to provide MBBS students with a comprehensive understanding of neoplasia, preparing them to diagnose, treat, and prevent cancer effectively in their future clinical practice.

## MODULE OUTCOMES

- Understand the basic concept of neoplasia, including benign and malignant tumors.
- Describe the molecular and cellular mechanisms of carcinogenesis, including the role of genetic mutations, oncogenes, tumor suppressor genes, and environmental factors
- Understand the classification of tumors based on histology, site of origin, and grading/staging systems (TNM classification).
- Explain the biological mechanisms of tumor growth, invasion, angiogenesis, and metastasis
- Explain the role of the immune system in tumor recognition and immune evasion mechanisms by cancer cells.
- Understand the general principles of cancer treatment, including surgery, chemotherapy, radiotherapy, immunotherapy, and targeted therapy.
- Understand how to utilize diagnostic tools, such as imaging and pathology (biopsy), to identify and assess neoplasms.
- Communicate effectively with patients and families about cancer diagnosis, treatment

## SUBJECTS INTEGRATED IN THE MODULE

1. Pathology
2. Pharmacology
3. Radiology
4. Oncology
5. Community Medicine
6. Behavioral Sciences
7. Biochemistry
8. Surgery

## 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 first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



## THEORY

### PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 15	
		INTEGRATING DISCIPLINE	TOPIC
N-Pa-001	Define neoplasia, Nomenclature and difference between benign and malignant tumors based on morphological and functional characteristics and epidemiology of cancer.	Pathology	Nomenclature. benign and malignant tumours.
N-Pa-002	Understand the molecular basis of cancer and pathogenesis of neoplasia, including the role of genetic mutations, oncogenes, tumor suppressor genes, mechanisms of cell cycle dysregulation, apoptosis evasion, angiogenesis in tumor progression and metastasis Differentiate Carcinomas, Sarcomas and lymphoreticular neoplasm		Difference between carcinoma and sarcoma and pathways of spread of malignant tumours.
N-Pa-003	Carcinogenic agents with their cellular interactions.		Carcinogenesis
N-Pa-004	Describe the role of diagnostic tools like biopsy, histopathology with IHC (Immuno-histochemistry) and special stains and molecular diagnostics with common tumor markers.		Tumor markers
N-Pa-005	Grading and staging of tumors and treatment strategies.		Grading and Staging Invasion and metastasis
	Understand the concept of invasion and metastasis		
	Basic tumor markers		
N-Pa-006	Molecular basis of cancer		Molecular basis of cancer
N-Pa-007	Define and describe Paraneoplastic syndrome and associate with neoplastic lesions.	Paraneoplastic syndrome	

<b>BEHAVIOURAL SCIENCES</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 01</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
N-BhS-001	<p>Discuss improvement in quality of life, holistic care for terminal cancer patient</p> <p>Discuss palliative care (pain management, psychological support).</p> <p>Understand the importance of mental health support for cancer patients.</p>	Behavioural Sciences	Psychosocial aspect of oncology / cancer
<b>BIOCHEMISTRY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
N-B-001	<p>Discuss molecular changes in oncogenes, tumor, suppressor genes, and apoapsis mechanism.</p> <p>Explain Role of epigenetics in cancer development.</p>	Biochemistry	Oncology / cancer
<b>RADIOLOGY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
N-M-001	<p>Introduction to Radiological Modalities in Oncology</p> <p>Understand the different radiological imaging techniques used in cancer management:</p> <ul style="list-style-type: none"> <li>i. X-rays</li> <li>ii. Ultrasound</li> <li>iii. CT scans (Computed Tomography)</li> <li>iv. MRI (Magnetic Resonance Imaging)</li> <li>v. PET scans (Positron Emission Tomography)</li> <li>vi. Mammography</li> </ul>	Medicine	Introduction
N-Ra-001	Role of Imaging in Cancer Detection and Diagnosis		Role of Imaging

	<ul style="list-style-type: none"> <li>i. Identify radiological signs of cancer in different imaging modalities.</li> <li>ii. Understand how imaging assists in detecting primary tumors and metastasis.</li> <li>iii. Compare the sensitivity and specificity of different imaging techniques in diagnosing various types of cancer (e.g., CT vs. MRI for brain tumors).</li> </ul>		
N-Ra-002	<p>Imaging in Cancer Staging:</p> <ul style="list-style-type: none"> <li>i. Learn the importance of imaging in staging cancer (TNM system).</li> <li>ii. Understand how radiological imaging helps determine the extent of local, regional, and distant disease spread.</li> <li>iii. Role of CT, MRI, and PET scans in staging cancers like lung cancer, breast cancer, and colorectal cancer.</li> </ul>		Imaging
	<p>Imaging-Guided Procedures</p> <ul style="list-style-type: none"> <li>i. Introduction to imaging-guided diagnostic procedures (e.g., CT or ultrasound-guided biopsy).</li> <li>ii. Learn how interventional radiology aids in both diagnosis and treatment, such as tumor ablation and drainage procedures.</li> </ul>		
	<p>Imaging in Treatment Planning:</p> <ul style="list-style-type: none"> <li>i. Role of imaging in planning surgical interventions, radiotherapy, and other treatments.</li> <li>ii. Understand how imaging assists in monitoring tumor size, location, and response to therapy.</li> <li>iii. Discuss the use of PET/CT scans in assessing the metabolic activity of tumors to guide treatment decisions.</li> </ul>		

N-Ra-003	<p>Follow-up and Monitoring</p> <ul style="list-style-type: none"> <li>i. Importance of radiological imaging in follow-up after cancer treatment (e.g., detecting recurrence or metastasis).</li> <li>ii. Learn how imaging changes guide alterations in treatment plans.</li> <li>iii. Understand the concept of surveillance imaging for cancer patients in remission.</li> </ul>		Follow up & monitoring
N-Ra-004	<p>Radiological Signs of Cancer Complications. Recognize radiological findings associated with complications like:</p> <ul style="list-style-type: none"> <li>i. Tumor obstruction</li> <li>ii. Bone metastasis</li> <li>iii. Brain metastasis</li> <li>iv. Vascular invasion or thrombosis</li> </ul>		Complications

## PHARMACOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 10	
		INTEGRATING DISCIPLINE	TOPIC
N-Ph-001	Patho physiology cell cycle	Pharmacology	Cell cycle
	Abnormalities in cell cycle leading to oncogenesis		
N-Ph-002	Cell Cycle specific and non-specific anti-tumour agent mechanism of action, adverse effect, indication drugs interaction of various class of chemotherapeutic agents.		Cell Cycle specific and non-specific anti-tumour agent
	Drugs for palliative therapy in various tumours		
	Drugs related with rehabilitation.		
	Drugs used during phases of radiotherapy e.g tumour lysis syndrome		
	Drugs used beside surgical resection of various tumour to treat complications.		

	Glucocorticoids as part of various anti-cancer cocktails.		
<b>SURGERY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 01</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
N-S-001	Understand the principles of oncologic surgery, including when and how surgery is indicated during the treatment Identify role of surgery, techniques, indicators for curative and palliative surgery.	Surgery	Principles of oncologic surgery
<b>COMMUNITY MEDICINE</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 01</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
N-CM-001	Define cancer screening and its important Explain methods of screening for common cancers Major risk factors for cancer. Preventive and control measures.	Community Medicine	Screening /prevention
<b>MEDICINE / ONCOLOGY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 04</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
N-M-002	Presenting Problems of Cancer Patients and clinical examination of patients on Cancer Treatment Understand the examination (important clinical signs of patients with cancer)	Medicine & oncology	Presenting problems
N-M-003	Risk factors for Cancer Development Understand and interpret the environment and genetic factors involved in Cancer development		Risk factors
N-M-004	Investigations in Cancer patients Will be able to understand & interpret various investigations required for Cancer patients		Investigation



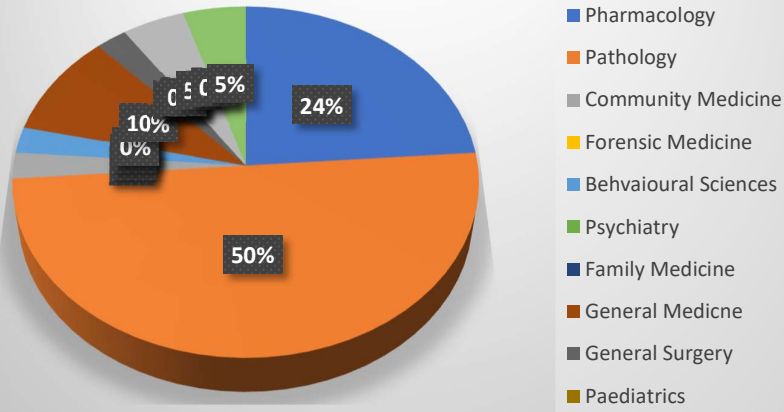
N-M-005	Oncological Emergencies & Paraneoplastic syndrome  Understand & interpret various ecologic emergencies, metastasis of tumours, and Paraneoplastic		Paraneoplastic syndrome
N-M-006	Therapeutic in Oncology  Will be able to understand and Interpret Various Therapeutic options like surgery, radiotherapy, chemotherapy, and palliative.		Therapeutics

### PRACTICAL / LAB WORK

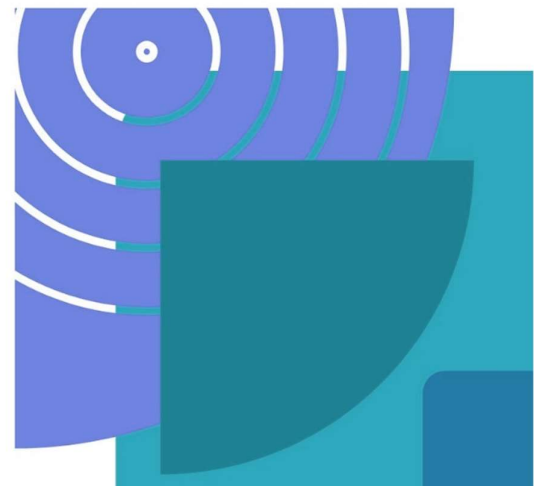
### PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 06	
		INTEGRATING DISCIPLINE	TOPIC
N-Pa-008	Morphological features of Benign and Malignant tumours (Gross and Microscopic features)	Pathology	Nomenclature, Difference between benign and malignant tumours
	Common Benign tumours (Lipoma, Leiomyoma, Fibroadenoma of Breast)		
	Carcinoma in situ (DCIS & Bowens disease)		
	Common Malignant tumours (Adenocarcinoma, Squamous cell carcinoma)		
N-Pa-009	Tumour grade and stage in malignant tumours Adenocarcinoma / Squamous cell carcinoma (including tumour invasion and metastasis)		Clinical aspects of Neoplasia

# Neoplasia



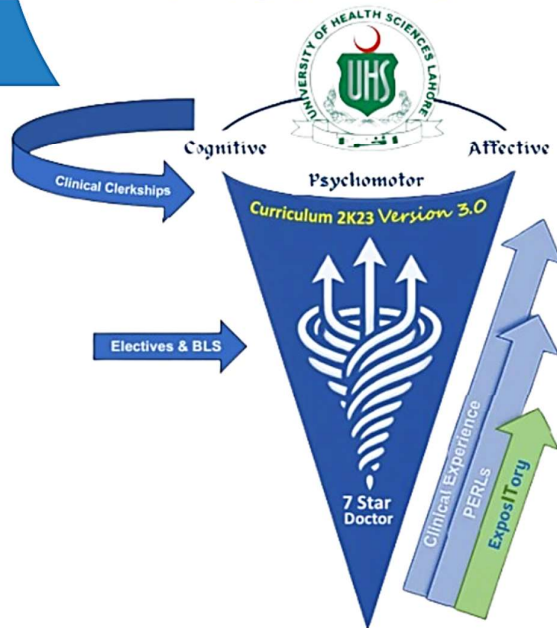
Module Weeks	Recommended Minimum Hours
1.2	42





# MODULE-17 INFECTIOUS DISEASES

## Modular Integrated Curriculum 2K23 *version 3.0*



## MODULE RATIONALE

Infectious diseases pose a universal threat to human health, ranging from mild to life-threatening conditions. This module aims to equip students with essential knowledge of common infections, including their transmission, clinical presentation, diagnosis, and treatment, while emphasizing the importance of infection control and biosafety. Students will learn the pathophysiology of conditions such as sepsis, septic shock, and pyrexia of unknown origin, as well as viral, bacterial, fungal, protozoal, and helminthic infections. Integrating infection control and biosafety into the curriculum, the module covers core safety principles like proper handling of biological materials, risk mitigation strategies, and the use of personal protective equipment (PPE), ensuring that students develop the skills to manage infections effectively while safeguarding public and healthcare worker safety through preventive measures such as immunization and sterilization. This comprehensive approach fosters a deeper understanding of clinical decision-making, laboratory investigations, and public health initiatives in infectious disease management.

## MODULE OUTCOMES

- Demonstrate a systematic approach to assessing patients with suspected infections, including pyrexia of unknown origin and sepsis, while adhering to biosafety protocols to minimize the risk of infection transmission during patient evaluation.
- Diagnose common viral infections such as measles, chickenpox, rubella, mumps, influenza, COVID-19, and dengue based on clinical features and diagnostic tools, applying biosafety measures during sample collection and handling.
- Outline treatment options, including antiviral therapies, supportive care, and preventive measures (e.g., immunization) for viral infections.
- Diagnose and manage gram-positive and gram-negative bacterial infections such as pharyngitis, pneumonia, enteric fever, and meningitis.
- Describe the clinical features, diagnosis, and management of clostridial infections (botulism, gas gangrene) and sexually transmitted infections like syphilis.
- Recognize the clinical features and management strategies for mycobacterial infections, with a focus on pulmonary and abdominal tuberculosis.
- Identify and manage common fungal infections, including diagnosis, treatment, and preventive measures.
- Explain the clinical features, investigations, and treatment of protozoal infections such as amoebiasis and helminthic infections like ascariasis and hookworm.
- Describe the life cycle of helminths and explain how infections like hookworm contribute to anemia, along with prevention and treatment strategies.

- Diagnose and manage acute and chronic diarrhea based on etiologies such as bacterial, viral, and protozoal infections.
- Discuss strategies for immunization and prevention of vaccine-preventable diseases, including measles, mumps, rubella, and poliomyelitis.
- Apply empirical and definitive treatment protocols for various infectious diseases, including antibiotic stewardship and antiviral therapies.
- Analyze the epidemiology of diseases like dengue, rabies, and COVID-19, and propose public health interventions for their control and prevention.
- Describe the role of surgical interventions in infections like hydatid cysts, alongside medical management approaches.
- Recognize different types of Healthcare-Associated Infections (HAI), associated pathogens, transmission routes, and prevention strategies.
- Implement effective prevention and control measures for HAI in clinical settings to ensure patient safety.
- Identify and apply biosafety measures in laboratory and clinical settings to ensure safe handling of biological materials and minimize bio risk during infectious disease management.
- Evaluate the importance of bio risk management protocols in infection prevention strategies, focusing on the safe collection, storage, and disposal of biological samples to protect both healthcare workers and patients.

## **SUBJECTS INTEGRATED IN THE MODULE**

1. Microbiology (Pathology)
2. Clinical Pharmacology & Therapeutics
3. Internal Medicine
4. Community Medicine
5. Paed's Medicine.
6. Surgery
7. Gynecology
8. Infection Control
9. Bio-risk management (Biosafety)
10. Clinical Rotation (CR)

## 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.
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- However, the level of cognition can be kept at a higher level by the institution.
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**SYLLABUS**

## THEORY

### MICROBIOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 53	
		INTEGRATING DISCIPLINE	TOPIC
ID-Pa-001	Explain the morphological, pathological and diagnostic aspects of: <ul style="list-style-type: none"> <li>• Staphylococci.</li> <li>• Streptococci</li> <li>• Clostridia</li> <li>• Bacillus</li> <li>• Corynebacterium</li> <li>• Listeria and Gardnerella</li> </ul>	Surgery	Bacterial infectious agents
	Explain the morphological, pathological and diagnostic aspects of; <ul style="list-style-type: none"> <li>• Gonococci and meningococci</li> <li>• E. coli and salmonella,</li> <li>• Shigella, vibrio, proteus,</li> <li>• Pseudomonas, H.pylori , campylobacter</li> <li>• Spirochetes, Mycobacteria</li> <li>• Chlamydia, rickettsia, actinomycetes</li> </ul>	Microbiology	
ID-Pa-002	Explain the life cycles and diagnostic aspects of; <ul style="list-style-type: none"> <li>• W. bancrofti, D.medinensis, loa loa</li> <li>• Tenia saginata, tenia solium, echinococcus granulosus, D.latum, H.nana</li> <li>• Giardia, entamoeba and plasmodium</li> <li>• Leishmania, toxoplasma, trypanosomes, naegleria.</li> </ul>	Microbiology	Parasitic infectious agents
ID-Pa-003	Explain the morphological, pathological and diagnostic aspects of ; <ul style="list-style-type: none"> <li>• Dermatophytes, malassezia fur fur, Spoorthi, Histoplasma,</li> </ul>	Microbiology	Fungal infections



	<p>Explain the morphological, pathological and diagnostic aspects of ;</p> <ul style="list-style-type: none"> <li>coccidioides, paracoccidioides, blastomyces, candida, mucor, aspergillus, cryptococcus</li> </ul>	Microbiology	Fungal infections
ID-Pa-004	<p>Explain the morphological, pathological and diagnostic aspects of;</p> <ul style="list-style-type: none"> <li>Adeno virus, papilloma virus, polyoma virus, papova virus</li> <li>Pox virus, herpes, hepadna</li> <li>Picornavirus, hepevirus, calicivirus, reovirus</li> </ul>	Microbiology	Viral infectious agents
	<p>Explain the morphological, pathological and diagnostic aspects of;</p> <ul style="list-style-type: none"> <li>Retrovirus, flaviviruses, togaviruses</li> <li>Coronavirus, delta virus, paramyxovirus, rhabdovirus, orthomyxovirus, filovirus</li> </ul>	Microbiology	
ID-Pa-005	<p>Enlist organisms producing CNS infections.</p>	Microbiology	Microorganisms producing CNS infections
	<p>Correlate clinically the following bacteria via their virulence factors, transmission, pathogenesis, laboratory diagnosis in CNS infections;</p> <ul style="list-style-type: none"> <li>Strept. pneumoniae</li> <li>Strept. agalactiae</li> <li>Neisseria meningitidis</li> <li>Haemophilus influenzae</li> <li>E. coli</li> <li>L. monocytogenes</li> <li>Mycobacterium tuberculosis</li> </ul>		
	<p>Correlate clinically the following microbes via their virulence factors, transmission, pathogenesis, laboratory diagnosis in CNS infections;</p> <ul style="list-style-type: none"> <li>Enteroviruses</li> <li>Mumps</li> <li>Herpes simplex</li> </ul>		

	<ul style="list-style-type: none"> <li>• Adenovirus</li> <li>• C. neoformans</li> <li>• Rabies</li> <li>• Herpes simplex</li> <li>• Malaria</li> <li>• Toxoplasma</li> <li>• Negleria</li> </ul>		
	Compare CSF findings of viral and bacterial meningitis.	Microbiology	
ID-Pa-006	Enlist organisms producing diarrhea & food poisoning.	Microbiology	Microorganisms producing GIT infections
	<p>Correlate clinically the following microbes via their virulence factors, transmission, pathogenesis, laboratory diagnosis in GIT infections;</p> <ul style="list-style-type: none"> <li>• E. coli</li> <li>• B.cereus</li> <li>• Salmonella</li> <li>• Shigella</li> <li>• Vibrio cholerae&amp; other Vibrio species</li> <li>• Helicobacter pylori</li> <li>• Campylobacter jejuni</li> <li>• Clostridium species</li> <li>• Entamoeba histolytica</li> </ul>	Microbiology integrates with medicine	
	<p>Correlate clinically the following microbes via their virulence factors, transmission, pathogenesis, laboratory diagnosis in GIT infections</p> <ul style="list-style-type: none"> <li>• Giardia lamblia</li> <li>• Cryptosporidium parvum</li> <li>• Diphyllbothrium latum</li> <li>• Hymenolepis nana</li> <li>• Ancylostoma duodenale</li> <li>• Necator americanus</li> <li>• Ascaris lumbricoides</li> <li>• Entrobium vermicularis</li> <li>• Trichiuris trichiura</li> </ul>	Microbiology integrates with medicine	

	<ul style="list-style-type: none"> <li>• Trichinella spiralis</li> <li>• Polio</li> <li>• Hepatitis A, E</li> <li>• Norwalk &amp; Rotavirus</li> </ul>		
	Correlate clinically the following viruses via their virulence factors, transmission, pathogenesis, laboratory diagnosis in acute & chronic hepatitis; Hepatitis A, B, C, D, E, G	Microbiology	
	Correlate clinically the virulence factors, transmission, pathogenesis, laboratory diagnosis of Entamoeba & Echinococcus in liver infections.	Microbiology	
ID-Pa-007	<p>Correlate clinically the virulence factors, transmission, pathogenesis, laboratory diagnosis of organism causing genital tract infections;</p> <ul style="list-style-type: none"> <li>• Nisseria gonorrhoea</li> <li>• Treponema pallidum</li> <li>• Chlamydia trachomatis</li> <li>• Mycoplasma hominis</li> <li>• Candida albicans</li> <li>• Trichomonas vaginalis</li> <li>• Gardnerella vaginalis</li> <li>• Hepatitis B</li> <li>• HIV</li> <li>• Herpes simplex –II</li> </ul>	Microbiology integrates with medicine	Sexually transmitted infections
ID-Pa-008	<p>Discuss important properties of:</p> <ul style="list-style-type: none"> <li>• Rickettsia,</li> <li>• Leptospira &amp; Brucella,</li> <li>• anthrax, plague.</li> <li>• Francisella, bartonella</li> </ul>	Microbiology	ZOONOTIC infections

## PHARMACOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 18	
		INTEGRATING DISCIPLINE	TOPIC
ID-Ph-001	Classify cell wall synthesis inhibitors.	Pharmacology	Cell Wall Inhibitors
	Discuss the mechanism of action of beta lactam antibiotics (Penicillin G, V, Oxacillin, Nafcillin, Ampicillin, Amoxicillin, Piperacillin).		
	Delineate the mechanism of resistance to beta lactam antibiotics.		
	Enlist the major adverse effects of penicillin		
	Differentiate the clinical uses of beta lactam antibiotics.		
	Discuss the mechanism of action and clinical significance of Beta Lactamase Inhibitors (Clavulanic acid, Sulbactam, Tazobactam, Avibactam, Vaborbactam)		Cell Wall Inhibitors
	Classify cephalosporin generations		
	Describe their antibacterial spectrum and clinical uses.		
	Differentiate the clinical uses of cephalosporin generations		
	List the major adverse effects of cephalosporins.		
	Describe important features of the carbapenems and monobactam.		
	Describe the mechanism of action of Membrane active antibiotics (daptomycin, Fosfomycin, bacitracin, cycloserine).		
	Describe the mechanism of resistance of Membrane active antibiotics.		
	Describe the adverse effects and toxicities of Membrane active antibiotics.		

	Describe antibacterial spectrum, mechanism of action, resistance, clinical uses and toxicity of vancomycin.		
	Discuss clinical features of Redman Syndrome.		
	Describe antibacterial spectrum, mechanism of action of Teicoplanin, Telavancin, Delbavancin, Oritavancin.		
ID-Ph-002	Explain briefly the major steps of protein synthesis.	Medicine	Protein Synthesis Inhibitors
	Classify protein synthesis inhibitors.		
	Demonstrate the tetracyclines and discuss mechanism of action, resistance, antibacterial spectrum, clinical uses, adverse effects of tetracyclines.		
	Outline features of Milk Alkali Syndrome	Medicine	
	List pharmacological indication and adverse effects of Glycylcycline.		
	Classify Macrolide/ Ketolide.		
	Describe the mechanism of action and pharmacokinetics, antimicrobial spectrum, clinical uses, adverse effects of Erythromycin, Clarithromycin, Azithromycin, Fidaxomycin.		
	Enlist mechanism of resistance & drug interactions of Macrolides.		
	Describe the antibacterial spectra, therapeutic uses and side effects of Ketolides (Telithromycin, solithromycin)		
	Discuss the main characteristics of Clindamycin including mechanism of action, pharmacokinetics, clinical uses and adverse effects.		

Explain Chloramphenicol with respect to its: mechanism of action, resistance, antibacterial spectrum, pharmacokinetics, clinical uses and adverse effects.		
Describe Gray Baby Syndrome.	Integrate with pediatrics	
Enlist major pharmacokinetic characteristics of Streptogramins (Quinupristin / dalfopristin).		
Classify Antifolate drugs.		
Define Sulfonamides.		
Discuss the classification of Sulfonamides.		
Describe the mechanism of action of Sulfonamides.		
Discuss the clinical uses of Sulfonamides.		
Describe the adverse effects and toxicities of Sulfonamides.		
Outline clinical features of Steven Johnsons Syndrome.		Integrate with Medicine
Explain Trimethoprim & Trimethoprim - Sulfamethoxazol with respect to their mechanism of actions, resistance, antibacterial spectrum, pharmacokinetics, clinical uses and adverse effects		
Define Aminoglycosides.		
Classify Aminoglycosides.		
Describe the mechanism of action of Aminoglycosides (amikacin, gentamycin, streptomycin, tobramycin, neomycin, kanamycin).		
Describe the mechanism of resistance of Aminoglycosides.		
Discuss the clinical uses of Aminoglycosides.		
Describe the adverse effects and toxicities of Aminoglycosides.		

	Discuss ototoxicity and nephrotoxicity of Aminoglycosides	Integrate with Medicine	
	Define DNA Gyrase Inhibitors.		
	Discuss the classification of DNA Gyrase Inhibitors.		
	Describe the mechanism of action of DNA Gyrase Inhibitors (Ciprofloxacin, Levofloxacin, Ofloxacin, Getifloxacin and others)		
	Describe the mechanism of resistance of DNA Gyrase Inhibitors.		
	Discuss the clinical uses of DNA Gyrase Inhibitors.		
	Describe the adverse effects and toxicities of DNA Gyrase Inhibitors.		
ID-Ph-003	Briefly describe the signs, symptoms, diagnosis of tuberculosis.	Integrate with Medicine	Antituberculosis Therapy (ATT)
	Classify antituberculosis drugs into 1st line and 2nd line agents with examples.		
	Describe standard protocols (WHO recommendation) for management of newly diagnosed pulmonary tuberculosis, multidrug-resistant tuberculosis, latent tuberculosis.	Integrate with Community Medicine	
	Delineate the characteristic pharmacodynamics and pharmacokinetic properties of Rifampin, Isoniazid, Ethambutol and Pyrazinamide.		
	Discuss the adverse effects of 1 <sup>st</sup> line antituberculosis drugs.		
	Describe how to monitor patients during antituberculosis drug therapy.		
Discuss 2 <sup>nd</sup> line drugs used in treatment of Multidrug resistant tuberculosis with their therapeutic and adverse effects.			
ID-Ph-004	Explain standard protocols (WHO recommendation) for management of leprosy.		Drugs used in Leprosy

	Describe the characteristic properties of dapsone and clofazimine with their adverse effects.		
ID-Ph-005	Classify Antiprotozoal Drugs.		Antiprotozoal Drugs
	Discuss the classification of Antimalarial agents.		
	Describe the mechanism of action of Antimalarial agents.		
	Describe the mechanism of resistance of Antimalarial agents.		
	Discuss the clinical uses of Antimalarial agents.		
	Describe the adverse effects and toxicities of Antimalarial agents.		
	Discuss the main characteristics of antiprotozoal drugs used in amoebiasis & giardiasis including mechanism of action, pharmacokinetics, clinical uses and adverse effects.		
	Discuss the main characteristics of antiprotozoal drugs used in treatment of Leishmaniasis.		
	Discuss the main characteristics of antiprotozoal drugs used in treatment of Trypanosomiasis.		
ID-Ph-006	Classify anti-helminthic drugs.	Integrate with Medicine / Pead's	Anti-Helminthic Drugs
	Discuss drugs used for the treatment of Nematodes.		
	Explain mechanisms of action, clinical uses, adverse effects of Mebendazole, Pyrantel pamoate, Piperazine, Diethylcarbamazine & Ivermectin.		
	Discuss drugs used for the treatment for Tape worm (cestodes) infection.		
	Explain mechanisms of action, clinical uses, and adverse effects of drugs used in cestodes infections.		



	Distinguish the drugs used for the treatment of Cestodes infection based on their characteristics and therapeutic uses.		
	Discuss drugs used in treatment of Neurocysticercosis.		
ID-Ph-007	Classify antifungal drugs.	Medicine / Pead's	Antifungal Drugs Classification
	Discuss drugs used for systemic mycotic infections.		
	Discuss mechanisms of action & resistance, pharmacokinetics, clinical uses, adverse effects of Amphotericin B.		
	Expalin the mechanism of action, uses and adverse effects of flucytosine.		
	Classify Azole antifungal drugs.		
	Discuss mechanism of action, resistance, antifungal spectrum, pharmacokinetics, clinical uses, adverse effects and drug interactions of Azole antifungal drugs.		
	Describe important pharmacologic properties of echinocandins.		
	Discuss the drugs used for mucocutaneous mycotic infections.		
	Discuss mechanism of action, resistance, antifungal spectrum, pharmacokinetics, clinical uses, adverse effects and drug interactions of Griseofulvin. and Terbinafine.		
	Discuss the drugs used for cutaneous mycotic infections / Topical agents.		
	Discuss mechanism of action, resistance, antifungal spectrum, pharmacokinetics, clinical uses, adverse effects of drugs used in cutaneous mycotic infections.		
	Discuss mechanism of action, resistance, antifungal spectrum, pharmacokinetics, clinical uses, adverse effects of Nystatin.		

ID-Ph-008	Discuss the main steps of viral replication that are targets for antiviral drugs.		Antiviral Agents
	Describe drugs used in treatment of herpes simplex and varicella zoster virus infection with their properties.		
	Explain the mechanism of action, pharmacodynamics and adverse effects of acyclovir, valacyclovir and famciclovir.		
	Explain the mechanism of action, pharmacodynamics and adverse effects of agents used in cytomegalovirus infection.		
	Classify antiretroviral agents.		
	Discuss mechanism of action, resistance, pharmacokinetics, clinical uses, adverse effects of NRTIs, NNRTIs, PIs, INSTIs, Fusion inhibitors, CCR5 coreceptor antagonist, CD4 post-attachment inhibitors.		
	Demonstrate the standard protocol for treatment of hepatitis B and C.		
	Describe pharmacodynamics and adverse effects of interferon, entacavir, tenofovir, ribavirin and others.		
	Describe the mechanism of action of drugs used in treatment of COVID-19 and influenza along with their adverse effects.		
	Briefly discuss antiretroviral drug used in treatment of HIV AIDS.		
Describe the significant characteristics of the five groups of drugs used in HIV AIDs.			

**COMMUNITY MEDICINE**

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 06	
		INTEGRATING DISCIPLINE	TOPIC
ID-CM-001	Analyze the local & global burden of Tuberculosis Identify the risk factors of TB	Integrate with Microbiology	Tuberculosis

	Identify prevention and control measures for Pulmonary TB in line with WHO strategies for control of TB		
	Appreciate significance of TB DOTS therapy for TB control		
ID-CM-002	Discuss the global burden of hepatitis		Hepatitis
	Discuss the importance of awareness & screening of hepatitis.		
	Analyze effective prevention methods for each type of hepatitis.		
	Discuss role of vaccination		
	Explain public health initiatives for prevention and control of hepatitis.		
	Describe the measures for prevention of vertical transmission of Hep B virus from mother to child transmission.		
ID-CM-003	Evaluate the Global Polio Eradication Initiative		Polio
	Analyze the historical and current global impact of poliomyelitis vaccination efforts.		
	Evaluate the effectiveness of different poliovirus vaccines (OPV and IPV) and vaccination schedules.		
	Discuss community health strategies for poliovirus surveillance, outbreak response & vaccination campaigns.		
	Describe End game strategy by WHO for Polio eradication		
ID-CM-004	Discuss the global distribution of measles, mumps, Rubella and their occurrence in different population groups		Measles, Mumps, Rubella
	Describe the mode of transmission (airborne droplets) and the highly contagious nature of measles, mumps, Rubella	Integrate with Microbiology	

	<p>Recognize the role of vaccination coverage and herd immunity in controlling outbreaks of measles, mumps, Rubella</p> <p>Discuss public health strategies for prevention and control of measles, mumps, Rubella including vaccination campaigns, surveillance, and outbreak response.</p>				
ID-CM-005	<p>Describe the goals and objectives of the Expanded Program of Immunization in Pakistan.</p> <p>Identify the key vaccines included in the EPI schedule.</p>		EPI		
	Analyze the strategies employed to implement the EPI in various communities.				
	Evaluate the role of healthcare workers, community leaders, and families in promoting immunization.				
	Identify the common barriers to immunization coverage in Pakistan				
	Discuss enhance vaccination uptake.				
	Discuss recent developments in the EPI, Pakistan				
	Analyze the potential impact of global health initiatives on the EPI's progress.				
ID-CM-006	<p>Describe the role of vaccination in preventing diphtheria, including the DTP (Diphtheria, Tetanus, Pertussis)</p> <p>Identify the recommended vaccine schedule for children and adults.</p> <p>Analyze community-based vaccination campaigns</p> <p>Analyze public awareness programs &amp; school health initiatives to control its transmission.</p>		Diphtheria		
	ID-CM-007			<p>Identify the global distribution of tetanus, including endemic areas &amp; populations at higher risk</p> <p>Describe the role of tetanus vaccination (Td or Tdap) in children.</p>	Tetanus

	Describe the role of tetanus vaccination in adults.		
	Discuss the significance of booster doses		
	Discuss the importance of timely immunization after potential exposure to contaminated wounds.		
	Discuss the importance of educating the community about wound care.		
	Discuss the significance of seeking medical attention for injuries.		

### INTERNAL MEDICINE

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 05	
		INTEGRATING DISCIPLINE	TOPIC
ID-Pa-009	Define pyrexia of unknown origin.	Integrate with Microbiology/ Pathology	Pyrexia of unknown origin
	Describe the investigations of a patient with pyrexia of unknown origin.		
ID-Ph-009	Summarize the treatment plan of a patient with pyrexia of unknown origin.		
ID-Pa-013	Discuss the signs, symptoms, diagnosis and treatment of septic and aseptic meningitis.	Integrate with Microbiology	CNS
	Discuss the signs, symptoms, diagnosis and treatment of septic and aseptic encephalitis.		
ID-Ph-010	Discuss the signs symptoms diagnosis and treatment of diarrhea and dysentery.	Integrate with Pharmacology	GIT infections
ID-Ph-011	Discuss the clinical diagnosis and treatment of typical and atypical pneumonia.		Integrate with Pharmacology
	Discuss the clinical diagnosis and treatment of TB		

<b>GYNAECOLOGY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
ID-GO-001	Discuss clinical presentation & treatment of pelvic inflammatory diseases (PID)	Integrate with Pharmacology	Sexually transmitted infections
ID-GO-002	Discuss the differential diagnosis of bacterial, parasitic and fungal vaginosis/vaginitis and their treatment	Integrate with Microbiology	Genital tract
<b>PEDIATRICS MEDICINE</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
ID-Pe-001	Discuss the signs symptoms diagnosis and treatment of neonatal meningitis.	Integrate with Microbiology	CNS
ID-Pe-002	Discuss the signs symptoms diagnosis and treatment of diarrhea in infants.		GIT
ID-Pe-003	Discuss the clinical diagnosis and treatment of childhood respiratory tract infections.		RTI
<b>SURGERY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
ID-S-001	Discuss the treatment of carbuncle, necrotizing fasciitis and gas gangrene	Integrate with Microbiology	Skin infections
ID-S-002	Discuss the signs symptoms diagnosis and surgical treatment of hydatid cyst and its differential diagnosis with amoebic liver abscess	Integrate with Medicine	GIT

## MICROBIOLOGY (INFECTION CONTROL)

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 08	
		INTEGRATING DISCIPLINE	TOPIC
ID-Pa-009	Define hospital acquired infections (HAI)	Microbiology	Infection prevention & control
	Discuss various types of HAI		
	Enlist bacteria and fungi associated with HAI		
	Describe the main routes of transmission of HAI in detail		
	Discuss the etiology and prevention of VAP (ventilator associated pneumonia)		
	Discuss the etiology and prevention of hospital acquired UTI		
	Discuss the etiology and prevention of nosocomial diarrhea		
	Discuss the etiology and prevention of central line associated infections		
	Discuss various methods of hospital sanitation		
	Define antimicrobial surfaces and enlist the microorganisms that are frequently present on touch surfaces		
	Describe the various preventive techniques to reduce the HAI		

## MICROBIOLOGY

# BIOSAFETY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 05	
		INTEGRATING DISCIPLINE	TOPIC
ID-Pa-010	<p>Define biosafety and biosafety levels according to WHO?</p> <p>Enlist the bio risk organisms in each of biosafety levels?</p> <p>What are 4 levels of biosafety?</p> <p>Discuss the safety protocols of BSL 1?</p> <p>Discuss the safety protocols of BSL 2?</p> <p>Discuss the safety protocols of BSL 3?</p> <p>Discuss the safety protocols of BSL 4?</p> <p>Define biological waste?</p> <p>categorize the biological wastes (HAZARDOUS, NON HAZARDOUS, SHARPS)?</p> <p>Describe procedures for segregation, storage, treatment and disposal of biological waste?</p> <p>Define spill management and discuss the steps for the management of a laboratory spill?</p> <p>Define PPE and discuss the situations under which PPE should be used by the health care professionals.</p> <p>Discuss the SOP of transportation of biological samples?</p> <p>Define and briefly discuss bio risk management?</p>	Microbiology	Bio-risk management (BRM)



## PRACTICALS / LAB WORK

### MICROBIOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 08	
		INTEGRATING DISCIPLINE	TOPIC
ID-Pa-011	Identify the stained slides* of gram positive and gram-negative bacteria (staphylococci, streptococci, Neisseria, Strept. pneumoniae, E. coli, proteus and acid fast bacilli). (*if slides will not be available, photographic slides should be used	Microbiology	Staining
ID-Pa-012	Interpret the culture sensitivity reports and antibiogram of gram positive and gram-negative bacteria.		Laboratory reporting
ID-Pa-013	Identify and describe the organisms that grow on the Blood agar, Chocolate agar, nutrient agar, TCBS, MacConkey media, LJ media. CLED, TSI, UREASE, CITRATE. blood culture bottle and anaerobic jar		Culture sensitivity
ID-Pa-014	Identify the ova, cysts and trophozoites of protozoans, helminths, cestodes and schistosomes.		Stool examination
ID-Pa-015	Perform and interpret the catalase test, coagulase test and oxidase test.		Laboratory tests

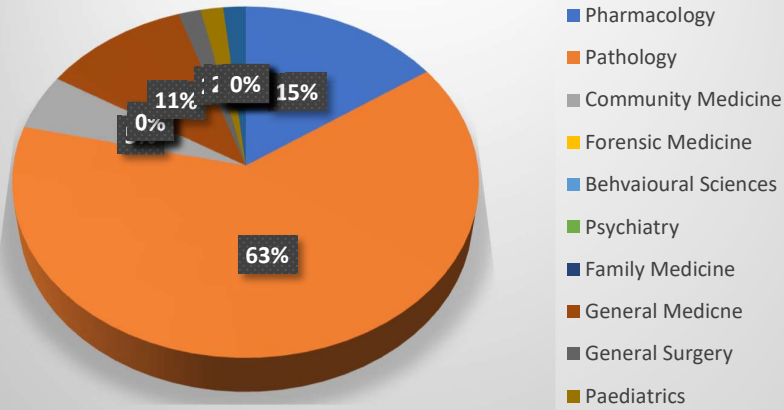
## CLINICAL ROTATIONS / COMMUNITY HEALTHCARE

### INTERNAL MEDICINE

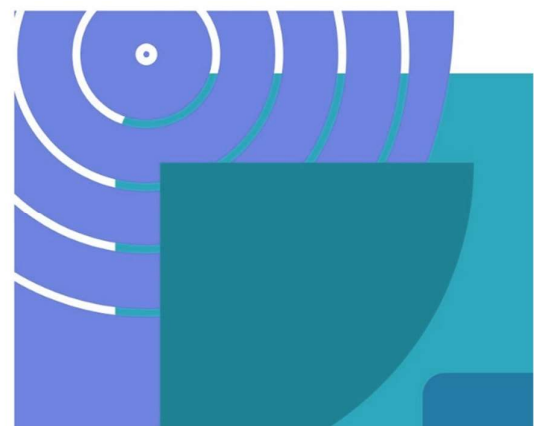
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 08	
		INTEGRATING DISCIPLINE	TOPIC
ID-M-001	Demonstrate an accurate and comprehensive history from patient with fever	Internal medicine	History taking
ID-M-002	Perform a thorough general physical examination of a patient with fever		Physical Examination
ID-M-003	Order laboratory and radiological investigations for a patient with fever		Investigations

ID-M-004	Interpret the results of investigations of a patient with fever		Results
ID-M-005	Use information from history, physical examination, and laboratory investigations to identify and formulate a differential diagnosis of the underlying causes of fever		Differential diagnosis
ID-M-006	Formulate a therapeutic plan by integrating information from history, physical examination, and laboratory data for the management of a patient with fever		Therapeutic plan
ID-M-007	Record and present the complete history, physical examination findings, laboratory data, differential diagnosis, and therapeutic plan in a systematic, concise, and coherent manner, both in writing and orally		Management plan

## Infectious Diseases



Module Weeks	Recommended Minimum Hours
3.3	117

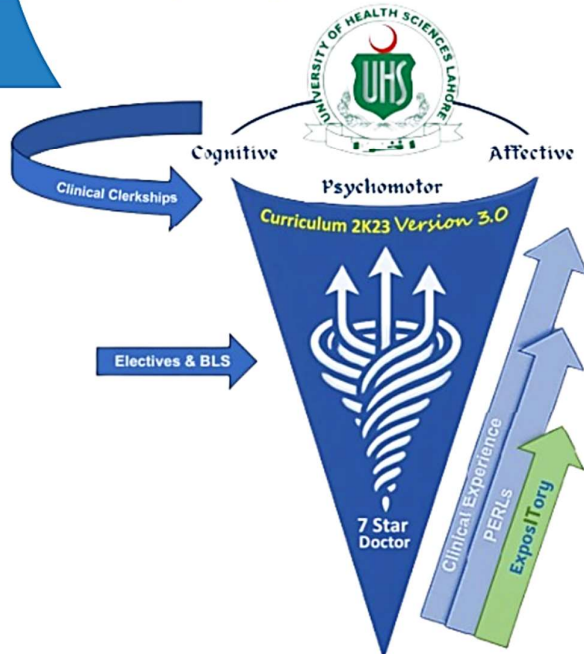




# MODULE-18

## MUSCULOSKELETAL & LOCOMOTION-II

Modular Integrated  
Curriculum 2K23  
*version 3.0*



## MODULE RATIONALE

The Musculoskeletal & Locomotion II module is designed to deepen medical students' understanding of the musculoskeletal system, integrating knowledge from multiple disciplines to enhance the management of musculoskeletal disorders and injuries. This module emphasizes the interconnectedness of various fields, including orthopedics, surgical traumatology, forensic traumatology, and rheumatology, while also incorporating essential subjects such as pathology, pharmacology, community medicine, behavioral sciences, radiology, and evidence-based medicine.

**Integrated Learning:** This module promotes an integrated approach to understanding the musculoskeletal system. By combining orthopedics, surgical traumatology, forensic traumatology, and rheumatology, students will gain a holistic perspective on diagnosis and treatment, preparing them for the complexities of clinical practice.

**Pathology and Pharmacology:** Understanding the underlying pathology of musculoskeletal disorders is essential for effective management. This module emphasizes the importance of pathology and pharmacology, equipping students with the knowledge to identify disease mechanisms and select appropriate pharmacological interventions for pain management and inflammation control.

**Community Medicine and Behavioral Sciences:** Musculoskeletal disorders significantly impact community health and patient well-being. The module includes community medicine to address the epidemiology, prevention, and health promotion aspects of musculoskeletal conditions. Additionally, behavioral sciences will be integrated to enhance understanding of patient behavior, adherence to treatment, and the psychosocial factors affecting recovery.

**Radiology and Evidence-Based Medicine:** Proficiency in interpreting radiological findings is crucial for diagnosing musculoskeletal conditions. The module will cover radiological techniques relevant to orthopedics and traumatology, allowing students to correlate imaging results with clinical findings. Furthermore, an emphasis on evidence-based medicine will teach students how to critically appraise research and apply findings to clinical decision-making, ensuring the delivery of high-quality patient care.

**Real-World Applications:** By focusing on both common and complex musculoskeletal disorders, including those requiring surgical intervention, students will develop the skills necessary to assess and manage a wide range of conditions. This prepares them for future roles in various healthcare settings, from primary care to specialized practices.

Multidisciplinary Collaboration: The management of musculoskeletal disorders often requires a team approach, involving collaboration with specialists in orthopedics, rheumatology, radiology, and rehabilitation. This module fosters an appreciation for interdisciplinary teamwork and the importance of effective communication in providing optimal patient care.

## MODULE OUTCOMES

- Explain the pathology and underlying mechanisms of common musculoskeletal disorders and injuries, including septic arthritis, osteomyelitis, fractures, and degenerative conditions.
- Identify key features of various musculoskeletal disorders, including their clinical presentations, epidemiology, and impact on community health.
- Perform thorough musculoskeletal examinations to assess joint mobility, strength, and functional capabilities.
- Interpret relevant imaging studies (e.g., X-rays, MRI, CT scans) to aid in the diagnosis and management of musculoskeletal conditions.
- Apply appropriate first aid measures for common musculoskeletal injuries, including immobilization techniques and pain management strategies.
- Integrate knowledge from orthopedics, surgical traumatology, forensic traumatology, and rheumatology to develop comprehensive management plans for patients with musculoskeletal conditions.
- Collaborate effectively with healthcare professionals from diverse specialties, including pathology, pharmacology, community medicine, behavioral sciences, and radiology, to enhance patient care.
- Critically evaluate and apply current evidence-based guidelines and research findings to inform clinical decision-making in the management of musculoskeletal disorders.
- Formulate treatment plans that incorporate pharmacological and non-pharmacological interventions based on best practices and individual patient needs.
- Demonstrate empathy and effective communication skills when interacting with patients suffering from musculoskeletal disorders, ensuring a patient-centered approach to care.
- Educate patients about their conditions, treatment options, and the importance of adherence to management plans for optimal outcomes.
- Recognize the ethical considerations and challenges in the management of musculoskeletal disorders, including issues related to informed consent, patient autonomy, and resource allocation.

- Exhibit professionalism in all interactions with patients, families, and healthcare team members, promoting a culture of respect and trust.

## **SUBJECTS INTEGRATED IN THE MODULE**

1. Orthopedics
2. Rheumatology
3. Surgery/ Traumatology
4. Forensic Traumatology
5. Pathology
6. Pharmacology
7. Community Medicine
8. Behavioural Sciences
9. Radiology
10. Evidence-Based Medicine

## 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 first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.





# SYLLABUS

# THEORY

## RHEUMATOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 17	
		INTEGRATING DISCIPLINE	TOPIC
MS2-Rh-001	Understand the scope and importance of rheumatology.	Rheumatology	Introduction to Rheumatology
	Recognize common musculoskeletal disorders managed in rheumatology.		
MS2-Rh-002	Describe the pathophysiology of Rheumatoid Arthritis (RA).	Rheumatology, Medicine	Rheumatoid Arthritis (RA)
	Identify clinical features of Rheumatoid Arthritis (RA).		
	Explain diagnostic criteria for Rheumatoid Arthritis (RA).		
	Differentiate Rheumatoid Arthritis (RA) from other inflammatory joint diseases.		
MS2-Rh-003	Explain the pathogenesis of Osteoarthritis (OA).	Rheumatology, Medicine	Osteoarthritis (OA)
	Identify clinical manifestations of Osteoarthritis (OA).		
	Discuss diagnostic methods for Osteoarthritis (OA).		
	Explain the community burden of Osteoarthritis (OA).	Rheumatology, Community Med	
	Identify risk factors for Osteoarthritis (OA).		
MS2-Rh-004	Define Crystal Arthritis, including Gout and Pseudogout.	Rheumatology, Medicine	Crystal Arthritis (Gout/Pseudogout)
	Describe the pathophysiology of Gout.		
	Describe the pathophysiology of Pseudogout.		
	Identify clinical features of Gout.		

	Identify clinical features of Pseudogout.	Rheumatology, Community Med	
	Discuss diagnostic tests for Crystal Arthritis.	Rheumatology, Medicine	
	Differentiate between Gout and Pseudogout based on clinical and diagnostic findings.		
	Outline management strategies for Gout.		
	Outline management strategies for Pseudogout.		
MS2-Rh-005	Define Systemic Inflammatory Vasculitis.	Pathology	Systemic Inflammatory Vasculitis
	Describe the pathophysiology of Systemic Inflammatory Vasculitis.		
	Identify types of Systemic Inflammatory Vasculitis.		
	Discuss the community burden of Systemic Inflammatory Vasculitis.	Rheumatology, Medicine	
	Explain risk factors for Systemic Inflammatory Vasculitis.	Pathology	
	Describe clinical features of Systemic Inflammatory Vasculitis.		
	Identify diagnostic tests for Systemic Inflammatory Vasculitis.		
	Justify the use of diagnostic investigations in Systemic Inflammatory Vasculitis.	Rheumatology, Medicine	
	Discuss management strategies for Systemic Inflammatory Vasculitis.	Medicine	
MS2-Rh-006	Define Autoimmune Rheumatic Diseases (e.g., SLE, Sjogren's, Systemic Sclerosis).	Pathology	Autoimmune Rheumatic Diseases
	Describe the pathophysiology of Systemic Lupus Erythematosus (SLE).		
	Identify clinical manifestations of Sjogren's Syndrome.	Pathology	
	Explain the pathophysiology of Systemic Sclerosis.		

	Discuss treatment options for Polymyositis and Dermatomyositis.	Rheumatology, Medicine	
	Define Spondylarthritis and its clinical features.		
	Describe clinical features of Spondylarthritis.		
	Explain diagnostic criteria for Autoimmune Rheumatic Diseases.	Pathology	
	Differentiate Autoimmune Rheumatic Diseases from each other.		
MS2-Rh-007	Understand the role of evidence-based medicine in rheumatology management.	Rheumatology, Evidence-Based Medicine	Integrated EBM
	Apply evidence-based guidelines to rheumatology case studies.		
	Critically evaluate current research in rheumatology.		
	Integrate evidence-based practices into rheumatology treatment plans.		
	Demonstrate the ability to appraise rheumatology research studies.		
	Apply evidence-based findings to clinical decision-making in rheumatology.		
	Summarize key research advancements in rheumatology.		
Implement evidence-based guidelines in rheumatology practice.			
<b>ORTHOPEDICS</b>			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 14	
		INTEGRATING DISCIPLINE	TOPIC
MS2-Orth-001	Define the field of orthopedics and its significance.	Orthopedics	Introduction to Orthopedics
	Identify common orthopedic conditions and their impact.	Community Medicine	

MS2-Orth-002	Explain the classification of fractures using the AO system.	Orthopedics, Radiology	Fracture Classification and Healing
	Describe principles of fracture healing.		
	Differentiate between complete and incomplete fractures.		
MS2-Orth-003	Discuss pediatric fractures and their management.	Orthopedics, Pediatrics, Rehabilitation	Pediatric Fractures
	Explain Salter-Harris classification for growth plate injuries.		
MS2-Orth-004	Define osteoporotic fractures and their clinical features.	Orthopedics, Geriatrics, Endocrinology	Osteoporotic Fractures
	Identify common sites of osteoporotic fractures.		
	Discuss risk factors for osteoporosis.		
MS2-Orth-005	Define pathological fractures and differentiate from traumatic.	Orthopedics, Oncology, Radiology	Pathological Fractures
	Identify causes of pathological fractures.		
	Describe diagnostic approaches for pathological fractures.		
	Explain management options for pathological fractures.		
MS2-Orth-006	Classify sports injuries and their management.	Orthopedics, Sports Medicine, Physical Therapy	Sports Injuries
	Describe common sports injuries in upper and lower limbs.		
	Discuss pathophysiology of muscle strains and ligament sprains.	Pathology, Sports Medicine	
	Explain biomechanics of gait and malalignment injuries.	Biomechanics, Orthopedics, Sports Medicine	
	Outline injury prevention strategies in sports.	Physiology, Sports Medicine	
	Analyze rehabilitation processes for sports injuries.		

	Discuss use of assistive devices in rehabilitation.	Orthopedics, Physical Therapy	
	Explain psychological impact of sports injuries.	Psychology, Sports Medicine	
	Describe nutritional roles in recovery from sports injuries.	Nutrition, Sports Medicine	
	Understand surgical intervention in severe sports injuries.	Surgery, Orthopedics, Physical Therapy	
	Promote multidisciplinary approach in managing sports injuries.	Sports Medicine, Team Management	
MS2-Orth-007	Define genetic conditions: Achondroplasia and Marfan's Syndrome.	Orthopedics, Genetics, Surgery	Genetic Conditions in Orthopedics
	Describe clinical features of Achondroplasia.		
	Explain management of Marfan's Syndrome.		
MS2-Orth-008	Define scoliosis and its types.	Orthopedics, Rehabilitation	Bone and Joint Disorders
	Identify clinical features and screening methods for scoliosis.	Orthopedics, Pediatrics	
	Discuss treatment options for scoliosis.	Orthopedics, Rehabilitation	
	Recognize multidisciplinary approach in managing scoliosis.		
	Define Osteogenesis Imperfecta and its genetic basis.	Orthopedics, Genetics, Rehabilitation	
	Identify clinical features and types of Osteogenesis Imperfecta.	Orthopedics, Pediatrics	
	Discuss management strategies for Osteogenesis Imperfecta.	Orthopedics, Rehabilitation	
Educate patients on Osteogenesis Imperfecta.	Orthopedics, Rehabilitation		

	Define Marfan's Syndrome and its genetic basis.	Orthopedics, Genetics, Surgery	
	Identify clinical manifestations of Marfan's Syndrome.	Orthopedics, Cardiology	
	Discuss management strategies for Marfan's Syndrome.	Orthopedics, Surgery	
	Promote patient education and support for Marfan's Syndrome.	Orthopedics, Rehabilitation	
<b>SURGICAL TRAUMATOLOGY</b>			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 12	
		INTEGRATING DISCIPLINE	TOPIC
MS2-Orth-009	Define ATLS and describe its relevance in trauma management.	Trauma Surgery, Surgery, Orthopedics	Introduction to Surgical Traumatology
MS2-Orth-010	Explain principles of trauma management and primary survey.	Trauma Surgery, Emergency Medicine	Introduction to Trauma Management & ATLS
	Describe types of injuries managed in traumatology.	General Surgery	
	Discuss multidisciplinary approach in trauma care.	Trauma Surgery, Surgery, Orthopedics	
	Identify key specialties in managing traumatic injuries.	Trauma Surgery, Surgery, Orthopedics	
MS2-Orth-011	Understand ATLS guidelines in primary survey (ABCDE).	Emergency Medicine, Trauma Surgery	Primary Survey and ATLS
	Recognize common causes of severe trauma.	Emergency Medicine, Trauma Surgery	
	Apply ATLS principles in conducting primary survey.	Emergency Medicine,	

		Trauma Surgery	
	Identify indications for rapid imaging in trauma assessment.	Radiology, Emergency Medicine	
MS2-Orth-012	Describe shock recognition and resuscitation measures.	Trauma Surgery, Critical Care	Shock Recognition and Management
MS2-Orth-013	Define Traumatic Brain Injury (TBI) and classify its severity.	Neurology, Neurosurgery	Traumatic Brain Injury (TBI)
	Describe pathophysiology of primary and secondary brain injury.	Neurosurgery, Pathology	
	Identify common causes of TBI.	Epidemiology, Emergency Medicine	
	Describe clinical features of TBI.	Neurology, Emergency Medicine	
	Explain importance of early imaging for TBI diagnosis.	Radiology, Neurology	
	Discuss ATLS role in TBI management.	Emergency Medicine, Trauma Surgery	
	Outline complications of TBI.	Neurology, Neurosurgery, Critical Care	
MS2-Orth-014	Define Neck and Spine Trauma and classify it.	Orthopedics, Neurosurgery, Trauma Surgery	Neck and Spine Trauma
	Recognize mechanisms of neck and spine trauma.	Epidemiology, Emergency Medicine	
	Describe anatomy of spine and spinal cord in trauma context.	Anatomy, Orthopedics, Neurosurgery	
	Identify clinical features of neck and spine trauma.	Neurology, Emergency Medicine, Neurosurgery	



	Understand importance of immobilization in spinal trauma.	Emergency Medicine, Orthopedics	
	Discuss role of imaging in spinal trauma diagnosis.	Radiology, Orthopedics, Neurosurgery	
	Recognize role of ATLS in spinal trauma management.	Emergency Medicine, Trauma Surgery	
	Outline complications of spine trauma.	Critical Care, Neurology, Rehabilitation	
MS2-Orth-015	Define Maxillofacial Trauma and its classification.	Oral & Maxillofacial Surgery, Plastic Surgery	Maxillofacial Trauma
	Identify causes of Maxillofacial Trauma.	Epidemiology, Emergency Medicine	
	Explain anatomy relevant to Maxillofacial Trauma.	Plastic Surgery, ENT	
	Recognize clinical features of facial trauma.	Surgery, Maxillofacial Surgery, ENT	
	Identify importance of airway management in facial trauma.	Emergency Medicine	
	Describe radiological investigations for facial fractures.	Radiology, Oral & Maxillofacial Surgery	
	Discuss complications of maxillofacial trauma.	Emergency Medicine, Plastic Surgery, ENT	
	Outline ATLS principles in maxillofacial trauma management.	Emergency Medicine, Trauma Surgery	
	Discuss surgical interventions for maxillofacial trauma.	Oral & Maxillofacial Surgery, Plastic Surgery	

MS2-Orth-016	Define Extremity Trauma and its types.	Orthopedics, Emergency Medicine	Extremity Trauma
	Explain mechanisms of extremity trauma.	Epidemiology, Trauma Surgery	
	Recognize clinical signs of extremity injuries.	Orthopedics, Emergency Medicine	
	Identify life-threatening complications of extremity trauma.	Orthopedics, Emergency Medicine	
	Understand role of imaging in extremity trauma diagnosis.	Radiology, Orthopedics	
	Describe principles of ATLS in extremity trauma management.	Emergency Medicine	
	Discuss management techniques for extremity trauma.	Orthopedics, Physical Therapy	
	Explain indications for surgical intervention in extremity trauma.	Orthopedics, Trauma Surgery	

**PATHOLOGY, PHARMACOLOGY, COMMUNITY MEDICINE and BEHAVIORAL SCIENCES & EBM**

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 20	
		INTEGRATING DISCIPLINE	TOPIC
MS2-Pa-001	Discuss the etiology, pathophysiology, morphology, clinical manifestations and diagnostic criteria of Rheumatoid Arthritis (RA)	Pathology	MSK Diseases & Tumors
	Discuss the etiology, pathophysiology, morphology, clinical manifestations and diagnostic criteria of Osteoarthritis (OA)		
	Discuss the etiology, pathophysiology, morphology, clinical manifestations and diagnostic criteria of Crystal Arthritis (Gout/Pseudogout)		
	Discuss the etiology, pathophysiology, morphology, clinical manifestations and diagnostic criteria of Autoimmune Rheumatic Diseases		

	Identify bone tumors, cartilaginous and soft tumors and their clinical features.		
	Discuss the etiology, pathophysiology, morphology, clinical manifestations and diagnostic criteria of Bone tumours, cartilaginous and soft tumors		
MS2-Ph-001	Describe pharmacologic interventions for MSK disorders.	Pharmacology	MSK Drugs & Interventions
	Explain mechanisms of NSAIDs in MSK disorders.		
	Describe DMARDs and their use in MSK disorders.		
	Discuss corticosteroids in MSK management.		
	Explain bisphosphonates and opioids in MSK disorders.		
MS2-CM-001	Understand epidemiology of MSK diseases.	Community Medicine	Epidemiology & Prevention
	Discuss public health burden of MSK diseases.		
	Explain preventive measures for MSK diseases.		
	Discuss pharmacologic management in rheumatology.	Pharmacology, Rheumatology	Pharmacologic Management in Rheumatology
	Understand the use of NSAIDs in rheumatic diseases.		
	Describe DMARDs and their role in managing RA.		
	Explain corticosteroids in rheumatic disease management.		
	Discuss biologics in rheumatology management.		
	Describe opioids for pain management in rheumatology.		
	Understand the epidemiology of rheumatic diseases.	Community Medicine	Epidemiology & Prevention
	Discuss the public health burden of rheumatic diseases.		

	Explain preventive measures for rheumatic diseases.		
MS2-BhS-001	Analyze psychosocial impact of chronic MSK conditions.	Behavioral Sciences	Psychosocial Impact & Patient Counseling
	Describe patient counseling techniques for MSK conditions.		
	Promote adherence to MSK treatment plans.		
	Educate patients on importance of adherence to MSK management.		
	Discuss impact of disability on MSK patients.		
MS2-Orth-017	Understand role of evidence-based medicine in MSK management.	Rheumatology, Pharmacology	Integrated EBM
	Apply evidence-based guidelines to rheumatology case studies.	Rheumatology, Evidence-Based Medicine	
	Critically evaluate current research in rheumatology.	Rheumatology, Evidence-Based Medicine	
	Integrate evidence-based practices into rheumatology treatment plans.	Rheumatology, Evidence-Based Medicine	
	Demonstrate the ability to appraise rheumatology research studies.		
	Apply evidence-based findings to clinical decision-making in rheumatology.		
	Summarize key research advancements in rheumatology.		
Implement evidence-based guidelines in rheumatology practice.			

## PRACTICAL / LAB WORK

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 09	
		INTEGRATING DISCIPLINE	TOPIC
MS2-Pa-002	Interpret various investigations related to joint diseases including: <ol style="list-style-type: none"> <li>i. Complete Blood Count (CBC)</li> <li>ii. Erythrocyte Sedimentation rate (ESR)</li> <li>iii. C-reactive protein (CRP)</li> <li>iv. Creatine Kinase (CK)</li> <li>v. Rheumatoid factor (RF)</li> <li>vi. Antinuclear antibody (ANA)</li> <li>vii. Anti-Neutrophil Cytoplasmic Antibodies (ANCA)</li> <li>viii. Serum uric acid level</li> </ol>	Pathology	Test Interpretation
MS2-Pa-003	Interpret related cultures for diagnosis for infections	Microbiology, Pathology	
MS2-Ra-001	Interpret imaging tests to evaluate various musculoskeletal disorders including: <ol style="list-style-type: none"> <li>i. X-rays</li> <li>ii. Computed tomography (CT) Scans</li> <li>iii. Ultrasound Scans</li> <li>iv. Bone Scans</li> </ol>	Radiology Rheumatology Orthopedics Surgical Traumatology	
MS2-Ph-002	Analysis and interpretation of Drugs (atracurium or skeletal muscle relaxant) on animal through online videos / simulations / graphs / practical performance.  Analysis and interpretation of different Concentrations of Drugs (atracurium or skeletal muscle relaxant) on Frog's rectus muscle through online videos / simulations / graphs / practical performance.	Pharmacology	MSK & locomotion

## CLINICAL ROTATIONS / COMMUNITY HEALTHCARE

### GENERAL MEDICINE/GENERAL SURGERY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 12	
		INTEGRATING DISCIPLINE	TOPIC
MS2-M-001	Elicit symptom of “pain” in history in terms of location, intensity, duration, character, aggravating and relieving factors.	General Medicine	History taking in pain
MS2-S-001	Elicit symptom of “swelling” in history in terms of location, intensity, duration, character, aggravating and relieving factors.	General Surgery	History taking in swelling
MS2-M-002	Elicit symptom of “swelling” in history in terms of location, duration, pattern and any family or drug history.	General Medicine	History taking in swelling in drug history
MS2-Rh-011	Elicit symptom of ‘joint mobility” in history in terms of location, intensity, duration, character, aggravating and relieving factors.	Rheumatology	History taking in joint mobility
MS2-Orth-017	Elicit symptom of “joint mobility” in history in terms of its location, duration, pattern, mechanism of injury with associated symptoms.	Orthopedics	History taking in joint mobility
	Elicit the signs and symptoms of patient with joint dislocation in history		
	Elicit signs and symptoms of patient with fracture in history		
MS2-Rh-012	Elicit the signs and symptoms of patient with osteoporosis	Rheumatology	History taking in osteoporosis
	Elicit a patient history to make a provisional diagnosis		

<b>RHEUMATOLOGY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 24</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
MS2-Rh-013	Palpate joints or areas for tenderness, warmth, swelling, and other inflammatory markers (e.g., effusion).	Rheumatology, Medicine	Physical Examination
	Assess range of motion (ROM) in joints, both actively (patient's effort) and passively (examiner's effort).	Rheumatology, Orthopedics	
	Test for specific joint tenderness and swelling in conditions like gout, rheumatoid arthritis, and osteoarthritis.	Rheumatology, Medicine	
	Assess for joint deformities (e.g., rheumatoid nodules, Heberden's nodes).	Rheumatology, Orthopedics	
	Perform a thorough hand and wrist examination for signs of arthritis (e.g., Boutonnière deformity, swan neck deformity).	Rheumatology, Orthopedics	
	Examine for abnormal postural patterns such as scoliosis, kyphosis, or lordosis.	Rheumatology, Orthopedics	
	Perform a spine examination, assessing for alignment, tenderness, and range of motion.	Rheumatology, Orthopedics	
	Perform pulse examination in Systemic Inflammatory Vasculitis.	Rheumatology	
<b>AFFECTIVE DOMAIN</b>			
MS2-PS-001	Show empathy toward patients with chronic pain.	Patient Communication, Ethics	Affective Domain
	Communicate the importance of early intervention.		
	Encourage adherence to long-term treatment plans.	Patient Education, Chronic Care	
	Promote timely referrals to specialists when necessary.	Patient Education, Chronic Care	

	Promote dietary interventions to improve overall health.	Nutrition, Patient Education	
	Discuss the prognosis of diseases based on findings and individual circumstances.	Clinical Decision Making, Pediatrics	
<b>ORTHOPEDECS</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 22</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
MS2-Orth-018	Inspect normal gait and assess deviations such as limping, stiffness, or imbalance.	Orthopedics, Medicine	Physical Examination
	Assess muscle strength surrounding normally functioning limbs using standard grading techniques (e.g., Oxford scale).	Orthopedics, Physical Therapy	
	Assess joint stability through special tests (e.g., Lachman test for ACL integrity, McMurray test for meniscus tears).		
	Perform a compartment syndrome assessment (checking for swelling, pain, and vascular compromise).	Orthopedics, Traumatology	
	Assess vascular status (pulses, capillary refill) in cases of trauma or orthopedic injury.		
Conduct a neurological examination of the upper and lower limbs to assess motor and sensory function.	Orthopedics, Neurology		
MS2-Orth-019	Demonstrate skills in performing a thorough assessment of extremity injuries, including physical examination techniques.	Clinical Skills, Orthopedics	Soft Tissue, Neurological, and Bony Extremity Injuries
	Provide first aid to a person with bone injury like common sprains, fractures and dislocations (immobilization of body part) resuscitation of injured patient.	Orthopedics, Emergency Medicine	



MS2-Orth-020	Demonstrate skills in assessing fractures through physical examination and appropriate imaging modalities, including X-rays and CT scans.	Clinical Skills, Radiology	Fractures
	Perform a fracture assessment and evaluate signs of potential fractures or dislocations (e.g., deformity, abnormal movement).	Orthopedics, Traumatology	
	Demonstrate skills in developing individualized treatment plans based on fracture type, patient factors, and healing principles.	Orthopedics, Patient Care	
	Demonstrate clinical skills in assessing and managing fractures in various locations, including the use of appropriate imaging studies.	Orthopedics, Radiology	
	Observe application of dressings, splints, plasters and other immobilization techniques in fracture patients in emergency	Orthopedics, Radiology	
	Observation of fracture reduction and fixation	Orthopedics, Radiology	
	Observation of internal and external fixation	Orthopedics, Radiology	
MS2-Orth-021	Assess and prioritize patients based on the severity of injuries.	Orthopedics, Emergency Medicine	Principles of Triage Surgery and Damage Control
	Implement damage control surgery techniques for orthopedic trauma.	Orthopedics, Trauma Surgery	
	Identify candidates for damage control surgery.		
	Stabilize fractures and manage soft tissue injuries in a timely manner.		
	Minimize the risk of complications and improve patient outcomes through damage control strategies.		
<b>AFFECTIVE DOMAIN</b>			
MS2-Orth-022	Recognize the indications for surgical intervention in the management of fractures, including fixation techniques and considerations for rehabilitation.	Orthopedics, Rehabilitation	Fractures

MS2-Orth-023	Educate patients on the principles of fracture healing and the importance of adherence to treatment protocols for optimal recovery.	Orthopedics, Patient Education	Fracture Healing and Principles of Treatment
MS2-Orth-024	Educate patients on the importance of follow-up and rehabilitation based on fracture location to optimize healing and functional recovery.	Orthopedics, Patient Education	Treatment by fracture location and region
	Collaborate with multidisciplinary teams to address unique challenges presented by fractures in specific regions (e.g., elderly patients with hip fractures).	Orthopedics, Geriatrics, Rehabilitation	
MS2-Orth-025	Coordinate with other specialties for comprehensive trauma care.	Orthopedics, Emergency Medicine, Anesthesiology	Principles of Triage Surgery and Damage Control
	Educate patients and families about the triage process and damage control strategies.	Orthopedics, Rehabilitation	

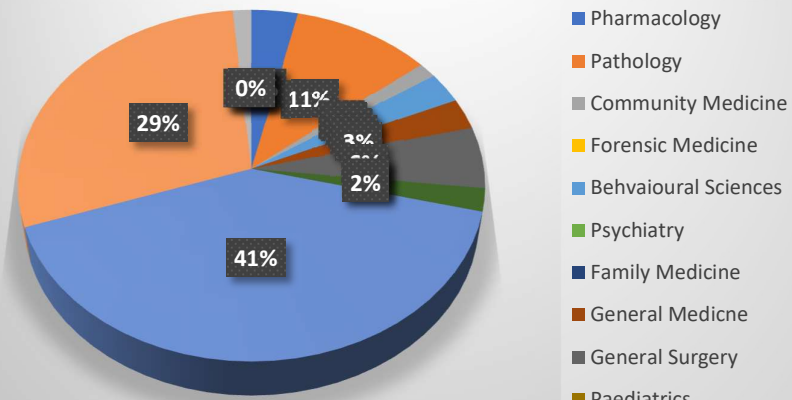
## SURGICAL TRAUMATOLOGY

### General Principles of ATLS - ABCDE

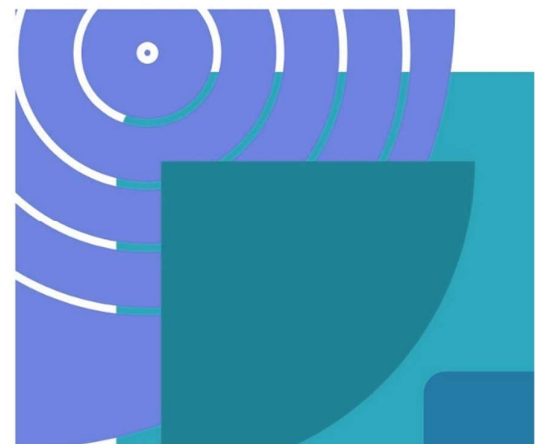
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 12	
		INTEGRATING DISCIPLINE	TOPIC
MS2-S-001	Assess airway patency and clear airway obstructions. Apply cervical spine immobilization if necessary.	Surgery, Anesthesiology	General Principles of ATLS - ABCDE
	Inspect for chest movement, auscultate breath sounds, palpate for deformities.	Surgery	
	Assess pulse, control external bleeding, and assess perfusion. Initiate shock management if required.	Surgery, Cardiology	
	Assess level of consciousness using the Glasgow Coma Scale (GCS) and check pupil reaction.	Surgery, Neurology	
	Expose the patient to assess for hidden injuries and prevent hypothermia.	Surgery, Emergency Medicine	
	Conduct secondary survey - a head-to-toe examination, including history and detailed physical exam.	Surgery, Emergency Medicine	

<b>SPECIAL EXAMINATIONS ACCORDING TO TYPE OF TRAUMA</b>			
MS2-M-001	Use the Glasgow Coma Scale to assess consciousness in patients with head injuries.	Neurology	Traumatic Brain Injury (TBI)
MS2-Orth-026	Assess for tenderness and deformity along the cervical spine in trauma patients.	Orthopedics	Neck and Spine Trauma
MS2-M-002	Identify abnormal breath sounds during auscultation to detect potential injuries.	Pulmonology	Thoracic Trauma
MS2-S-002	Perform abdominal palpation to identify tenderness or rigidity indicating injury.	Surgery	Abdominal Trauma
MS2-S-003	Recognize signs of facial fractures or deformities during the examination.	Surgery	Maxillofacial Trauma
MS2-S-004	Conduct a quick neurovascular examination of the limbs to evaluate pulse and sensation.	Orthopedics	Extremity Trauma
MS2-S-005	Conduct a triage to prioritize patients in mass casualty situations.	General Surgery	Disaster Surgery
<b>AFFECTIVE</b>			
MS2-S-009	Recognize when to initiate life-saving interventions such as airway management, chest decompression, and external hemorrhage control.	Trauma Surgery, Emergency Medicine	Early Assessment and Management of Severe Trauma
	Initiate consultation/ referral to a trauma center for further management, ensuring early communication with the trauma team.	Emergency Medicine, Trauma Surgery	
	Recognize when to initiate life-saving interventions such as airway management, chest decompression, and external hemorrhage control.	Trauma Surgery, Emergency Medicine	

## Musculoskeletal & Locomotion II

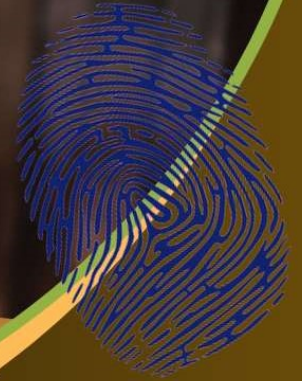


Module Weeks	Recommended Minimum Hours
<b>04</b>	<b>142</b>



CRIME SCENE DO NOT

CRIME SCENE DO NOT



**Modular Integrated  
Curriculum 2K23**  
*version 3.0*

**MODULE-19**  
**Forensic Medicine  
& Toxicology-II**

## MODULE RATIONALE

This module trains the 3rd year MBBS student to handle social issues like violence, and sexual exploitation, they can identify injuries and give an inference on their cause. It equips them with skills to provide accurate medical evaluation and contribute to justice.

## MODULE OUTCOMES

- Explain the biomechanics of wound production
- Determine the manner of injury
- Describe the pathophysiology of injuries and their effects on the body
- Define & Explain puberty, Impotence in males, frigidity in females, Sterility and medico-legal importance.
- Reproduce different sections of law relevant to sexual offenses.

## SUBJECTS INTEGRATED IN THE MODULE

1. Pathology
2. Surgery
3. Gynae / Obs.

## 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 first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.





## THEORY

### TRAUMATOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 03	
		INTEGRATING DISCIPLINE	TOPIC
For2-Tr-001	Define injury, wound and hurt.	Forensic Medicine	General concept
	Classify injuries on the basis of causative weapons		
	Classify injuries as per Qisas and Diyyat Act.		
For2-Tr-002	Explain mechanism of wound production with reference to subject, object and contact.		Wound production
For2-Tr-003	Define abrasions.		Abrasion
	Classify abrasion.		
	Describe mechanism of production of abrasions.		
	Differentiate between different types of abrasions.		
For2-Tr-004	Explain medicolegal importance of abrasions.	Bruise	
	Define bruises.		
	Describe mechanism of production of bruises.		
	Classify bruises.		
	Explain pathophysiology of color changes in the bruise		
For2-Tr-005	Assess the age of wound from color changes of wound.	Laceration	
	Distinguish between bruise, artificial bruise and hypostasis.		
	Explain medico legal importance of bruises.		
	Define lacerated wound.		
	Outline mechanism of production of a lacerated wound.		
	Classify lacerated wounds.		
For2-Tr-006	Differentiate between a lacerated wound and incised wound on gross examination.	Fractures	
	Explain medico legal importance.		
	Explain mechanism of fracture of bones/tooth.		
	Discuss the mechanism of fractures/tooth.		
For2-Tr-006	Describe different types of fractures of bones.	Surgery/Ortho pedics	

	<p>Interpret the age of fractures from radiological findings.</p> <p>Illustrate stages of healing of fractures of bones/teeth.</p> <p>Apply the nature of the fracture in the injury certificate as per Qisas and Diyat act.</p> <p>Explain medico-legal importance of fracture of bone/tooth.</p>	
For2-Tr-007	<p>Define incised/stab wounds.</p> <p>Discuss mechanism of production of an incised wound.</p> <p>Explain medico-legal significance of incised/stab wounds</p>	Incised/stab wounds

### SPECIAL TRAUMATOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 12.5	
		INTEGRATING DISCIPLINE	TOPIC
For2-Tr-008	<p>Describe the pathophysiology of injuries.</p> <p>Explain effects of injuries on the body.</p>	Pathology	Pathophysiology of injuries
For2-Tr-009	<p>Elaborate different methods (naked eye examination, microscopic examination, histochemical and biochemical methods) for determination of age of wound.</p> <p>Describe different methods (naked eye examination, microscopic examination, histochemical and biochemical methods of determination of ante mortem/post mortem nature (vital reaction) of a wound.</p>	Pathology, surgery, medicine & Forensic medicine	Timing of injury / ante mortem, post mortem nature of wound
For2-Tr-010	<p>Link Sequelae of trauma to its original cause and search for the relationship of sequelae to pre-existing disease.</p>		Ewing's postulates
For2-Tr-011	<p>Give a detailed account of battered baby or Caffey syndrome from a medicolegal point of view.</p> <p>Diagnose a case of a battered baby on the basis of different injuries sustained by a battered baby</p>		Battered baby syndrome
For2-Tr-012	<p>Define torture.</p> <p>Explain reasons, types and complications of torture.</p> <p>Describe medicolegal aspects of torture.</p>		Torture

For2-Tr-013	Examine and prepare Medico-legal report of an injured person with different etiologies in a simulated/supervised environment.		Medicolegal Certification of injury
For2-Tr-014	Define fire arms and ballistics. Classify fire arm. Explain different parts of fire arm weapons. Describe ammunition used in firearms. Explain chain of events of firing		Internal ballistics
For2-Tr-015	To explain the factors affecting the trajectory of bullet after its exit from the muzzle end.		External Ballistics
For2-Tr-016	Interpret wound complex produced by a rifled and non-rifled weapons at different ranges. Calculate the distance of fire from the wound examination. Differentiate between entry and exit wounds of fire arms. Explain medicolegal importance of fire arm injuries.		Terminal Ballistics
For2-Tr-017	Identify gun powders and ammunition used through different methods.		Gun powders
For2-Tr-018	Describe mechanics of blast injuries. Explain effects of blast injuries on human body. Describe medicolegal aspects of blast injuries		Blast injuries
For2-Tr-019	Explain mechanism of injuries to soft and bony tissues of head, neck, chest, abdomen and limbs. Describe effects of injuries to head, neck, chest, abdomen and limbs. Describe medicolegal aspects of regional injuries		Regional Injuries
For2-Tr-020	Classify transport accidents. Describe different factors involved in the causation of RTA. Classify and describe different patterns of injuries sustained by pedestrians and occupants of the vehicles Explain medicolegal significance and prevention of RTA.		Transportation Injuries

For2-Tr-021	<p>Define thermal injuries.</p> <p>Classify thermal injuries-flame burns and scalds.</p> <p>Describe degree of burns according to different classifications.</p> <p>Calculate percentage of burnt surface area and their effects on the body.</p> <p>Describe management of the burnt patient clinically.</p> <p>Appraise causes of death due to burn.</p> <p>Determine age of burn and ante-mortem/post mortem nature of burn.</p> <p>Describe autopsy findings and medico legal importance of burns.</p>		Thermal Injuries / Burn
For2-Tr-022	<p>Classify electrical injuries injuries-low voltage and high voltage</p> <p>Explain factors affecting electrocution.</p> <p>Describe mechanism and causes of death in electrocution.</p> <p>Interpret different patterns of electrical injuries due to low and high voltage current and lightening</p> <p>Describe autopsy findings and medico legal importance of electrocution</p>	Surgery	Electrocution Lightening
For2-Tr-023	<p>Explain deaths from exposure to high environmental temperature like heat stroke, heat cramps and heat exhaustion.</p> <p>Explain deaths from exposure to low environmental temperature like Frost bite, Trench foot, Immersion foot.</p> <p>Describe their mechanism of development, autopsy findings and medicolegal importance.</p> <p>Interpret Starvation, causes, clinical findings, autopsy findings and medicolegal importance</p>		Hyper / Hypothermia/ Starvation
For2-Tr-024	<p>Describe chemical burns</p> <p>Explain mechanism of development of chemical burns</p> <p>Describe autopsy findings</p>		Chemical Burns

	Summarize the chemical burns as per qisas and diyat act. Describe medicolegal importance of chemical burns.		
For2-Tr-025	Define and classify drowning. Explain mechanism of death in wet and dry drowning. Describe external and internal autopsy findings in wet and dry drowning. Interpret biochemical and diatom tests. Emphasize medicolegal importance of drowning		Drowning

### MEDICOLEGAL ASPECTS OF SEXUAL OFFENCES

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 4.5	
		INTEGRATING DISCIPLINE	TOPIC
For2-Se-001	Comprehend the terms-impotency, frigidity in females and sterility Explain their causes. Narrate their medico legal importance	Forensic Medicine & Gyne/obs	Impotency frigidity and sterility
For2-Se-002	Explain signs of virginity and defloration. Interpret medico legal importance		Virginity and defloration
For2-Se-003	Describe presumptive, probable and sure signs of pregnancy in living and dead.		Pregnancy
For2-Se-004	Explain recent and old signs of delivery in living and dead.		Delivery
For2-Se-005	Define and classify abortions Explain motives for criminal abortions Reproduce different methods of inducing criminal abortion Outline complications and causes of death due to abortion. Describe findings in living and dead after abortion. Examine the aborted material to assess the age and viability Apply sections of Qisas and Diyat act relevant to abortion.		Abortion/Miscarriage

For2- Se-006	<p>Classify sexual offenses (natural, un-natural and perversions) and explain their medico legal importance.</p> <p>Describe sexual perversions and identify the traits.</p> <p>Reproduce different sections of law relevant to sexual offenses.</p> <p>Explain Medico-legal examination of a victim of sexual assault and issue report.</p> <p>Describe Medico-legal examination of the alleged accused of rape and issue report</p> <p>Know the Medico-legal examination in unnatural sexual offence.</p> <p>Outline collection, preservation and dispatch of specimens in cases of sexual assaults to chemical examiner.</p> <p>Interpret Psycho-pathology of assailant</p> <p>Interpret Psycho-pathology of victim</p> <p>Undertake initial management &amp; referral of victim.</p>		Sexual Offences
For2- Se-007	<p>Define infanticide.</p> <p>State status of infants-still born/dead born/live born.</p> <p>Describe autopsy findings to determine whether live born or not, cause of death, age of new born and others</p>	Forensic Medicine	Infanticide
<b>PRACTICAL / LAB WORK</b>			
<b>TRAUMATOLOGY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 09</b>	
		<b>INTEGRATING DISCIPLINE</b>	<b>TOPIC</b>
For2-Tr- 026	<p>Recognize and identify common conventional blunt objects, sharp objects, firearms, electrical instruments and chemicals and their medico-legal aspects.</p> <p>(lathi, knife, axe, gandasa, sickle, dagger, razor</p>	Forensic medicine	Mechanical injuries

	& stick, fire arms		
For2-Tr-027	Differentiate between different types of abrasions		Abrasion
For2-Tr-028	Assess the age of a bruise on the basis of color changes. Differentiate between a bruise and post mortem staining		Bruise
For2-Tr-029	Differentiate between a lacerated and incised wound on naked eye examination		wound
For2-Tr-030	Assess the age of fracture by recognition of healing stages on x rays Apply different sections of Qisas and Diyat Act from examination of fractures on x rays		Age of fracture
For2-Tr-031	Identify hurt and apply relevant section of Qisas and Diyat Act for: i. Itlaf-udw ii. Itlaf -slahiat-udw iii. Shajja iv. Jurh		Hurt / Qisas N Diyat Act
For2-Tr-032	Demonstrate appropriate examination of an injured person and issue the report in a simulated/supervised environment correctly		Certification of injury
For2-Tr-033	Identify different types of fire arm weapons Identify different parts of fire arm weapons Identify different parts of ammunition.		Firearm
	Determine the type of fire arm weapon from the examination of fire arm wound complex. Calculate the firing range of the weapon from appearance of wound. Identify characteristics of entry and exit fire arm wounds.		
For2-Tr-034	Differentiate between dry burn and wet burn. Calculate burnt surface area Determine age and nature of burn on naked eye examination		Burn

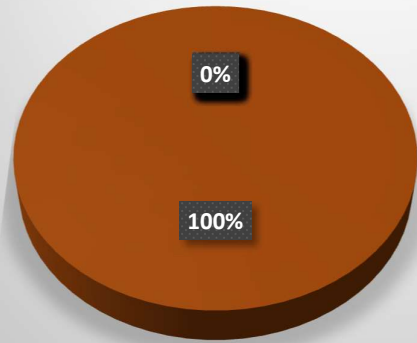
	Recognize autopsy findings.		
For2-Tr-035	Recognize between entry and exit wounds of electric currents on body. Describe different pathways of electric currents through human body. Recognize different patterns of electrical injuries.		Electrocuted injury
For2-Tr-036	Recognize different patterns of effects of high/low environmental temperature on the body. Appreciate clinical and autopsy findings of death due to starvation		Hypo / Hypothermia / starvation
For2-Tr-037	Recognize different patterns of Chemical burns over body. Apply relevant sections of Qisas And Diyat Act.		Chemical Burns
For2-Tr-038	Identify different kinds of ligature materials used for hanging Recognize different types of hanging Appreciate nonspecific and specific autopsy findings of hanging. Know how to remove and preserve the ligature material used.		Hanging
For2-Tr-039	Differentiate between ligature marks due to hanging and strangulation. Appreciate nonspecific and specific autopsy findings of hanging. Know how to remove and preserve the ligature material used.		Strangulation / Hanging
For2-Tr-040	Appreciate external and internal autopsy findings of death due to throttling. Determine the position of assailant and victim from external marks on neck		Throttling
For2-Tr-041	Appreciate external and internal autopsy findings of death due to smothering, choking, gagging and traumatic asphyxia		Smothering / Gagging
For2-Tr-042	Appreciate external and internal autopsy findings of death due to drowning.		Drowning



## SEXOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 06	
		INTEGRATING DISCIPLINE	TOPIC
For2- Se-008	Replicate Medico-legal examination of a victim of sexual assault and issue report. Demonstrate Medico-legal examination of the alleged accused of rape and issue report. Copy the Medico-legal examination in unnatural sexual offence. Perform collection, preservation and dispatch of specimens in cases of sexual assaults to chemical examiner.	Forensic medicine	Sexual assault

## Forensic Medicine & Toxicology-II



- Pharmacology
- Pathology
- Community Medicine
- Forensic Medicine
- Behavioural Sciences
- Psychiatry
- Family Medicine
- General Medicine

Module Weeks	Recommended Minimum Hours
01	35

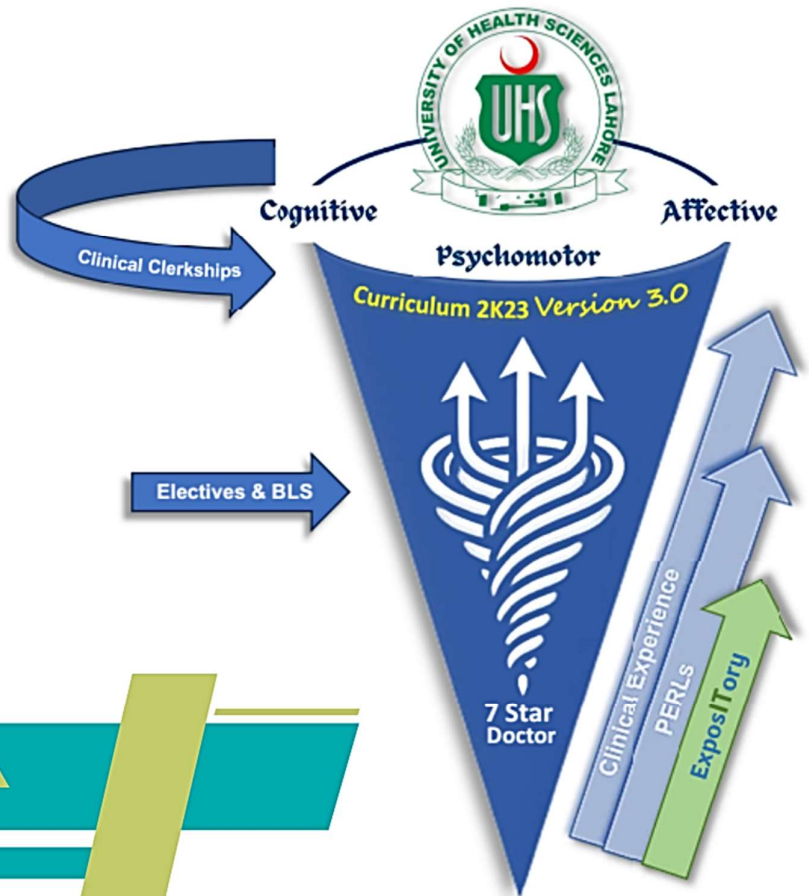




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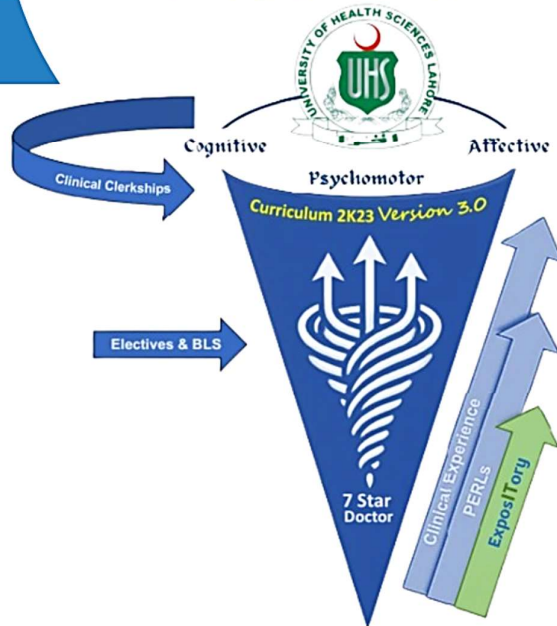
## BLOCK-09





# MODULE-20 CARIOVASCULAR-II

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## MODULE RATIONALE

The Cardiovascular System (CVS 2) Module is designed to provide a understanding of cardiovascular diseases (CVDs), which are a leading cause of global morbidity and mortality. This module is critical at this stage of medical education as it integrates foundational knowledge from basic sciences—such as anatomy, physiology, and pathology—with clinical application in general medicine, surgery, cardiology, pharmacology, and vascular surgery. The module emphasizes the pathophysiology, clinical manifestations, diagnostic approaches, and management strategies for common and critical cardiovascular conditions, including coronary artery disease, valvular heart disease, aneurysms, cardiomyopathies, congenital heart diseases, and vascular disorders.

## MODULE OUTCOMES

- Explain the underlying pathophysiological mechanisms of cardiovascular diseases and correlate them with clinical signs and symptoms.
- Apply concepts from general medicine, surgery, cardiology, pharmacology, pathology, and vascular surgery to understand and manage cardiovascular diseases.
- Recognize and diagnose common and critical cardiovascular disorders using clinical features, physical examination, and diagnostic tools such as ECG, echocardiography, and laboratory investigations.
- Develop comprehensive, evidence-based management strategies, including medical, pharmacological, and surgical interventions, for treating cardiovascular diseases.
- Competently interpret diagnostic studies (e.g., ECG, echocardiography, and imaging) and use them to guide patient care decisions.
- Understand the role of various pharmacological agents in the prevention, treatment, and management of cardiovascular conditions and complications.

## SUBJECTS INTEGRATED IN THE MODULE

1. General Medicine
2. General Surgery
3. Pathology
4. Pharmacology
5. Cardiology
6. Vascular Surgery
7. Pediatrics
8. Biochemistry
9. Anatomy

## 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 first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



# THEORY

## GENERAL MEDICINE

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 10	
		DISCIPLINE	TOPIC
CV2-M-001	Understand the Etiology and Pathogenesis of Rheumatic Fever	Integrate with Pathology	Rheumatic fever
	Describe “Jones Criteria” and its significance in diagnosis of Rheumatic fever		
	Identify the clinical features of acute Rheumatic fever		
	Describe the Pathological Changes in Rheumatic Heart Disease		
	Discuss the Diagnostic Approach to Rheumatic Fever		
	Outline the Treatment and Prevention Strategies for Rheumatic Fever		
CV2-M-002	Define cor-pulmonale and distinguish it from other causes of right heart failure.	Integrate with Pathology	Cor-pulmonale
	Classify cor-pulmonale into acute and chronic forms based on the onset and underlying causes (e.g., pulmonary embolism in acute cor-pulmonale vs. COPD in chronic cor-pulmonale).		
	Explain the Pathophysiology of Cor Pulmonale		
	Identify the Etiological Factors of Cor Pulmonale	Integrate with Pathology	
	Identify the symptoms and signs of cor pulmonale		
	Describe the Diagnostic Approach to Cor Pulmonale		
	Outline the management plan for cor-pulmonale		
CV2-M-003	Define and Classify Infective Endocarditis (IE)	Pathology integrates with medicine	Infective endocarditis
	Explain the Pathophysiology of Infective Endocarditis		
	Identify the Common Etiological Agents of Infective Endocarditis		
	Recognize the Clinical Features of Infective Endocarditis		



	Discuss the Diagnostic Approach to Infective Endocarditis		
	Explain the Complications of Infective Endocarditis		
	Outline the Management and Treatment of Infective Endocarditis		
	Describe the Prevention Strategies for Infective Endocarditis		
CV2-M-004	Define and Classify Pericarditis		Pericarditis
	Describe the Etiology of Pericarditis		
	Explain the Pathophysiology of Pericarditis	Pathology	
	Recognize the Clinical Features of Acute Pericarditis		
	Discuss the Diagnostic Approaches to Pericarditis		
	Explain the Complications of Pericarditis:		
	Outline the Management plan of Acute Pericarditis		
	Discuss Prevention and Prognosis of Pericarditis		

### PHARMACOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 14	
		DISCIPLINE	TOPIC
CV2-Ph-001	<p>Classify antihypertensive drugs including vasodilators, calcium channel blockers, drugs acting on RAAS, central sympatholytic drugs and diuretics.</p> <p>Describe their mechanisms of action, clinical uses, adverse effects, drug-interactions and contraindications</p> <p>Identify the compensatory responses to antihypertensive drugs.</p> <p>Give an account of pharmacological considerations taken in hypertensive emergencies, malignant hypertension, IHDs, cardiac failure, cardiomyopathies, coarctation of aorta, diabetes</p>	Pharmacology	Anti-hypertensives

	mellitus, chronic renal diseases, Cerebrovascular Disease, Dementia, and pregnancy		
CV2-Ph-002	<p>Explain strategies used in pharmacological treatment of angina.</p> <p>Classify anti-anginal drugs and describe the mechanism of action, uses, adverse effects and interactions of nitrates and nitrites, Beta Blockers, and Calcium Channel Blockers.</p> <p>Explain the role of Fatty Acid Oxidation Inhibitors in the treatment of Angina.</p> <p>How the Coronary Steal Phenomenon is addressed?</p>		Ischemic Heart Diseases
CV2-Ph-003	<p>Classify drugs used in cardiac arrhythmias; describe their mechanism of action, uses, adverse effects and drug interactions.</p> <p>Explain general strategies used in pharmacological treatment of cardiac arrhythmias.</p>		Cardiac Arrhythmias:
CV2-Ph-004	<p>Classify drugs used in cardiac failure and describe their mechanism of action, pharmacological effects, uses, adverse effects, interactions and contraindications.</p> <p>Describe the cardiovascular effects of Dopamine, Dobutamine, Phosphodiesterase Enzyme Inhibitors, ACE Inhibitors and ARBs, Beta Blockers, directly acting vasodilators in Cardiac Failure.</p> <p>Role of Diuretics, Renin–Angiotensin–Aldosterone System Inhibitors, Beta-blockers, Digitalis glycosides, Nitrates and Hydralazine, Ivabradine and their combination; Anticoagulation, Antiarrhythmic therapy, and Statin, etc.</p>		Cardiac Failure.

CV2-Ph-005	<p>Classify Anti-Hyperlipidemic Drugs</p> <p>Describe their Mechanism of Action, Uses, Adverse Effects and Drug Interactions</p> <p>Enlist combination therapies for treatment of hyperlipidemias</p>		Anti-Hyperlipidemic / Anti-Dyslipidemias
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**CARDIOLOGY**

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 14	
		DISCIPLINE	TOPIC
CV2-M-005	Define cardiomyopathies as diseases of the heart muscle that affect its structure and function.	Integrate with pathology	Cardiomyopathies
	Classify cardiomyopathies into the major subtypes <ul style="list-style-type: none"> <li>i. Dilated cardiomyopathy (DCM)</li> <li>ii. Hypertrophic cardiomyopathy (HCM)</li> <li>iii. Restrictive cardiomyopathy (RCM)</li> <li>iv. Arrhythmogenic right ventricular cardiomyopathy (ARVC)</li> </ul> Unclassified cardiomyopathies (e.g., left ventricular non-compaction)		
	Explain the underlying Pathophysiology of Different Cardiomyopathies		
	Recognize the Clinical Features of Cardiomyopathies		
	Describe the role of echocardiography in diagnosing cardiomyopathies by assessing heart structure, wall thickness, chamber size, and ejection fraction.		
	Highlight the use of ECG in detecting arrhythmias and conduction abnormalities associated with specific cardiomyopathies.		
	Discuss the role of cardiac MRI in identifying myocardial fibrosis, particularly in hypertrophic and arrhythmogenic cardiomyopathies.		

	<p>Explain the importance of genetic testing in familial cardiomyopathies, especially HCM and ARVC, for risk assessment and family screening.</p> <p>Understand the Complications of Cardiomyopathies:</p> <p>Outline the Management of Cardiomyopathies</p> <p>Describe the Genetic and Preventive Aspects of Cardiomyopathies:</p>		
CV2-M-006	<p>Define and Classify Congestive Cardiac Failure</p> <p>Understand the Epidemiology and Risk Factors of Heart Failure</p> <p>Explain the Pathophysiology of Congestive Cardiac Failure</p> <p>Recognize the Clinical Features of Congestive Cardiac Failure</p> <p>Discuss the Diagnostic Approach to Congestive Cardiac Failure</p> <p>Differentiate Between Acute and Chronic Heart Failure</p> <p>Explain the Complications of Congestive Cardiac Failure</p> <p>Outline the non-pharmacological and pharmacological Management of Congestive Cardiac Failure</p> <p>Discuss strategies to prevent the development or progression of heart failure</p> <p>Understand the role of prognostic factors in heart failure</p>	Integrate with pathology	Congestive Cardiac Failure
CV2-M-007	<p>Define coronary artery disease</p> <p>Differentiate between stable angina, unstable angina, myocardial infarction (MI), and acute coronary syndrome (ACS).</p> <p>Discuss the modifiable and non-modifiable risk factors for CAD</p> <p>Describe how CAD can lead to myocardial ischemia, affecting oxygen supply to the heart muscle, and the</p>		Coronary artery disease

	<p>consequences of plaque rupture leading to thrombus formation and acute coronary syndromes.</p> <p>Differentiate between stable angina (caused by fixed plaque) and acute coronary syndromes (caused by plaque rupture and thrombosis).</p> <p>Recognize the Clinical Features of Coronary Artery Disease</p> <p>Discuss the Diagnostic Approach to Coronary Artery Disease:</p> <p>Enlist the complications of CAD</p> <p>Discuss the management plan of stable CAD</p> <p>Discuss the role of revascularization techniques in stable CAD, including percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG) in selected patients.</p> <p>Outline the Management of Acute Coronary Syndromes (ACS</p>		
CV2-M-008	<p>Define Valvular Heart Disease</p> <p>Differentiate between stenosis (narrowing of valve orifice) and regurgitation (incompetence or leakage of valve).</p> <p>Understand the Epidemiology and Etiology of Valvular Heart Disease</p> <p>Explain the Pathophysiology of Common Valvular Lesions</p> <p>Discuss the management plan for valvular heart diseases</p>	Integrate with pathology	Valvular heart diseases
CV2-M-009	<p>Define congenital heart disease as structural or functional defects of the heart and great vessels present at birth.</p> <p>Classify Congenital Heart Diseases into:</p> <ol style="list-style-type: none"> <li>i. Cyanotic congenital heart diseases (e.g., Tetralogy of Fallot, Transposition of the Great Arteries).</li> </ol>		Integrate with Pead's

	Cyanotic congenital heart diseases (e.g., Atrial Septal Defect, Ventricular Septal)		
	Understand the Epidemiology and Risk Factors of Congenital Heart Disease.		
	Explain the Pathophysiology of Common Congenital Heart Lesions (ASD, VSD, PDA, TOF, TGA)	Integrate with pathology	
	Recognize the Clinical Features of Congenital Heart Disease.		
	Outline the Diagnostic Approach to Congenital Heart Disease.		
	Explain the Complications of Congenital Heart Disease		
	Discuss the Management of Common Congenital Heart Diseases.		

### PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 12	
		DISCIPLINE	TOPIC
CV2-Pa-001	Define aneurysm and differentiate between true and false aneurysms.	Integrate with biochemistry	Aneurysms
	Classify aneurysms based on their morphology (saccular, fusiform) and etiology (atherosclerotic, mycotic, and congenital).		
	Understand the underlying mechanisms leading to aneurysm formation, including vessel wall weakening, genetic factors (e.g., Marfan syndrome, Ehlers-Danlos syndrome), and role of atherosclerosis.		
	Identify the common sites where aneurysms form (e.g., aortic aneurysms, cerebral aneurysms, popliteal aneurysms) and explain why certain areas are more prone to aneurysm development.		
	Discuss the clinical signs and symptoms of aneurysms depending on their location (e.g.,		

	abdominal aortic aneurysm, thoracic aortic aneurysm) and size.		
	Correlate the presentation with possible complications like rupture, dissection, or compression of adjacent structures.		
	List the common diagnostic modalities used in identifying aneurysms (e.g., ultrasound, CT angiography, MRI).		
	Describe the complications of aneurysm		
	Discuss the management of aneurysm		
CV2-Pa-002	Define vascular tumors		
	Classify vascular tumors		
	Understand the underlying mechanisms involved in the development of vascular tumors, including genetic mutations, environmental factors (e.g., radiation, exposure to chemicals), and infections (e.g., HHV-8 in Kaposi sarcoma).		
	Discuss the role of angiogenesis and endothelial cell Proliferation in tumor formation.		
	Identify the characteristic clinical presentations of common vascular tumors (e.g., skin lesions in hemangiomas, liver involvement in cavernous hemangiomas, purple plaques in Kaposi sarcoma).	Integrate with biochemistry	Vascular tumors
	Correlate the size, location, and aggressiveness of the tumor with its clinical manifestations.		
	Discuss the diagnostic techniques used to detect and evaluate vascular tumors, including biopsy, histopathology (e.g., Doppler ultrasound, MRI), and immunohistochemically markers (e.g., CD31, CD34, VEGF).		
	Describe the histological differences between various vascular tumors, emphasizing the appearance of endothelial cells, vascular channels, and mitotic activity	Integrate with histology	

CV2-Pa-003	Define cardiac tumors and differentiate between primary and secondary (metastatic) cardiac tumors.		Cardiac tumors
	Classify primary cardiac tumors into benign (e.g., myxoma, rhabdomyoma, fibroma) and malignant (e.g., angiosarcoma, rhabdomyosarcoma).		
	Discuss the possible genetic and molecular mechanisms involved in the development of cardiac tumors, including familial syndromes associated with cardiac tumors (e.g., Carney complex, tuberous sclerosis).		
	Describe how cardiac tumors can disrupt normal cardiac function through obstruction, embolization, or invasion of adjacent structures.		
	Identify the clinical presentations of cardiac tumors based on their location and size, including obstructive symptoms (e.g., dyspnea, syncope), embolic phenomena (e.g., stroke, systemic embolism), and constitutional symptoms (e.g., fever, weight loss).		
	Describe the key diagnostic tools for identifying cardiac tumors, including echocardiography (trans esophageal and transthoracic), MRI, CT scan, and histopathological examination.		
	Explain how histopathological analysis helps in distinguishing between benign and malignant cardiac tumors.	Integrate with histology	
	Outline the Principles of Management for Cardiac Tumors	Integrate with surgery	

**GENERAL SURGERY/VASCULAR SURGERY**

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 10	
		DISCIPLINE	TOPIC
	Discuss the Pathophysiology of Peripheral Vascular Diseases	Integrate with pathology	Peripheral Vascular



CV2-S-001	Identify key risk factors for peripheral vascular diseases		Diseases (PVD)
	Differentiate between the types of PVD, such as peripheral artery disease (PAD) and venous insufficiency.		
	Discuss the role of embolism and thrombosis in the etiology of acute limb ischemia		
	Describe the signs and symptoms of peripheral vascular diseases		
	Enlist the investigations required to diagnose peripheral vascular disease		
	Discuss the role of medical treatment and surgical interventions for management of peripheral vascular disease		
	Describe the complications of untreated peripheral vascular diseases		
	Differentiate between acute and chronic limb ischemia		
	Classify different types of gangrene		
	What are different dysfunctions of venous system?		
Discuss the etiology and pathophysiology of varicose veins and venous ulcers			

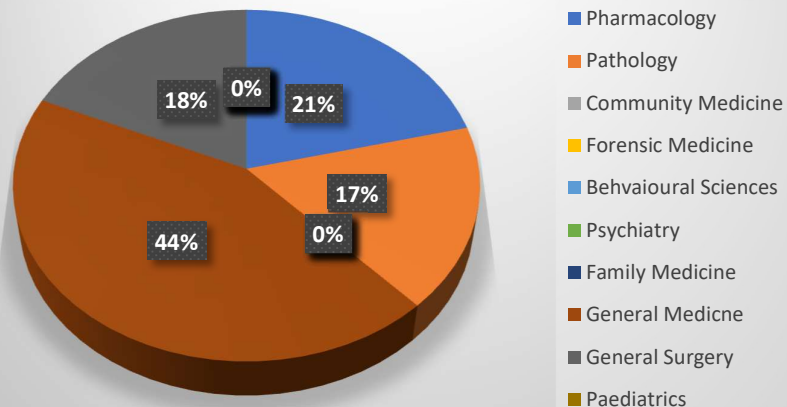
## PRACTICAL / LAB WORK

### PHARMACOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 01	
		INTEGRATING DISCIPLINE	TOPIC
CV2-Ph-006	Analysis and interpretation of Drugs (Acetylcholine, Atropine Adrenaline, Propranolol) on animal through online videos / simulations / graphs / practical performance.	Pharmacology	Cardiovascular System
	Analysis and interpretation of different Concentrations of Acetylcholine on Frog's heart		

	through online videos / simulations / graphs / practical performance.		
<b>CLINICAL ROTATIONS</b>			
<b>CARDIOLOGY AND SURGERY</b>			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 10	
		DISCIPLINE	TOPIC
CV2-M-009	Take history specific to CVS	Medicine	History taking
	Perform GPE relevant to CVS to observe signs of cyanosis, pallor, edema, hyperlipidemia and clubbing		GPE
	Palpate peripheral pulses, observe signs of raised JVP		
	Measure blood pressure		
CV2-M-010	Perform CVS examination on a patient	Cardiology	CVS examination
CV2-M-011	Interpret changes in ECG and correlate them with clinical conditions		ECG
CV2-S-002	Perform examination of an ischemic limb	Surgery	Examination of peripheral vascular system

## Cardiovascular System-II



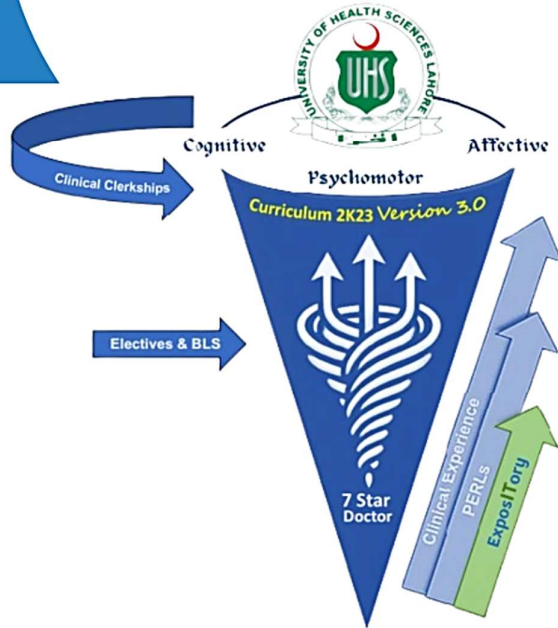
Module Weeks	Recommended Minimum Hours
02	71





# MODULE-21 RESPIRATORY-II

Modular Integrated  
Curriculum 2K23  
*version 3.0*



## MODULE RATIONALE

The curriculum for respiratory medicine and related fields is designed to equip students with essential knowledge and skills in managing thoracic trauma, respiratory complications, and conditions affecting respiration.

Demonstrate the qualities of compassion, honesty, and integrity in interactions with patients, families, communities, and fellow medical professionals. Exhibit a professional demeanor, foster a team-oriented spirit, and employ effective communication skills by actively participating in collaborative problem-solving, particularly in small group exercises focused on understanding respiratory disorders.

## MODULE OUTCOMES

- Integrate foundational concepts to address clinical respiratory issues.
- Interpret common respiratory symptoms with accuracy in assessments.
- Outline management plans for prevalent respiratory diseases during case discussions.
- Utilize a problem-solving approach to accurately diagnose respiratory emergencies in simulated scenarios.
- Demonstrate understanding of respiratory tract malignancies and referral criteria by the end of the module.
- Identify the morphological features of common respiratory tract diseases in practical examinations.
- Demonstrate effective communication strategies in patient interactions, evaluated through peer and instructor feedback.

## SUBJECTS INTEGRATED IN THE MODULE

1. Medicine
2. Surgery
3. Pathology
4. Clinical Pharmacology & Therapeutics
5. Community Medicine
6. Behavioural Sciences
7. Forensic Medicine
8. Paed's
9. Radiology

## 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 first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



THEORY			
PATHOLOGY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 16	
		DISCIPLINE	TOPIC
Re2-Pa-001	Describe hypersensitivity reaction 1 with clinical examples Describe immune mechanism involved in HSR-I	Pathology	Hyper-sensitivity reaction (HSR) Type II
Re2-Pa-002	Define asthma Classify asthma Discuss pathogenesis of atopic and non -atopic asthma Discuss pathogenesis of atopic and non -atopic asthma.		Bronchial asthma
Re2-Pa-003	Define chronic bronchitis Describe the pathogenesis of chronic bronchitis Discuss the pathogenesis of bronchiectasis Describe gross and microscopic morphological features of bronchitis. Describe gross and microscopic features of bronchiectasis.		Chronic bronchitis
Re2-Pa-004	Define emphysema Classify types of emphysema Describe protease-antiprotease imbalance hypothesis for development of emphysema		Emphysema
Re2-Pa-005	Differentiate between obstructive and restrictive pulmonary diseases List the causes of restrictive lung diseases Describe pneumoconiosis with respect to etiology and pathogenesis Enlist asbestos related diseases Describe morphologic features of asbestosis Describe morphological features of cryptogenic organizing pneumonia, coal workers		Restrictive Lung Diseases
Re2-Pa-006	Describe various etiological factors of pulmonary pneumonia.		Pneumonia



	<p>Describe the histopathological subtypes of pulmonary pneumonia</p> <p>Describe morphological features of bronchogenic and lobar pneumonia.</p> <p>Describe four stages of lobar pneumonia</p> <p>Explain the complications associated with pulmonary pneumonia</p>		
Re2-Pa-007	<p>Describe the morphological features of different types of granulomatous inflammation</p> <p>Describe Ghons complex.</p> <p>Differentiate between primary and secondary tuberculosis.</p>		Granulomatous Inflammation
Re2-Pa-008	<p>Describe hypersensitivity reaction IV with clinical examples</p> <p>Describe the immune mechanism involved in HSR IV</p>		Hypersensitivity Reaction (Hsr) Type IV
Re2-Pa-009	<p>Classify pleural tumors</p> <p>List the risk factors for development of malignant mesothelioma</p> <p>Describe morphologic features of malignant mesothelioma</p>		Pleural Tumors
Re2-Pa-010	<p>Classify lung tumors</p> <p>Benign &amp; Malignant diseases of lungs and thorax</p> <p>Describe morphologic features of squamous cell carcinoma</p> <p>Adenocarcinoma, neuroendocrine tumors, other Tumors</p> <p>Enumerate paraneoplastic syndromes associated with lung tumors</p>		Lung Tumors
Re2-Pa-011	<p>Small cell carcinoma lung</p> <p>Squamous cell carcinoma lung</p> <p>Adenocarcinoma lung</p> <p>Malignant Mesothelioma</p>		Image Session Of Respiratory System-II
Re2-Pa-012	<p>Classify pulmonary edema according to etiology</p> <p>Describe clinical conditions associated with development of ARDS</p> <p>Describe the pathogenesis of ARDS</p>		Pulmonary Edema & Acute Respiratory Distress

	Describe morphologic features of Diffuse alveolar damage (DAD)		Syndrome (ARDS)
Re2-Pa-013	Describe the important morphological features, virulence factors of Mycobacterium tuberculosis with their clinical significance Describe the pathogenesis of Pulmonary tuberculosis Describe the immunity and hypersensitivity against infections by Mycobacterium tuberculosis Extra pulmonary tuberculosis infections	Microbiology	Mycobacterium Tuberculosis
Re2-Pa-014	Describe Corona virus Explain the structure and antigenicity of the virus Describe the pathogenesis of corona virus Discuss the relation with pneumonia	Microbiology	COVID-19
Re2-Pa-015	Enlist organisms producing respiratory tract infections	Microbiology	Microorganisms producing Respiratory tract infection
	Correlate clinically the virulence factors, transmission, pathogenesis, laboratory diagnosis of organisms causing respiratory tract infections; <ul style="list-style-type: none"> <li>• Mycobacterium tuberculosis</li> <li>• Streptococcus pneumoniae</li> <li>• Mycoplasma pneumoniae</li> <li>• Legionella pneumoniae</li> <li>• Haemophilus influenzae</li> <li>• Klebsiella</li> <li>• Corynebacterium diphtheria</li> <li>• Bordetella</li> </ul>	Microbiology	
	Correlate clinically the virulence factors, transmission, pathogenesis, laboratory diagnosis of organisms causing respiratory tract infections; <ul style="list-style-type: none"> <li>• Influenza &amp; para influenza viruses</li> <li>• RSV</li> <li>• Rhinovirus</li> <li>• Measles</li> </ul>	Microbiology	

	<ul style="list-style-type: none"> <li>• Pneumocystis carinii</li> <li>• Aspergillus</li> </ul>		
<b>PHARMACOLOGY</b>			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 17	
		DISCIPLINE	TOPIC
Re2-Ph-001	<p>Discuss the role of different drugs in the prevention &amp; treatment of asthma</p> <p>Describe the mechanism of action &amp; adverse effects of Beta 2 agonists used in asthma</p> <p>Describe the mechanism of action, actions &amp; adverse effects of Methylxanthines Describe mechanism of action and adverse effects of Mast Cell Stabilizers</p> <p>Discuss the roles of corticosteroids in the treatment of bronchial asthma.</p> <p>Discuss the role of ipratropium in asthma</p> <p>Discuss the mechanism of action and adverse effects of leukotriene synthesis and receptor blockers used in asthma</p> <p>Enlist drugs used in acute and chronic asthma</p>	Clinical Pharmacology & Therapeutics	Anti-Asthmatic drugs
Re2-Ph-002	<p>Discuss the role of Anti-inflammatory drugs in COPD</p> <p>Describe the pharmacodynamics of bronchodilators in COPD treatment</p> <p>Explain the mechanism of action and indications of corticosteroids in restrictive lung diseases.</p>		Anti-Inflammatory drugs
Re2-Ph-003	<p>Describe anti-tussive, mucolytics and expectorants</p> <p>Interactive</p> <p>Classify Anti-tussive Lecture</p> <p>Describe Pharmacodynamics of these drugs.</p>		Anti-tussive, expectorants, mucolytics
Re2-Ph-004	<p>Explain the spectrum of activity for macrolides and cephalosporins</p> <p>Identify adverse reactions associated with common antibiotics</p>		Macrolides and cephalosporins

Re2-Ph-005	<p>Classify the drugs used for hospital and community-acquired pneumonia</p> <p>Describe the mechanism of action for each class</p> <p>Discuss the mechanism of action of pneumococcal and influenza vaccines in stimulating the immune system</p>		Drugs For Treatment Of Pneumonia
Re2-Ph-006	<p>Enumerate first and second line drugs for treatment of tuberculosis</p> <p>Describe mechanism of action of first line drugs used in tuberculosis</p> <p>Describe spectrum of antibacterial action of Rifampicin</p> <p>Describe drug interactions of Rifampicin</p> <p>Discuss adverse effects of 1st line Anti-TB drugs</p> <p>Discuss drugs used for various anti-TB regimes</p> <p>Discuss chemoprophylaxis of TB</p> <p>Discuss second line drugs used in TB</p>		Anti-Tuberculous Drugs
Re2-Ph-007	<p>Define autacoids.</p> <p>Enlist major histamine receptors.</p> <p>Classify anti-histamine drugs.</p> <p>Describe clinical uses of antihistamines.</p> <p>Discuss the toxicity of antihistamines.</p> <p>Classify serotonin agonists &amp; antagonists.</p> <p>Describe the clinical uses of serotonin agonists &amp; antagonists.</p> <p>Discuss the adverse effects of serotonin agonists &amp; antagonists.</p> <p>Enumerate ergot alkaloids.</p> <p>Describe the mechanism of action of ergot alkaloids.</p> <p>Discuss the clinical uses of ergot alkaloids. Discuss the toxicity of ergot alkaloids. Enlist the types of prostaglandins.</p> <p>Discuss the pharmacological actions of prostaglandins.</p> <p>Describe the clinical uses of prostaglandins. Discuss the adverse effects of prostaglandins</p>		Autacoids
Re2-Ph-008	<p>Explain the chemotherapeutic options for lung cancer</p>		Chemotherapeutic Drugs

Re2-Ph-009	Discuss the management strategies for ARDS Explain the role of corticosteroids and sedatives in respiratory failure management		Drugs respiratory failure management
Re2-Ph-010	Describe the mechanism of action and adverse effects of opioid analgesics and NSAIDs in trauma management Explain the role of local anesthetics in pain control through nerve blocks Discuss the use of muscle relaxants in chest trauma to alleviate muscle spasms and improve breathing		Opioid analgesics and NSAIDs
Re2-Ph-011	Discuss the use of vasopressors in managing hypotension due to blood loss in trauma		Vasopressors
<b>SURGERY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 08</b>	
		<b>DISCIPLINE</b>	<b>TOPIC</b>
Re2-S-001	Surgical approach to lung cancer resection, Complications of lung resection	Surgery	lung cancer resection
Re2-S-002	Management of Lung metastases		Lung Metastasis
Re2-S-003	Describe mechanism of tension pneumothorax (T.P.) Enlist the causes of T.P. Describe the clinical of features of tension pneumothorax (signs & symptoms) Outline the steps of treatment of T.P.		Tension Pneumothorax
Re2-S-004	Describe sucking chest wound. Describe the underlying respiratory physiological changes in flail chest. Describe steps of management of such wound.		Open Pneumothorax
Re2-S-005	Enlist the causes of thoracic trauma in Describe significance of RTA mortality. Enlist the causative factors for breathing difficulty in chest trauma patients. Review the different thoracic injuries. Enumerate the sources of probable bleeding in a chest trauma.		Thoracic Trauma

	Describe the initial management of a patient with chest trauma. Outline the management of thoracic injuries		
Re2-S-006	Define flail chest. Describe mechanism of respiratory sequel of flail chest. Describe the clinical features of flail chest. Describe treatment options in flail chest Define surgical emphysema. Enumerate the causes of surgical emphysema. Describe clinical features of Surgical emphysema Describe the steps of management of Surgical emphysema Enumerate complications.		Thoracic Trauma-II
Re2-S-007	Describe the clinical features of following respiratory complications: Atelectasis, pneumonia, pulmonary embolism Interpret the X ray findings of post-operative pneumonia Outline the treatment option of complications. Enlist the causes of diaphragmatic rupture Enumerate the clinical features Describe the x-ray/USG findings Describe the steps of management		Post Op Respiratory Complications
Re2-S-008	Define the pulmonary contusions Enumerate the clinical features Describe the steps of management Describe complications of pulmonary contusion.		Lungs Injuries

**MEDICINE**

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 19	
		DISCIPLINE	TOPIC
Re2-M-001	Correlate Clinical features of bronchial asthma to its pathogenesis Describe investigations of a patient with asthma Enlist features of acute severe asthma Enlist features of life-threatening asthma	Medicine	Bronchial asthma

	Discuss the step-wise therapy of stable asthma Discuss the management of acute severe asthma		
Re2-M-002	Enumerate risk factors for asthma. Describe clinical features of acute and chronic bronchial asthma. Classify asthma symptoms according to GINA Guidelines. Outline management of childhood Asthma.	Pediatrics	Childhood asthma
Re2-M-003	Define COPD Describe types of COPD Describe Clinical features of COPD Outline investigation plan of a patient with COPD Describe GOLD staging criteria for COPD Outline the management of acute exacerbation of COPD Describe long term management of COPD Describe criteria for long term oxygen therapy in COPD	Medicine	COPD, Chronic bronchitis, Emphysema
Re2-M-004	Enlist the causes of bronchiectasis Describe the clinical features of bronchiectasis Describe investigations of bronchiectasis Enlist the complications of bronchiectasis Describe the management of bronchiectasis	Medicine	Bronchiectasi s
Re2-M-005	Define cystic fibrosis. Describe pattern of inheritance of cystic fibrosis. Describe pathophysiology of CF Describe clinical features of CF. Interpret investigations for CF. Enumerate steps of management of CF.	Pediatrics	Cystic fibrosis
Re2-M-006	Identify psychological disturbances associated with respiratory diseases/COPD Enlist psychological consequences of COPD Describe steps to manage psychological effects of COPD	Behavioral Sciences	Psychological implications of COPD
Re2-M-007	Enlist the causes of ILD Describe the clinical features of interstitial lung diseases Outline investigation plan of interstitial lung diseases Describe the treatment of interstitial lung diseases	Medicine	Interstitial Lung Diseases

Re2-M-008	<p>Define pertussis.</p> <p>Describe clinical features of pertussis.</p> <p>Describe complications of pertussis.</p> <p>Interpret investigations for pertussis.</p> <p>Describe prognosis and prevention.</p>	Pediatrics	Pertussis
Re2-M-009	<p>Define Croup</p> <p>Describe etiology of croup.</p> <p>Describe clinical features of viral croup.</p> <p>Interpret investigations for viral croup.</p> <p>Discuss differential diagnosis of croup</p> <p>Describe management of viral croup.</p> <p>Describe clinical features of epiglottitis.</p> <p>Interpret investigations for epiglottitis.</p> <p>Describe management of epiglottitis.</p>	Pediatrics	Croup
Re2-M-010	<p>Comprehend the MoA of the asphyxiant poisons</p> <p>Diagnose a case when presented to him</p> <p>Plan management</p>	Forensic Medicine	Asphyxiants Poisons
Re2-M-011	<p>Classify pneumonia</p> <p>Enlist the microbiological agents causing pneumonia</p> <p>Describe the clinical features of pneumonia</p> <p>Enlist investigations plan in a patient of pneumonia</p> <p>Describe CURB-65 criteria for severity of pneumonia</p> <p>Describe the management of pneumonia</p> <p>Describe the complications of pneumonia</p>	Medicine	Pneumonia
Re2-M-012	<p>Define bronchiolitis and pneumonia.</p> <p>Enlist etiology of bronchiolitis and pneumonia.</p> <p>Describe clinical features of bronchiolitis/pneumonia.</p> <p>Interpret investigations for bronchiolitis/pneumonia.</p> <p>Describe management of bronchiolitis/pneumonia</p>	Pediatrics	Childhood Pneumonia
Re2-M-013	<p>Describe investigation plan of a patient with suspected tuberculosis</p> <p>Describe investigation plan of a patient with suspected tuberculosis</p> <p>Discuss primary and secondary tuberculosis</p>	Medicine	Pulmonary Tuberculosis



	<p>Correlate pathophysiology of pulmonary tuberculosis with its clinical presentation.</p> <p>Discuss clinical features of pulmonary tuberculosis.</p> <p>Interpret investigations for tuberculosis.</p> <p>Discuss management of pulmonary tuberculosis.</p> <p>Discuss prevention of tuberculosis.</p> <p>Drug resistant TB</p> <p>Discuss prevention of tuberculosis in a neonate of a mother suffering from tuberculosis.</p>		
Re2-M-014	<p>Describe the epidemiology prevalence and preventive measures of Tuberculosis</p> <p>Describe the epidemiology prevalence and preventive measures of Respiratory infections</p> <p>Describe the epidemiology &amp; Prevention of Pneumoconiosis</p> <p>Describe the epidemiology prevalence and preventive measures of Influenza, Diphtheria, whooping cough, meningococcal meningitis</p> <p>Discuss the efficacy of the BCG vaccine in different populations.</p>	Community Medicine	Preventive Measures
Re2-M-015	<p>Describe Clinical features of bronchogenic carcinoma</p> <p>Enlist investigations of bronchogenic carcinoma</p> <p>Enumerate treatment options in bronchogenic carcinoma</p> <p>Complications of CA</p>		Bronchogenic Carcinoma
Re2-M-016	<p>Define pleural effusion</p> <p>Differentiate between exudative and transudative pleural effusion</p> <p>Enlist causes of pleural effusion</p> <p>Describe Clinical features of pleural effusion</p> <p>Describe investigations in a patient with pleural effusion</p> <p>Describe palliative management of recurrent pleural effusion</p>	Medicine	Pleural Effusion
Re2-M-017	<p>Define pneumothorax</p> <p>Classify pneumothorax</p> <p>Enlist Risk factors of pneumothorax</p>		Pneumothorax

	Describe clinical features of pneumothorax Enlist investigations of pneumothorax Describe management of pneumothorax		
Re2-M-018	Define respiratory failure Classify types of respiratory failure Describe clinical features of respiratory failure Describe management of respiratory failure		Respiratory Failure
Re2-M-019	Define Etiology, clinical features, investigations, treatment of OSA	Medicine	Obstructive Sleep Apnea
Re2-M-020	Enumerate the lab investigations to diagnose Covid 19 Describe the Clinical presentation of Covid-19 Discuss the management protocols to treat Covid patient complications Discuss the vaccination and side effect (for COVID)	Medicine	COVID-19

## PRACTICAL / LAB WORK

### PATHOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 16	
		DISCIPLINE	TOPIC
Re2-Pa-016	Describe the important morphological characteristics, biochemical reactions, virulence factors of Bordetella pertussis with their clinical Significance Describe pathogenesis of Bordetella pertussis infections Describe lab diagnosis of Bordetella pertussis infections.		Bordetella Pertussis
Re2-Pa-017	Describe the important morphological characteristics, biochemical reactions, virulence factors of Streptococcus pneumoniae with their clinical significance Enumerate the diseases caused by Streptococcus Pneumoniae Describe the pathogenesis of lobar Pneumonia caused by S. pneumonia Describe the lab investigation of Streptococcus Pneumoniae infections	Microbiology	Streptococcus Pneumoniae & H. Influenza

	<p>Describe the important morphological characteristics, biochemical reactions, virulence factors of H. influenzae with their clinical significance</p> <p>Describe the pathogenicity of H. influenzae in causation of respiratory tract infections</p> <p>Describe the lab diagnosis of H. influenzae infections</p>		
Re2-Pa-018	<p>Describe the important morphological characteristics, biochemical reactions, virulence factors of Mycoplasma pneumoniae</p> <p>Describe the pathogenesis of atypical pneumonia caused by M. pneumoniae</p> <p>Describe the lab diagnosis of M. pneumoniae infections</p>		Mycoplasma Pneumoniae
Re2-Pa-019	<p>Describe the important morphological characteristics, biochemical reactions, virulence factors of Legionella pneumophila</p> <p>Describe the pathogenesis of atypical pneumonia caused by Legionella pneumophila</p>		Legionella
Re2-Pa-020	<p>Define Chlamydia, enumerate their medically important species</p> <p>Enumerate the diseases caused by Chlamydia</p> <p>Describe the important morphological characteristics, biochemical reactions, virulence factors of Chlamydia and their clinical significance</p> <p>Describe the pathogenesis of C. trachomatis, C. pneumoniae, C. psittaci mediated atypical pneumonias</p> <p>Describe the lab diagnosis of Chlamydial infections</p>		Chlamydiae & Coxiella Laburnetii
Re2-Pa-021	<p>Describe the important morphological Characteristics, biochemical reactions, virulence factors of Bacillus anthracis with their clinical significance.</p> <p>Describe the lab diagnosis of Bacillus anthracis infections.</p>		Bacillus Anthracis
Re2-Pa-02	<p>Describe the important morphological characteristics, biochemical reactions, virulence factors of Yersinia pestis and their clinical significance</p> <p>Describe the pathogenesis of plague</p> <p>Describe the lab diagnosis of Yersinia pestis infections</p>		Yersinia Pestis

Re2-Pa-023	Describe the lab diagnosis of Pulmonary (ZN staining and cultures)		Mycobacterium Tuberculosis
<b>FORENSIC MEDICINE</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 05</b>	
		<b>DISCIPLINE</b>	<b>TOPIC</b>
Re2-For-001	Define hanging Enlist types of hanging Enumerate causes of death in hanging Enlist autopsy findings in hanging. Define strangulation. Enlist its sub types Enlist autopsy findings in case of manual strangulation Enlist autopsy findings in case of ligature strangulation Differentiate between strangulation and hanging ligature mark	Forensic Medicine	Hanging/ Strangulation
Re2-For-002	Define suffocation Enumerate deaths which are caused due to suffocation. Define smothering Enlists autopsy findings in case of death due to smothering		Suffocation, Smothering
Re2-For-003	Define gagging Enlists autopsy findings in case of death due to gagging Define choking Enlists autopsy findings in case of death due to choking Define traumatic asphyxia Enlists autopsy findings in case of traumatic asphyxia Discuss medicolegal importance		Gagging, Choking Traumatic Asphyxia and Autoerotic Asphyxia
Re2-For-004	The student be able to: Enlist important Asphyxiant present in the environment Describe their Mechanism of action. Discuss effect on different body systems with increasing blood concentration Enlist sign and symptoms Enlist autopsy findings		Asphyxiant poisons

	Describe their medico legal importance Comprehend the MoA of the Asphyxiant poisons, Diagnose a case when presented to him Plan management		
<b>PHARMACOLOGY</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>DISCIPLINE</b>	<b>TOPIC</b>
Re2-Ph-012	Write down the prescription for Tuberculosis Write down the prescription for Asthma Write down the prescription for Cough Discuss the steps involved in selection of P-drug for bronchial asthma	Clinical Pharmacology & Therapeutics	Prescription Writing
<b>COMMUNITY MEDICINE</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 02</b>	
		<b>DISCIPLINE</b>	<b>TOPIC</b>
Re2-CM-001	Describe the standard preventive precautions for all patients. Describe the additional precautions for infected patients & for patient requiring single isolated room. Describe the precautions for family members providing care to the patient in hospital & home. Describe the use of face mask, gloves, shoe cover, cap and gown. Recognize the common errors made while using personal protective equipment. Demonstrate the method to wear face mask, gloves, shoe cover, cap and gown & remove them aseptically.	Community Medicine	Isolation Precautions

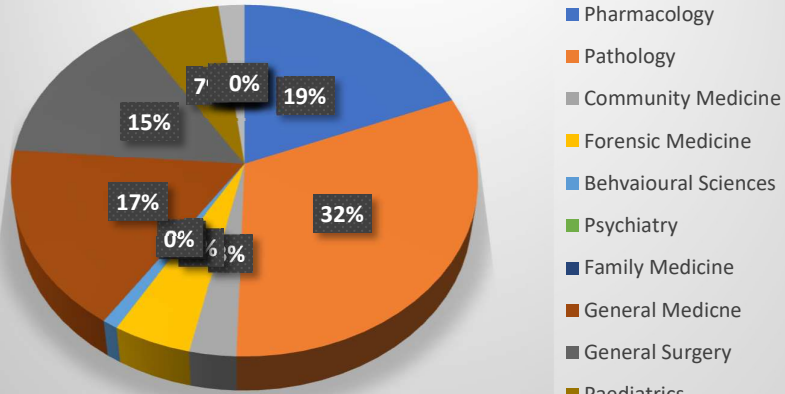
## CLINICAL ROTATIONS / COMMUNITY HEALTHCARE

### MEDICINE & SURGERY

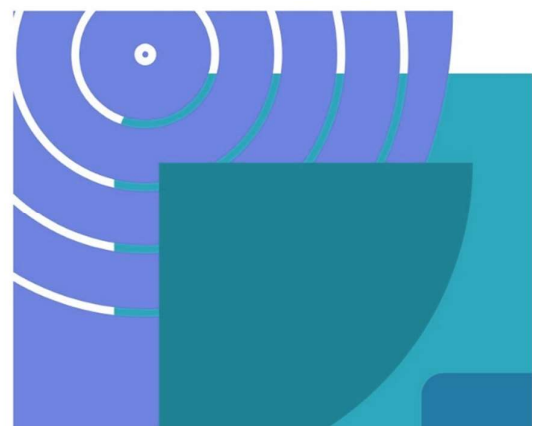
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 17	
		DISCIPLINE	TOPIC
Re2-M-021	Use of Devices for Inhaled Medication: Types of Inhalation Devices: Metered-dose inhalers >Explain to a patient how to use an inhaler correctly, including spacers, and check that their technique is correct.	Medicine (Pulmonology)	Instruct patients in the use of devices for inhaled medication
Re2-M-022	Indications for Oxygen Therapy Oxygen Delivery Methods Monitoring Oxygen Saturation > Prescribe and administer oxygen safely using a delivery method appropriate for the patient's needs and monitor and adjust oxygen as needed. Knows the exact volume given per Minute	Medicine (Pulmonology)	Prescribe and administer oxygen
Re2-M-023	Common Findings of Pneumothorax, pleural effusion, lung consolidation, fractures. > Students should be able to identify rib fractures, hemothorax, pneumothorax, free air under diaphragm, pelvic fractures	Radiology	Interpretation of x-rays of chest
Re2-M-024	Define Mantoux test Enumerate the indications and contraindications Describe the procedure and interpretation of results	Medicine (Pulmonology)	Tuberculosis Mantoux Test
Re2-S-009	Clinical Presentation, Management Strategies & Complications Students should be able to identify and differentiate between types of pneumothoraxes (primary, secondary, and tension pneumothorax) through clinical assessment and imaging techniques	Surgery (Thoracic)	Pneumothorax
Re2-S-010	Management & Complications	Surgery (Thoracic)	Pulmonary embolism

	<p>&gt;Should be able to perform risk assessments using validated scoring systems (e.g., Wells criteria)</p> <p>interpret imaging findings to differentiate pulmonary embolism from other respiratory conditions.</p>		
Re2-S-011	<p>ABCDE approach in trauma settings</p> <p>&gt;Students should be able to assess and prioritize the management of thoracic trauma by identifying key injuries (such as pneumothorax, hemothorax, rib fractures, and flail chest)</p>	Surgery (Thoracic)	Principles of management of trauma
Re2-S-012	<p>Student should be able to demonstrate appropriate interventions (including airway management and fluid resuscitation)</p>	Surgery (Thoracic)	Principles of management of trauma
Re2-S-013	<p>Students should be able to identify the anatomical landmarks of the pediatric patient for pleural tap 2)</p> <p>perform the pleural tap procedure on simulation in skill lab 3)</p> <p>Counsel the attendants for the indication, procedure, and contraindication of the pleural tap.</p>	Paeds (Thoracic)	Pleural Tap

## Respiratory System-II



Module Weeks	Recommended Minimum Hours
03	101

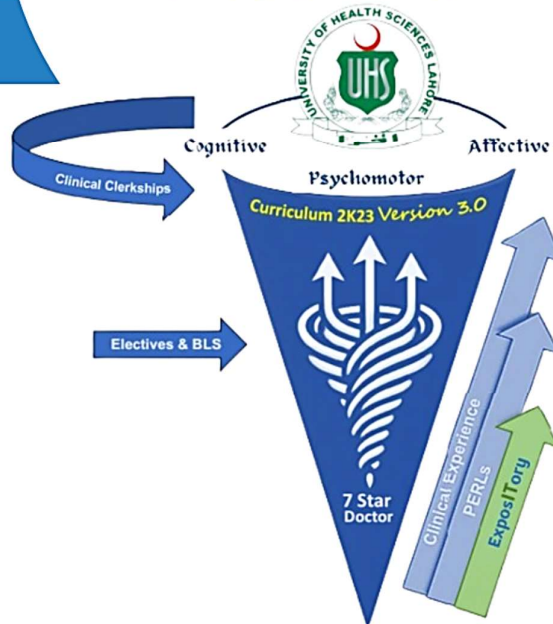






## MODULE-22 COMMUNITY MEDICINE & FAMILY HEALTH-I

### Modular Integrated Curriculum 2K23 *version 3.0*



## MODULE RATIONALE

The module on Community Medicine and Family Medicine is crucial for addressing the learning needs of medical students about holistic concept of health, prevalent health problems, their determinants and provision of comprehensive healthcare to the communities.

Curriculum on Community Medicine and family medicine equips future healthcare professionals with the knowledge, skills and attitude to implement preventive strategies, health promotion & reduce the burden of disease through primary health care approach targeting universal health coverage. Health outcomes are influenced by social, economic & environmental factors. It helps students understand the broader determinants of health & how to address health disparities. Public health crises such as pandemics, natural disasters & environmental hazards require professionals trained in community-based responses & health emergencies and reaching at door step through provision of family health services. Healthcare professionals must be equipped to engage in provision of health care needs at smaller scale and building health policy at local, national and global levels to improve public health outcomes.

## MODULE OUTCOMES

- To apply principles of epidemiological study designs in research methodology to establish association and causations
- To apply principles of community diagnosis, screening in general population and high-risk population
- To apply the concept of environmental safety and global environmental concerns including air, water, waste disposal, radiation, noise and climate change
- To apply principles of infectious disease epidemiology in classification, prevention and control of communicable diseases
- To apply different types of surveillance in disease control, elimination and eradication
- To understand the concept of herd immunity and role of immunizing agents in disease prevention and control
- To demonstrate the difference between health education and propaganda, application of different health education, communication, information in different settings using different techniques and approaches
- To apply principles of primary health care targeting universal health care coverage through family medicine.
- To demonstrate comprehensive health care services as a concept of One Health which is attainable and achievable.

## **SUBJECTS INTEGRATED IN THE MODULE**

1. Community Medicine
2. Family Health

## 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 first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



# SYLLABUS

# THEORY

## COMMUNITY MEDICINE

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 44	
		DISCIPLINE	TOPIC
CMFH1-CM-001	To understand the development of Public Health in Pakistan.	Community Medicine	Health Systems in Pakistan
	To describe the Health Policy and planning in Pakistan.		
	To explain the background, concepts and progress made towards achieving "Health for all",		
	To understand the concepts and assess the progress of "Primary Health Care"		
	To describe the National Disease Control programs including policies, strategies and operations.		
	To analyze the roles Federal and Provincial Governments in managing Healthcare services in Pakistan		
	To understand The District Health System, in the context of devolution. The Physician as a manager: Functions of manager management of material, human and financial resources.		
	To understand key principles of leadership and motivation in healthcare settings		
	To describe the collaboration between the public and private sectors in health care		
	To evaluate the role of Non-governmental Organizations and International Agencies.		
	To analyze the resources available for health.		
To understand the importance of community mobilization			
CMFH1-CM-002	To understand the background, concepts, uses and basic measurements of epidemiology (morbidity, mortality, disability and fatality)	Community Medicine	General Epidemiology and
	To describe the different epidemiological methods including descriptive, analytic and experimental approaches		

	To differentiate between association and causation		Research Methodology and Screening
	Investigation of an outbreak or an epidemic.		
	To understand the principles and methods of disease screening		
	To conduct a community diagnosis and interpret its findings		
	To describe research and survey methodologies		
CMFH1- CM-003	To understand the composition of air	Community Medicine	Environment al Health Sciences
	To describe the causes of air pollution and methods of air purification		
	To explain the diseases caused by impurities in the air and their prevention		
	To identify the sources of water and understand daily water requirements		
	To analyze the causes of water pollution and methods for its prevention		
	To understand the process of water purification and water quality standards		
	To describe diseases caused by polluted water and their prevention		
	To explain the contents, hazards, and safety measures for the disposal of solid and liquid waste from domestic, industrial, and hospital sources and To understand global and marine problems related to waste disposal		
	To differentiate between climate and weather		
	To analyze global environmental concerns like greenhouse effect, depletion of Ozone layer and acid rains		
	To explain the effects of extremes in temperature, humidity, and atmospheric pressure on human health, along with prevention methods		
	To describe the sources, types, causes, hazards, and prevention of radiation exposure		

	To understand the concepts of healthful housing and the challenges faced in urban and rural slums		
	To define noise, its causes, acceptable levels, and the hazards and methods of control		
CMFH1- CM-004	Definitions to differentiate between Infection, contamination, pollution, infestation		Prevention and control of Infectious diseases
	To understand the terminology of Infectious disease, communicable disease, contagious disease		
	To define Host, Immune and susceptible persons		
	To differentiate between Sporadic, Endemic, Epidemic, Pandemic, Epizootic, Exotic and Zoonotic		
	To understand the roles of contact, fomites, carriers, insect vectors, and reservoirs of infection		
	To describe the incubation period, infective period, and generation time		
	To differentiate between cross infection, nosocomial infections, opportunistic infections, and iatrogenic disorders (Physician induced)		
	To explain the concepts of surveillance, control, eradication, and elimination		
	To analyze the various modes of disease transmission		
	To understand the principles of disease prevention and control		
	To describe the methods and types of disinfection		
	To explain the concept of immunity		
	To identify different immunizing agents		
CMFH1- CM-005	Describe the concepts aims and approaches of IEC and approaches used in public health (Knowledge)	Community Medicine	Communication, information and health education
	Recall the contents, principles and stages of health education (Knowledge)		
	Explain the process, types, methods and barriers of communication		
	Identify the role of health care provider in health education (knowledge)		



	Plan, organize and evaluate a health education program (skill)		
	Describe the concept of social marketing and its' applications in health sector (knowledge and skill)		
	Conduct health education sessions		
CMFH1- CM-006	Developing new models for patient care, such as telemedicine, personalized medicine, and digital health tools.	Community Medicine	Clinical entrepreneur ship
	Focusing on improving patient outcomes and experiences through technology, services, or products that cater to specific needs		
	Working with professionals from various fields—technology, business, and healthcare—to foster innovation and create comprehensive solutions.		
	Identifying gaps in the market and understanding patient and provider needs to create viable business models.		
	Designing solutions that can grow and adapt over time while maintaining quality and efficiency.		
	Securing funding through grants, venture capital, or partnerships to support the development and launch of new products or services.		
	Utilizing advancements in technology, such as AI, big data, and wearables, to enhance clinical practice and patient management targeting ethical and social responsibility		

### FAMILY MEDICINE

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 15	
		DISCIPLINE	TOPIC
CMFH1- FM-001	Understand and describe the impact of social, demographic, cultural, environmental, and climate factors on health and disease.	Community Medicine	Epidemiology
CMFH1- FM-002	Describe principles of prevention and control and apply them to common/prevalent diseases		Health promotion

CMFH1-FM-003	Describe the role, purpose, and method of counseling and patient education		Counseling and advocacy
CMFH1-FM-004	Discuss breaking bad news and effective communication strategies and their role in violence de-escalation and management.		Communication skills
CMFH1-FM-005	Understand the history and evolution of general practice as a medical specialty and the structure and organization of general practice at national and international levels.	Medicine, surgery	Scope of GP practice
CMFH1-FM-006	Describe health literacy and shared decision-making concepts.	Community Medicine	Concept of health & disease
	Discuss evidence-based clinical decision-making.		
	Describe different healthcare models and the concept of universal health coverage.		
CMFH1-FM-007	Define and apply ethical practices in clinical decision-making within family medicine	Community Medicine	Epidemiology of diseases
	Discuss the general practitioner's role in coordinating patient care, including treatment plans, educating patients, and ensuring continuous care.		
	Discuss the principles of patient-centered care, focusing on the individual's needs and preferences.		
CMFH1-FM-008	Discuss the importance of quality care across preventive, therapeutic, rehabilitative, and palliative domains of healthcare.	Community Medicine	Preventive medicine
	Learn how to effectively utilize available healthcare resources to optimize patient care.		
CMFH1-FM-009	Implement strategies to reduce risk in clinical practice and ensure patient safety being a safe doctor	Medicine & surgery	Patient Safety
<b>PRACTICAL / LAB WORK</b>			
<b>COMMUNITY MEDICINE</b>			
<b>CODE</b>	<b>SPECIFIC LEARNING OUTCOMES</b>	<b>TOTAL HOURS = 10</b>	
		<b>DISCIPLINE</b>	<b>TOPIC</b>
CMFH1-CM-007	To assess the application of standards and KPIs in hospital lab settings and Blood banks	Pathology	MSDS Standards

To assess the application of standards and Quality assurance indicators for imaging services	Radiology	
To assess the application of standards and Quality assurance indicators for emergency services	Emergency and traumatology	
To assess the application of standards and Quality assurance indicators for high-risk obstetrical services	Gynae & Obs	
To assess the application of standards and Quality assurance indicators for anesthetic services	Anaesthesia	
To assess the application of standards and Quality assurance indicators for surgical procedures	Surgery and Allied	
To assess the application of standards and Quality assurance indicators for prescription and dispensing and administration of the drugs	Working Pharmacies	
To assess the application of standards and Quality assurance indicators for patients' rights and education	Medical and Surgical OPDS	
To collect data and transform into a report with recommendations	Community Medicine	

### FAMILY HEALTH

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 10	
CMFH1-FM-010	<p>Conduct patient history and physical exams.</p> <p>Identify common conditions and refer when necessary.</p> <p>Develop patient-centered management plans.</p>	General OPD	<p>History taking and physical examination. Diagnosis of acute and chronic conditions. Patient education on lifestyle and disease management. Recognizing red flags and making appropriate referrals.</p>
CMFH1-FM-011	Symptomatic Approach to Adults with nutritional supplements	Clinical pharmacology	Fever, Body aches and Pain, Flulike symptoms,

			Cough (Dry & Productive), Muscles Pain, Joint Pains, Diarrhea, Dysentery, Abdominal Cramps and Allergic Reactions
CMFH1-FM-012	Symptomatic Approach to pregnant female with nutritional supplements	Gynae & Obs.	Fever, Body aches and Pain, Flulike symptoms, Cough (Dry & Productive), Muscles Pain, Joint Pains, Diarrhea, Dysentery, Abdominal Cramps and Allergic Reactions
CMFH1-FM-013	Symptomatic Approach to children with nutritional supplements	Clinical pharmacology	Fever, Body aches and Pain, Flulike symptoms, Cough (Dry & Productive), Diarrhea (Role of ORS / Homemade), dysentery, Abdominal Cramps and Allergic Reactions
CMFH1-FM-014	Engage in community health promotion and disease prevention. Participate in health screening, vaccination drives, and education.	Community Health Center Rotation	Conduct health education sessions and screening programs Participate in vaccination drives and

community outreach activities. Identify health needs in the community and implement preventive strategies.

**CLINICAL ROTATIONS / COMMUNITY HEALTHCARE**

**COMMUNITY MEDICINE**

**TOTAL HOURS = 36**

**CODE**

**SPECIFIC LEARNING OUTCOMES**

**DISCIPLINE**

**TOPIC**

CMFH1-  
CM-008

Assess the appropriateness of location of a water purifying facility.  
 Elaborate the process of delivering and transporting water to a water treatment plant.  
 Differentiate the critical aspects of water supply from various sources.  
 Identify the physical and chemical characteristics of the water.  
 Determine the characteristics of the ingredients contained in water purification plants.  
 Characterize infectious organisms and indicators.  
 Explain how chemical compounds affect human health.  
 Discuss the physical, chemical, and biological unit operations that are commonly encountered in treatment processes;  
 Determine which rules, regulations, and guidelines govern the selection of various water treatment processes at the local, national, and international levels.  
 Highlight the requirement for surface water and some ground water treatment for drinking reasons.  
 Comprehend the role of each treatment procedure in the treatment of drinking water.

Community  
Medicine

Water  
purification  
plant/Water  
testing lab

	<p>Provide a fundamental overview of technology selection.</p> <p>Evaluate the working of water treatment plants.</p>		
CMFH1-CM-009	<p>Identify working biomedical waste department</p> <p>Describe various type of biomedical waste &amp; their disposal in hospital</p> <p>Explain with rationale about the waste management plan of their hospital</p> <p>Describe color coding scheme for various type of waste according to WHO</p> <p>Describe the various methods to dispose of waste, their advantages and disadvantages.</p> <p>Describe non risk waste</p> <p>Describe risk waste</p> <p>Describe incineration working and cost analysis</p> <p>Describe storage site of waste at hospital</p>	Community Medicine	Visit to hospital waste management
CMFH1-CM-010	<p>Describe the various physical, emotional and cognitive disabilities experienced by people who receive rehabilitation services and understand their functional limitations.</p> <p>Explain the medical &amp; psychosocial impact of disabilities.</p> <p>Explain the impact of society's attitudes towards disabilities on the treatment of people with disabilities</p> <p>Critically evaluate the effect of physical, mental, gender, racial, cultural, and environmental factors on the lives of people with disabilities.</p> <p>Develop interaction skills to accommodate cultural sensitivity when working with consumers &amp; their families.</p> <p>Explain the local context to familiarize the wide variety of generic and specialized community resources available to serve people with disabilities.</p> <p>Describe the major services provided in rehabilitation (e.g., rehabilitation counseling, vocational evaluation, adjustment services, job placement, physical restoration, environmental adaptations).</p>	Community Medicine	Visit to Rehabilitation center

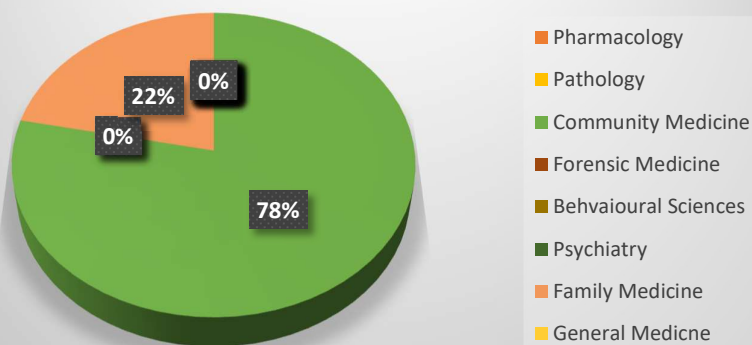
	<p>Explain the role of the rehabilitation case manager in coordinating services for people with disabilities.</p> <p>Explain the local, state, and federal laws that affect rehabilitation services and the rights of people with disabilities.</p> <p>Explain the importance of advocacy (including self-advocacy) in the field of rehabilitation</p> <p>Discuss awareness and imparting skills to empower consumers to be active participants in their own rehabilitation plan.</p> <p>Critically appraise the ethical guidelines based on principles that encompass the rehabilitation field.</p> <p>Develop the verbal, written, and nonverbal communication skills necessary to work with people with disabilities, their families, and other service providers.</p> <p>Develop basic rehabilitation service delivery skills</p> <p>Describe the rehabilitation process and techniques used to evaluate eligibility for services, assess consumers to identify employment and independent living options, develop appropriate treatment plans, and provide follow-up</p> <p>Explain the similarities and differences among public, private not-for-profit, and private-for-profit rehabilitation practice.</p> <p>Discuss the community-based employment options for individuals with disabilities</p> <p>Recognize the social, political, economic, and legal issues pertinent to an aging society and rehabilitation Develop the knowledge and skills pertinent to the procedures and programs provided to persons with developmental disabilities.</p> <p>Develop the knowledge and skills pertinent to the procedures and programs provided to persons with psychiatric disabilities.</p>		
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	<p>Develop the knowledge and skills to train, supervise, and evaluate employees who are providing direct care to consumers.</p> <p>Discuss the professional organizations, professional journals, and job opportunities in the field of rehabilitation.</p> <p>Discuss the integration of the biological, physical, behavioral, and clinical sciences into physical therapy services</p> <p>Exhibit professional conduct and behaviors that are consistent with the legal and ethical practice of physical therapy.</p> <p>Demonstrate compassion, care, integrity, and respect for differences, values, and preferences in all interactions with patients/clients, family members, health care providers, students, other consumers, and payers.</p> <p>Screen patients/clients to determine if they are candidates for physical therapy services or if a referral to, or consultation with, another health care professional or agency is warranted.</p> <p>Complete a patient/client examination/re-examination and evaluate and interpret the examination data to determine a physical therapy diagnosis and prognosis</p> <p>Employ critical thinking, self-reflection, and evidence-based practice to make clinical decisions about physical therapy services.</p> <p>Collaborate with patients/clients, caregivers, and other health care providers to develop and implement an evidence-based plan of care that coordinates human and financial resources.</p> <p>Critically appraise the services and information related to health promotion, fitness, wellness, health risks, and disease prevention within the scope of physical therapy practices and rehabilitation</p>		
CMFH1-CM-011	Apply 5 levels of prevention for diseases of public health importance.	Community Medicine	Visit to BHU & RHCs



	Design and implement community-based Health education and promotion projects. Collect, organize, analyze, interpret and disseminate data of disease burden in community and present report		
CMFH1- CM-012	House hold survey of 10 houses. Data collection and report writing	Community Medicine	Acquired community in vicinity of Medical College

## Community Medicine & Family Health-I

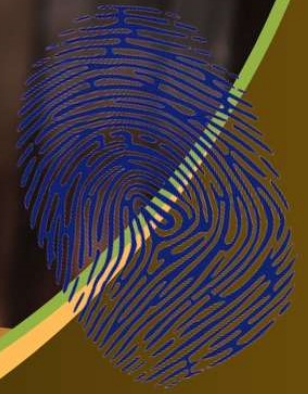


Module Weeks	Recommended Minimum Hours
3.3	115



CRIME SCENE DO NOT

CRIME SCENE DO NOT



**Modular Integrated  
Curriculum 2K23**

*version 3.0*

**MODULE-23**

**Forensic Medicine  
& Toxicology-III**

## MODULE RATIONALE

This module prepares the 3rd year MBBS students for the real-world challenges of crime scene investigation, medico-legal frameworks of Pakistan, and dealing with cases of poisoning. This module is critical in developing a holistic understanding of the intersection of the medical profession and law.

## MODULE OUTCOMES

- Describe different types of Laws
- Define legal terms relevant to medical practice and explain procedures in the courts of law
- Explain legal aspects of medical practice
- Discuss the principles and methods of crime scene investigations
- Describe different analytical techniques to diagnose the nature of poison/drugs

## SUBJECTS INTEGRATED IN THE MODULE

1. Pathology
2. Pharmacology
3. Behavioral Sciences

## 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 first professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



# SYLLABUS

## THEORY

### LAW

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 05	
		INTEGRATING DISCIPLINE	TOPIC
For3-L-001	Define and describe different types of law.	Forensic Medicine	Law
For3-L-002	Describe different levels of courts of Pakistan and their judicial powers.		Hierarchy of courts and their judicial powers
For3-L-003	Define different legal terms.		Legal Terms and Procedures
	Understand legal procedures and its presentation in the courts		
For3-L-004	Define and describe types of evidence		Evidence
	Describe the stages of presentation of evidence in the court of law.		
	Explain the types of witness and its presentation in the court		
	Differentiate between dying deposition and declaration.		
For3-L-005	Describe general presumptions and exemptions in law to fix the criminal responsibility		Forensic psychiatry and Criminal Responsibility
	Define insanity, immaturity and intoxication.		
	Define illusions, delusions and hallucinations and their types and medico legal significance.		
	Differentiate between true and feigned insanity.		
	Reproduce different sections of PPC dealing with these factors.		
	Describe Mc Naughtan's rule, Durham,s rule to test the criminal responsibility.		
	Outline the fate of criminal responsibility- Unfit to plead,		

	Diminished responsibility		
	State testamentary capacity.		
For3-L-006	Define consent; describe its types and its role in medical treatment, consent & its legal basis.	Forensic medicine & Behavioral sciences	Consent
	Differentiate between valid and invalid consent.		
	Outline standard procedure of informed consent.		
	Explain the informed consent procedure from a patient before undergoing a major surgical procedure		
	Explain the consent protocol of a minor		
	Prepare a blanket consent form		
	Apply modified procedure of consent taking in special Circumstances.		
For3-L-007	Define medical bioethics.	Forensic medicine & Behavioral sciences	Doctor patient relationship
	Describe principles of ethics.		
	Explain different codes of medical ethics		
	Reproduce duties of doctor towards patients, society and state.		
	Outline the factors responsible for the deterioration of ethical values in medical practice.		
For3-L-008	Explain professional misconduct and its different types.	Forensic medicine & Behavioral sciences	Professional misconduct
	Describe professional secrecy, privileged communication, medico legal significance of medical records.		
For3-L-009	Differentiate between professional misconduct and professional negligence.	Forensic medicine & Behavioral sciences	Professional Negligence
	Describe different types of professional negligence.		
	Establish the extent of damage to patient in medical practice.		
	Outline the laws dealing with negligence.		



For3-L-010	Describe composition of PMDC	Forensic Medicine	Laws dealing with medical practice
	Explain functions of body-supervision of standards of proficiency, maintenance of register, disciplinary powers.		
	Compare composition of PMDC and PMC ACT 2020		
	Describe objective of ALLOPATHIC SYSTEM 1962		
	Outline Medical and Dental Degree Ordinance 1982.		
	Explain relevant sections of Drug act 1976 and subsequent Amendments.		
	Write Dangerous drug act 1930 and their different sections and rules.		
For3-L-011	Describe sections 2,4,5 and 6 of Hadood Ordinance 1979	Forensic Medicine	Laws dealing with sexual offences Hadood Ordinance 1979, Women Protection Act 2006 Legal aspects of marriage, Muslim family law ordinance 1961.
	Explain natural & un-natural sexual offences		
	Reproduce criteria of legal marriage and dissolution of marriage.		
For3-L-012	Define different terms used in the Qisas and Diyat Act relevant to hurt and Qatl	Forensic Medicine	Law relevant to Hurt and killings Qisas and Diyat Act 1997
	Classify hurt and its subtypes as per Qisas and Diyat Act 1997		
	Classify QATL and its subtypes.		
	Describe ISQAT-E-HAML AND ISQAT-E-JANIN.		
	Understand Mental Health Act 2001		Law relevant to

For3-L-013	Describe the composition and functions of the FEDERAL MENTAL HEALTH AUTHORITY. SEC 3	Forensic Medicine	mental health
	Explain composition and functions of BOARD OF VISITORS. SEC 4		
	Reproduce duration for period of detention for assessment, treatment, urgent admission and emergency holding. SEC 9		
	Outline the procedure of admission of the patient in the psychiatric centre. SEC 10,11		
	Explain holding of mentally disordered persons wandering in public places. SECT19		
	Write the procedure of discharge from psychiatric centre SEC 20		
For3-L-014	Define child abuse	Forensic Medicine	Laws relevant to Domestic violence Child abuse,
	Explain epidemiology		
	Describe clinical features		
	Diagnose a case of child abuse.		
	Reproduce medico legal significance. Apply the knowledge to relevant situation for problem-solving		
For3-L-015	Describe the provisions for medical aid and treatment of injured persons to save their lives and protect their health during emergency.	Forensic Medicine	Injured Person (Medical Aid) Act 2004
	Describe the concept of the ancient law of torts		Workman Compensation Act 1923 Employee social security ordinance 1965
For3-L-016	Diagnose the injuries causing disablement and percentage loss of earning capacity.		
For3-L-017	Discuss the Health Commission Act		Health Commission Act

For3-L-018	Describe the Consumers Protection Act in relation to Forensic Medicine		Consumers Protection Act
For3-L-019	Define and classify euthanasia.		Euthanasia
	Describe different progonist and antagonist views.		
	Reproduce global laws relevant to euthanasia.		
	Discuss ethical and moral issues.		
For3-L-020	Define and classify suicide.	Forensic Medicine	Suicide
	Describe different views about suicide in society.		
	Elaborate high risks groups.		
	Explain different methods used		
	Reproduce preventive measures.		
	Discuss moral and ethical issues.		
	Explain the psychopathology of suicide		
<b>GENERAL TOXICOLOGY</b>			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 04	
		INTEGRATING DISCIPLINE	TOPIC
For3-Tox-001	Enlist & define various branches of Toxicology	Forensic Medicine & Chemical Pathology	General Toxicology
	Define terms like drug, poison, dose, acute and chronic poisoning.		
	Explain the therapeutic index and toxicity rating scale		
	Quote and cite characteristics of homicidal, suicidal, and accidental poisons in home and environment		
	Describe preventive measures of such poisonings		
For3-Tox-002	Differentiate between Drug and Poison Classify different poisons according to their mode of action		Classification of Poisons

	Enumerate legal classification of poisons		
For3-Tox-003	Describe routes of absorption, sites of metabolism and routes of excretion of poisons Enlist and describe different factors that modify the patient's response to a toxic agent.		Factors affecting the absorption of poison
For3-Tox-004	Enlist the clinical, ethical & statutory duties of a doctor while managing a case of poisoning. Collection, preservation, storage and dispatch of samples for toxicological analysis		Duties of doctor
For3-Tox-005	Diagnose a case of poisoning in living Enlist various bed side tests used for diagnosis of poisoning Interpret post-mortem findings in a suspected case of poisoning		Diagnosis of a Poisoning case
For3-Tox-006	Apply general principles in treatment of poisoning cases Prescribe general treatment measures to poisoning cases Briefly describe the procedures to remove the unabsorbed poisons from the body Describe the procedure of Gastric lavage Enlist complications of Gastric Lavage Enumerate contra indications of gastric lavage procedure Describe the role of Activated Charcoal in poisoning patient Enlist indications & contraindications of administering cathartics in poisoning cases Classify antidotes according to their mode of action Define & classify Chelators Enlist properties of ideal chelating agents Enlist & briefly describe the methods of removal of absorbed poisons from the body		Treatment of a poisoned patient
For3-Tox-007	Enlist medico-legal implications of poisoning cases		Laws related to Drugs &

	<p>Comprehend different laws relating to poisons &amp; drugs</p> <p>Enlist important relevant points of Rule 8, Rule 13 &amp; Rule 14 of the Dangerous Drug Act 1930</p> <p>Enlist WHO recommendations being incorporated in the Drug act 1976</p> <p>Enlist the WHO criteria for Drug Dependence</p> <p>Define National Formulary</p>		poisons
For3-Tox-008	<p>Explain, observe/perform the following analytical techniques:</p> <p>I. Spectrophotometric:</p> <ul style="list-style-type: none"> <li>i. Calorimetric</li> <li>ii. Fluorometric</li> <li>iii. Automation.</li> </ul> <p>II. Chromatographic:</p> <ul style="list-style-type: none"> <li>i. Thin layer chromatography (TLC).</li> <li>ii. Gas liquid chromatography (GLC).</li> <li>iii. High pressure liquid chromatography (HPLC).</li> <li>iv. Gas liquid mass spectrometry (GL-MS).</li> </ul> <p>III. Competitive binding assay or immunoreactive assay:</p> <ul style="list-style-type: none"> <li>i. Radioimmunoassay (RIA).</li> <li>ii. Enzyme immunoassay (EIA).</li> <li>iii. Fluorescent Polarization immunoassay (FPIA).</li> <li>iv. Immunoturbidimetric assay.</li> </ul>		Analytical techniques

### SPECIAL TOXICOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 09	
		INTEGRATING DISCIPLINE	TOPIC
For3-Tox-009	<p>Classify corrosive poisons.</p> <p>Describe sources, physical and chemical properties.</p> <p>Explain mechanism of action.</p> <p>Write the fatal dose and fatal period.</p> <p>Describe the clinical features of the poison.</p> <p>Manage the patient clinically.</p> <p>Explain the autopsy findings.</p>	Forensic medicine & medicine	<p>Corrosives</p> <p>Mineral acids-</p> <p>Sulfuric acid</p> <p>Nitric acid</p> <p>Hydrochloric acid</p> <p>Strong alkalis</p>

	<p>Describe medico-legal aspects.</p> <p>Define Vitriol age.</p> <p>Apply the relevant section of qisas and diyat act to the hurt caused by the poison.</p>		
For3-Tox-010	<p>Classify corrosive poisons.</p> <p>Describe sources, physical and chemical properties.</p> <p>Explain mechanism of action.</p> <p>Write the fatal dose and fatal period.</p> <p>Describe the clinical features of the poison.</p> <p>Manage the patient clinically.</p> <p>Explain the autopsy findings.</p> <p>Describe medicolegal aspects.</p>		Organic acid – Oxalic acid, Carbolic acid, Hydrocyanic acid
For3-Tox-011	<p>Classify snakes</p> <p>Differentiate between poisonous and non-poisonous snakes.</p> <p>Tabulate the differences between the elapids and vipers.</p> <p>Discuss the characteristics of snake venom.</p> <p>Describe the clinical feature of venomous snake bite.</p> <p>Explain clinical management of venomous snake bite.</p> <p>Discuss post mortem features and medico legal aspects of venomous snake bite.</p>	Forensic medicine & medicine	Irritant Poisons Snakes- Elapids Vipers Hydrophidate or sea-snakes
For3-Tox-012	<p>Describe the sources, properties, routes of absorption of the poison.</p> <p>Reproduce the fatal dose, clinical features of the poison.</p> <p>Outline the clinical management of such case.</p> <p>Enlist the samples to be collected, preserved and sent to chemical examiner for its detection.</p> <p>State the post mortem appearances of the poison.</p> <p>Explain the medico legal aspects of acute poisoning of the poison.</p>	Forensic medicine & medicine	Irritant Metallic poisons – (Inorganic metallic origin- Arsenic, Mercury, Lead, Copper Nonmetallic irritant poisons- Phosphorus

	<p>Describe the clinical features of chronic poisoning of the poison.</p> <p>Explain the laboratory investigations to establish the diagnosis.</p> <p>Summarize the clinical management of a case of poisoning with irritant poisons</p> <p>Describe post mortem findings.</p> <p>Describe post mortem findings.</p> <p>Discuss medico legal aspects of chronic poisoning.</p>		
For3-Tox-013	<p>Classify pesticides.</p> <p>Classify organophosphates.</p> <p>Describe the sources of exposure, mechanism of action and fatal dose and fatal period</p> <p>Explain clinical features of poisoning</p> <p>Summarize laboratory investigations and bed side test to confirm the diagnosis.</p> <p>Enlist the samples to be collected and sent to the chemical examiner.</p> <p>Know the clinical management.</p> <p>Reproduce the autopsy findings.</p> <p>Discuss the medico legal aspects.</p>		<p>Agricultural poisons – Organophosphates, Carbamates, Chlorinated Hydrocarbon, Endrin Paraquet Aluminium Phosphide</p>
For3-Tox-014	<p>Recall physical and chemical properties of the poison</p> <p>Describe different preparations of Cannabis</p> <p>Explain clinical features in acute and chronic poisoning,</p> <p>Reproduce fatal dose and fatal period.</p> <p>Know the clinical management of the poison.</p> <p>Enlist the samples to be collected and sent to the chemical examiner.</p> <p>Describe autopsy findings of the case.</p> <p>Explain the difference between the seeds of Datura and chilli.</p> <p>Outline medico legal aspects of acute and chronic poisoning.</p>	Forensic medicine & medicine	<p>Deleriant Poisons – Datura Cannabis Sativa</p>

For3-Tox-015	<p>Classify barbiturates.</p> <p>Know fatal dose and fatal period.</p> <p>Describe clinical features.</p> <p>Explain clinical management.</p> <p>Describe autopsy findings.</p> <p>Reproduce medico legal importance.</p>	Pharmacology	Sedatives and Hypnotics – Barbiturates
For3-Tox-016	<p>Classify alkaloids of opium.</p> <p>Know the fatal dose and fatal period.</p> <p>Describe clinical features in acute and chronic poisoning.</p> <p>Describe the differential diagnosis of opium coma.</p> <p>Know laboratory investigations and bedside test.</p> <p>Explain clinical management.</p> <p>Explain autopsy findings</p> <p>Reproduce medico legal aspects</p> <p>Define drug dependence.</p> <p>Differentiate between drug dependence and drug habituation.</p> <p>Enlist drugs</p> <p>Describe criteria of drug dependence as per WHO criteria. of dependence.</p>		Somniferous / Narcotics– (Opium - Morphine, Heroin) Drugs of dependence
For3-Tox-017	<p>Define Alcohols</p> <p>Describe different alcohol beverages with different alcohol concentrations.</p> <p>Explain toxicokinetic of alcohols</p> <p>Reproduce clinical features of acute ethyl alcohol poison.</p> <p>Correlate different clinical features with different BAC.</p> <p>Outline clinical management of poisoning</p> <p>Describe the laboratory investigation and samples to be sent to the chemical examiner.</p> <p>Describe protocol of examination of a drunken person.</p> <p>Describe autopsy findings.</p> <p>Reproduce medicolegal aspects.</p>		Inebriants – Ethyl Alcohol / Methanol,



	<p>Describe clinical features of alcoholism.</p> <p>Explain clinical features of methanol toxicity</p> <p>Describe autopsy findings</p> <p>Reproduce medicolegal aspects of methanol poisoning.</p>		
For3-Tox-018	<p>Describe the sources of exposure of asphyxiant gases.</p> <p>State the mechanism of action.</p> <p>Explain clinical features of poisoning.</p> <p>Reproduce clinical management of cases of poisoning.</p> <p>Enlist samples to be collected and sent to chemical examiner.</p> <p>Outline autopsy features</p> <p>Explain medico legal aspects of acute poisoning of asphyxiants gases.</p>	Forensic Medicine	<p>Asphyxiant Gases - Carbon Mono oxide, Hydrogen Sulphide, Carbon Dioxide</p>
For3-Tox-019	<p>Describe source of exposure</p> <p>Explain methods of inhalation.</p> <p>Reproduce clinical features</p> <p>Know the diagnostic findings on X rays chest.</p> <p>Explain clinical management</p> <p>Discuss autopsy findings</p> <p>Outline medico legal aspects of acute poisoning.</p>		<p>CNS Stimulant – Cocaine Amphetamine Methyl phenidate (ritalin) Hallucinogens- LSD, Mescaline, Phencyclidine Tricyclic anti depressants - Sheesha (Nicotine + Fruits &amp; Herbal Flavors &amp; Coal</p>
For3-Tox-020	<p>Describe source of exposure</p> <p>Explain methods of inhalation.</p> <p>Reproduce clinical features</p> <p>Know the diagnostic findings on X rays chest.</p>	Forensic Medicine	<p>Hydrocarbons-- kerosene oil, Volatile substance abuse Glue sniffing</p>

	<p>Explain clinical management</p> <p>Discuss autopsy findings</p> <p>Outline medico legal aspects of acute poisoning</p>		<p>Sniffing</p> <p>Huffed</p> <p>Bagged</p>
For3-Tox-021	<p>Describe source of exposure</p> <p>Reproduce clinical features</p> <p>Know the diagnostic findings</p> <p>Explain clinical management</p> <p>Discuss autopsy findings</p> <p>Outline medico legal aspects of acute poisoning.</p>		<p>Black stone</p> <p>Paraphenylene diamine (PPD)</p>

### FORENSIC SEROLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 04	
		INTEGRATING DISCIPLINE	TOPIC
For3-FS-001	<p>Define Forensic Serology</p> <p>Describe the Medico-legal importance of Forensic Serology</p>	Forensic Medicine	<p>Definition &amp; medico-legal importance of Forensic Serology</p>
For3-FS-002	<p>Define Trace Evidence Classify Trace Evidence</p> <p>Describe Locard's Exchange Principle</p>		<p>Trace Evidence</p>
For3-FS-003	<p>Describe the protocol of scientific study (identification, collection, preservation, storage, labeling and transport to the concerned quarter) of trace evidentiary material.</p>		<p>Scientific study of trace evidentiary material</p>
For3-FS-004	<p>Enlist the medico-legal importance of different biological fluids &amp; stains</p>	Forensic Medicine	<p>Biological fluids</p>
For3-FS-005	<p>Outline principles of chain of custody and its medico-legal significance</p>		<p>chain of custody</p>
For3-FS-006	<p>Briefly describe the principles of chemical &amp; physiochemical tests to determine the presence of blood in suspected stains Interpret the physical characteristics of a blood stain</p>	Pathology	Blood
	<p>Describe the procedure of examination of blood stain comprising of physical, chemical, physiochemical &amp; confirmatory tests</p>		
	<p>Discuss the principle &amp; importance of spectroscopic analysis of blood in the stain</p>		

	Briefly describe microscopic, Immunological & enzymological methods for species determination of blood stain		
	Explain different blood group systems		
	Briefly describe medico-legal importance of blood grouping		
	Interpret the phenotype & genotype of different ABO blood groups		
For3-FS-007	Briefly describe the scheme for examination of Seminal stain including physical, chemical, microscopic & serological tests including DNA Analysis.	Forensic Medicine	Semen
	Briefly describe the Medico-legal importance of seminal stain		
For3-FS-008	Briefly describe the physical, chemical, serological & microscopic examination of hair		Hair
	Compare & contrast human and animal hair & hair like Structures as fibers.		
	Enlist the Medico-legal significance of hair		
For3-FS-009	Enumerate the tests for determination of other body fluids like Milk, saliva, urine, fecal matter		Body Fluids
	Briefly describe their medico-legal significance		
For3-FS-010	Explain the Structure of DNA.		DNA
	Describe DNA fingerprinting methods		
	Outline the samples needed for DNA profiling, their collection, preservation, storage and dispatch to the analyst.		
	Explain National DNA databank (CODIS).		
	Discuss Ethical Issues relevant to DNA.		

## FORENSIC SCIENCES

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 02	
		INTEGRATING DISCIPLINE	TOPIC
For3-FSc-001	Describe search patterns of scene of crime. Photograph the area/object of interest from scene of crime. Examine, collect, preserve and dispatch trace evidence and record his findings at scene of crime. Identify the stains of different biological fluids, collect, preserve, dispatch and record his findings Explain and demonstrate screening, chemical and microscopic analysis of biological stains. Describe forensic analysis of DNA.	Forensic medicine	Principles and methods of crime scene investigation
For3-FSc-002	Describe the examination of firearm and tool mark evidence	Forensic medicine	Examination of firearm and tool mark evidence
For3-FSc-003	Explain the examination of broken glass		Examination of broken glass

## PRACTICAL / LAB WORK

## LAW

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 03	
		INTEGRATING DISCIPLINE	TOPIC
For3-L-021	Demonstrate legal procedures and its presentation in the courts	Forensic Medicine	Legal Terms and Procedures
For3-L-022	Demonstrate presentation of different stages of evidence in the court of law. Distinguish between different types of witness and its presentation in the court		Evidence
For3-L-023	Demonstrate the recording of dying deposition and dying declaration step wise.		Dying deposition and declaration

## GENERAL TOXICOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 03	
		INTEGRATING DISCIPLINE	TOPIC
For3-Tox-022	Assess a suspected patient of poisoning	Forensic Medicine	Poisoning
	Collect, preserve & dispatch the routine viscera of a suspected poisoning case sent to chemical examiner		
	Demonstrate the procedure of gastric lavage on a mannequin		

## SPECIAL TOXICOLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 04	
		INTEGRATING DISCIPLINE	TOPIC
For3-Tox-023	Identify corrosive poisons. Describe identifying features. Recognize Autopsy features of H <sub>2</sub> SO <sub>4</sub> and HNO <sub>3</sub> Apply the relevant section of qisas and diyat act to the hurt caused by the poison	Forensic Medicine	Mineral acids- Sulfuric acid Nitric acid Hydrochloric acid Strong alkalis
For3-Tox-024	Identify organic acid corrosive poisons Describe identifying features. Explain laboratory investigations Recognize autopsy findings.	Forensic Medicine	Organic acid – Oxalic acid, Carbolic acid, Hydrocyanic acid
For3-Tox-025	Label salient differentiating features of poisonous and non-snakes. Identify snake bite wound. Apply the tourniquet above the site of bite of a patient.	Forensic Medicine	Irritant Animal Poisons (Snakes- Elapids Vipers Hydrophidate or sea-snakes
For3-Tox-026	Identify poison. Describe identifying features. Identify features of chronic arsenic poisoning Identify chronic lead poisoning on x rays Identify chronic lead poisoning (basophilic stippling) on blood cell slide.	Forensic Medicine	Irritant Metallic poisons – (Inorganic metallic origin- Arsenic, Mercury, Lead, Copper

	Collect samples to be sent to the chemical examiner.		Nonmetallic irritant poisons- Phosphorus
For3-Tox-027	<p>Diagnose a case of insecticide poisoning</p> <p>Explain laboratory investigations</p> <p>Manage a case of insecticide poisoning</p> <p>Recognize autopsy features</p> <p>Collect, preserve and dispatch the specimens to chemical examiner</p> <p>Perform bedside test for certain pesticides (aluminium phosphide)</p>	Forensic Medicine	<p>Agricultural poisons – Organophosphates, Carbamates Chlorinated Hydrocarbon, Endrin Paraquet Aluminum Phosphide</p>
For3-Tox-028	<p>Identify the poison</p> <p>Describe identifying features</p> <p>Diagnose a case of deliriant poisoning</p> <p>Explain lab investigation</p> <p>Manage the case</p> <p>Recognize autopsy features</p> <p>Collect, preserve and dispatch the specimens to chemical examiner</p>	Forensic Medicine	<p>Deliriant Poisons – Dhatura Canabis Sativa</p>
For3-Tox-029	<p>Diagnose a case of sedatives / hypnotic's toxicity</p> <p>Explain lab investigation</p> <p>Manage the case</p> <p>Recognize autopsy features</p> <p>Collect, preserve and dispatch the specimens to chemical examiner</p>	Forensic Medicine	<p>Sedatives and Hypnotics – Barbiturates</p>
For3-Tox-030	<p>Identify the poison (Opium / Poppy capsule)</p> <p>Describe identifying features</p> <p>Diagnose a case of narcotic poisoning</p> <p>Perform bedside test</p> <p>Explain lab investigations</p> <p>Recognize autopsy features</p> <p>Collect, preserve and dispatch the specimens to chemical examiner</p>	Forensic Medicine	<p>Somniferous / Narcotics– (Opium - Morphine, Heroin) Drugs of dependence</p>

For3-Tox-031	<p>Diagnose a case of Acute alcohol Toxicity (Ethanol / Methanol)</p> <p>Explain lab investigations</p> <p>Manage the case</p> <p>Conduct examination of a case of ethyl alcohol toxicity and certify findings with opinion</p> <p>Collect appropriate samples</p> <p>Recognize autopsy features</p> <p>Collect, preserve and dispatch the specimens to chemical examiner</p>	Forensic Medicine	Inebriants – Ethyl Alcohol / Methanol,
For3-Tox-032	<p>Diagnose a case of Asphyxiant gases</p> <p>Explain lab investigations</p> <p>Manage the case</p> <p>Recognize autopsy features</p> <p>Collect, preserve and dispatch the specimens to chemical examiner</p>	Forensic Medicine	Asphyxiant Gases - Carbon Mono oxide, Hydrogen Sulphide, Carbon Dioxide
For3-Tox-033	<p>Identify the poison</p> <p>Describe identifying features</p> <p>Diagnose the case</p> <p>Explain lab investigation</p> <p>Manage the case</p> <p>Recognize autopsy features</p> <p>Collect, preserve and dispatch the specimens to chemical examiner</p>	Forensic Medicine	<p>CNS Stimulant – Cocaine Amphetamine Methyl phenidate (ritalin) Hallucinogens- LSD, Mescaline, PHEN CYCLIDINE Tricyclic anti depressants - Sheesha (Nicotine + Fruits &amp; Herbal Flavors &amp; Coal)</p>
For3-Tox-034	<p>Identify the poison</p> <p>Diagnose the case</p> <p>Explain lab investigation</p>	Forensic Medicine	Hydrocarbons-- -- kerosene oil - Volatile

	Manage the case Recognize autopsy features Collect, preserve, and dispatch the specimens to the chemical examiner		substance abuse - Glue sniffing - Sniffing - Huffed - Bagged
For3-Tox-035	Identify the poison Diagnose the case Explain lab investigation Manage the case Recognize autopsy features Collect, preserve, and dispatch the specimens to the chemical examiner	Forensic Medicine	Black stone Paraphenylene diamine (PPD)

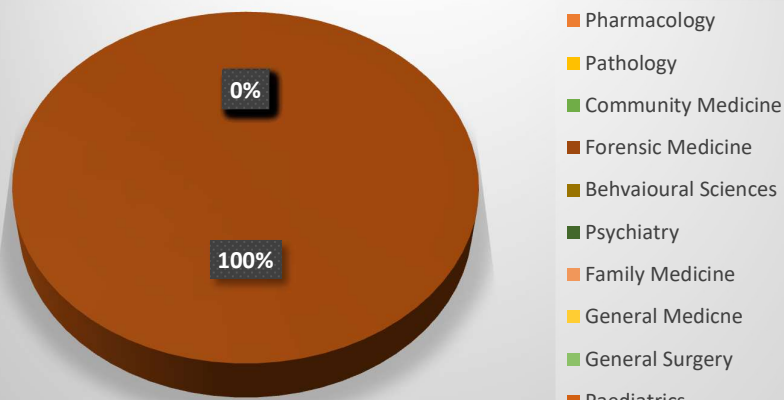
### FORENSIC SEROLOGY

CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 06	
		INTEGRATING DISCIPLINE	TOPIC
For3-FS-011	Categorize different trace evidence to Biological & Non-biological sources	Forensic Medicine	Trace evidence
For3-FS-012	Identify, collect, preserve, label and dispatch trace evidentiary material to the concerned quarters.		The scientific study of trace evidentiary material
For3-FS-013	Interpret the physical characteristic of a suspected blood stain with naked eye & under UV lamp		Bloodstain
For3-FS-014	Preserve & seal the clothes with suspected blood/seminal stain	Forensic Medicine	Cloth examination
For3-FS-015	Perform Screening tests (Benzedine & Phenolphethein/Kastle Mayer) on suspected blood stain		Blood stain
	Identify the Takayama (Haemochromogen) & Teichmann (Haemin) Crystals under the microscope		
	Identify different absorption bands of hemoglobin & its derivatives with spectroscopy		



	Perform forward & reverse blood grouping techniques & interpret the results		
	Differentiate various species (human, hen, goat and camel) with the help of microscopic examination of RBCs		
For3- FS-016	Identify & confirm the presence of semen with the help of microscopic examination		Semen
For3- FS-017	Prepare the slide of hair & Differentiate Human & Animal Hair under the microscope		Hair
	Differentiate human/animal hair from cotton fiber, polyester fiber		

## Forensic Medicine & Toxicology III



Module Weeks	Recommended Minimum Hours
1.14	40





**SECTION-06**



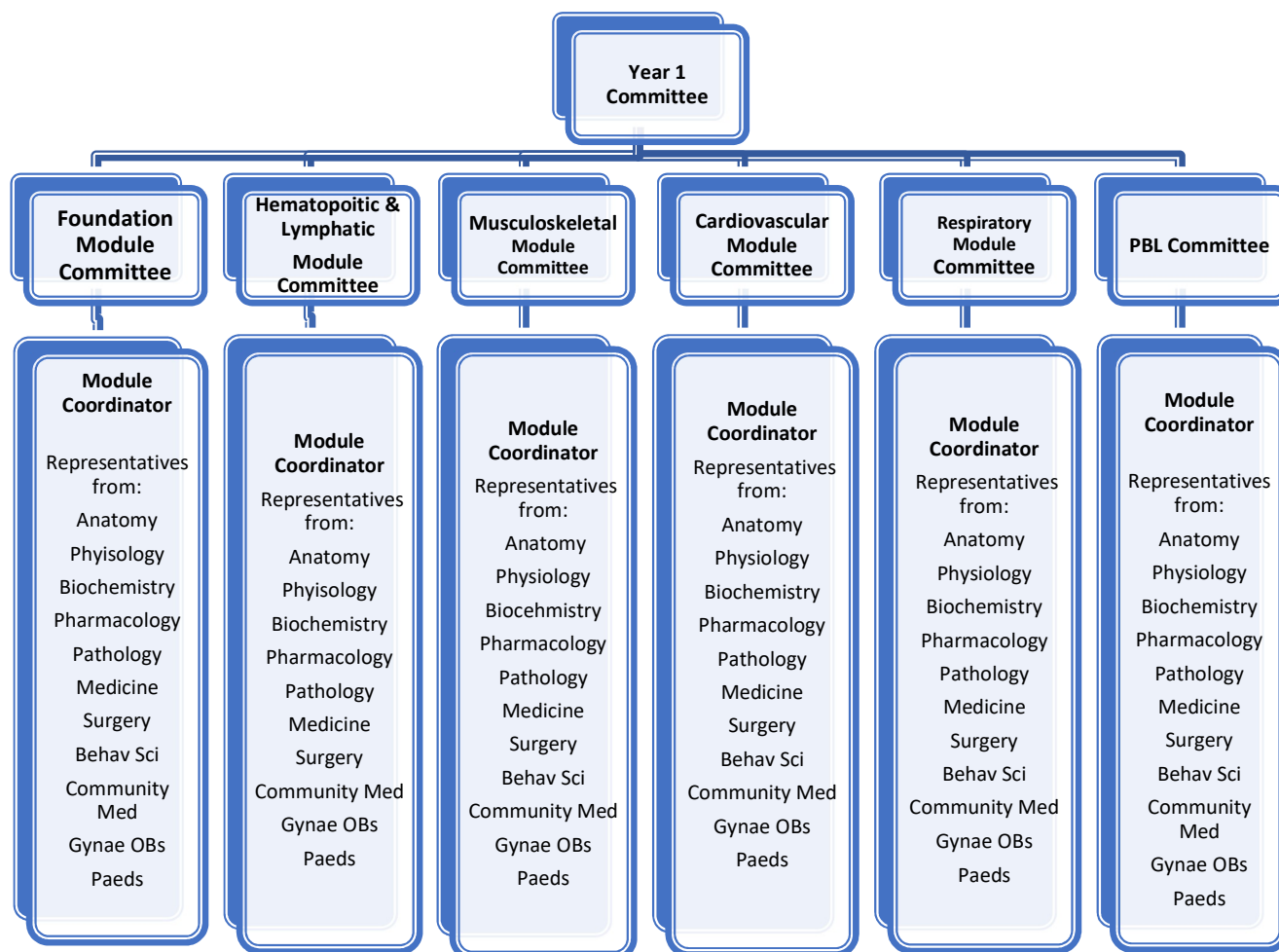
**INSTITUTIONAL IMPLEMENTATION**  
**RECOMMENDATIONS**



# 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:

<b>YEAR COMMITTEE</b>
<ul style="list-style-type: none"><li>• Identify the philosophy for implementing future Curriculum.</li><li>• Ensures module requirements ahead of time.</li><li>• Any adjustment of schedule if required.</li><li>• Liaison with the chairperson of the mentoring program.</li><li>• Quality assurance of teaching and learning.</li><li>• Hold regular meetings.</li><li>• Compliance to schedule and timetable.</li><li>• Compliance to proposed internal assessment.</li><li>• Oversee completion of Logbooks and Portfolio.</li><li>• Oversee the foundation component of C-FRC.</li><li>• Ensure student centeredness and feedback from students.</li><li>• Develop timetables.</li><li>• Analyze the implementation of current curriculum.</li><li>• Strategize communication with both faculty and students.</li></ul>
<b>MODULE COMMITTEE</b>
<ul style="list-style-type: none"><li>• Module committee should be headed by module coordinator.</li><li>• 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.</li><li>• The coordinator will develop module team.</li><li>• Collaboration and consultation with all the relevant departments.</li><li>• Follow the curricular guidelines by the modules provided by UHS.</li><li>• Coordinate with the Assessment Cell.</li><li>• Arrange regular meetings.</li><li>• Develop study guides in collaboration with the Department of Medical Education</li><li>• Liaison with the PBL Committee.</li></ul>
<b>PBL COMMITTEE</b>
<ul style="list-style-type: none"><li>• PBL committee should be headed by PBL coordinator.</li></ul>

- 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

### Significance of its usage

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

## Problem based learning (PBL)

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

### Significance of its usage

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

## 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.

### Significance of its usage

- Safety for patients
- Liberty to make mistakes.
- Manageable/variable complexity of tasks
- Opportunity to develop self-efficacy before real patient encounter.
- Repeatability of tasks
- Learning at 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.

#### Significance of its usage

- 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.

### Significance of its usage

- 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 third Professional MBBS Examination shall be held at the end of the third year.
2. Every candidate shall be required to study contents of Anatomy (including Histology), Physiology, Biochemistry, Behavioural Sciences, Community Medicine & Public Health, Pathology including microbiology, Pharmacology & Therapeutics, Ophthalmology, Otorhinolaryngology, Surgery, Medicine, 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 third professional examination:

### Third Professional Exam:

- a. Paper 1 will be based on contents of Block 7;
  - b. Paper 2 will be based on contents of Block 8;
  - c. Paper 3 will be based on contents of Block 9;
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 7,8, and 9 (inclusive of Internal Assessment).
  6. Total marks for the Third Professional Examinations shall be 1050.
  7. Major content areas of the third professional years shall be from:
    - a. Pharmacology including applied/clinical Pharmacology;
    - b. Pathology including microbiology;
    - c. Community Medicine and Public Health
    - d. Forensic Medicine.
  8. The Applied/Clinical content shall be based on clinical correlations.
  9. Integrated clinical content areas include General Medicine, General Surgery, Community Medicine & Public Health, Pathology, Pharmacology & Therapeutics, Clinical Rotations (C-FRC- III), PERLs- III, Expository writing and IT.

### Written Examination

- a. The written component of Papers 7, 8, and 9 will consist of 'One-best-type' 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) and will carry one (01) mark.
- c. There will be no negative marking.
- d. Each SEQ will be a structured question with five (05) marks each.
- e. SEQ's will only be based on the major content areas of the year.

- f. There will be total of 90 MCQs and 10 SEQs in every written paper in Papers 7, 8, and 9.
- g. The duration of each written paper will be 190 minutes (03 hours and 10 minutes).
- h. The section 'B' of the MCQs and the section 'B' of the SEQs must be passed independently also to be declared as 'pass' in the theory exam.
- i. The MCQ section will be 90 minutes duration and the SEQ section of 100 minutes.

### Oral/Practical/Clinical Examination

- j. The 'Oral/Practical/Clinical' component of each Papers 7, 8, and 9 will consist of a total of fifteen (15) OSPE/OSCE/OSVE stations in each 'Oral/Practical/Clinical' examination.
- k. There will be eleven (11) Observed OSPE/OSCE (Objective Structured Practical Examination Objective Structured Clinical Examination) stations from major subject areas. Each OSPE/OSCE station will have the practical component and an evaluation of the underlying principle relevant to that practical with a component of applied knowledge.
- l. There will be one (01) Observed OSCE (Objective Structured Clinical Examination) station, based on PERLs-3 & Expository-3 in each 'Oral/Practical/Clinical' examination.
- m. 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 a component of applied/practical knowledge and related clinical application.
- n. OSPE/OSCE station from the major subject areas will carry eight (08) marks.
- o. The OSCE station of PERLs-3 & Expository-3 will carry ten (10) marks.
- p. Each OSVE station will carry fourteen (14) marks
- q. The duration of each "Oral/Practical/Clinical" examination will be 120 minutes (2 hours).
- r. Time for each OSPE, OSCE and OSVE station will be eight (08) minutes.

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

YEAR-3		
		Marks
A.	<b>Block 7</b> (Foundation-II + Hematopoietic, Immunity & Implant + General Pharmacology + Forensic Medicine & Toxicology-I)	350
B.	<b>Block 8</b> (Musculoskeletal & Locomotion-II + Infectious Diseases + Neoplasia + Forensic Medicine & Toxicology - II)	350
C.	<b>Block 9</b> (Cardiovascular-II + Respiratory II + Community Medicine & Public Health + Family Medicine I + Forensic Medicine & Toxicology - III)	350
	<b>Total</b>	1050

**A. Block 7 (Foundation-II + Hematopoietic, Immunity & Implant + General Pharmacology + Forensic Medicine-I)**

The examination in Block 7 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 total 90 marks (01 mark for each MCQ) and the time allotted shall be 90 minutes. There will be no negative marking.
  - ii. Part II shall have ten Structured Essay Questions (SEQs) of total 50 marks (05 marks for each SEQ) and the time allotted shall be 110 minutes.
- II. "Oral/Practical/Clinical" examination shall have 140 marks in total.
- III. The continuous internal assessment through 'Block Examination' and other parameters specified, 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 8 (Musculoskeletal & Locomotion--II + Infectious Diseases + Neoplasia + Forensic Medicine - II)**

The examination in Block 8 shall be as follows: -

- I. One written paper of 140 marks having two parts:
  - iii. Part I shall have ninety Multiple Choice Questions (MCQs) of total 90 marks (01 mark for each MCQ) and the time allotted shall be 90 minutes. There will be no negative marking.
  - iv. Part II shall have ten Structured Essay Questions (SEQs) of total 50 marks (05 marks for each SEQ) and the time allotted shall be 110 minutes.
- II. "Oral/Practical/Clinical" examination shall have 140 marks in total.
- III. The continuous internal assessment through 'Block Examination' and other parameters specified, 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 9 (Cardiovascular -II + Respiratory II + Community Medicine & Public Health + Family Medicine I + Forensic Medicine - II)**

The examination in Block 9 shall be as follows: -

- I. One written paper of 140 marks having two parts:
  - v. Part I shall have ninety Multiple Choice Questions (MCQs) of total 90 marks (01 mark for each MCQ) and the time allotted shall be 90 minutes. There will be no negative marking.
  - vi. Part II shall have ten Structured Essay Questions (SEQs) of total 50 marks (05 marks for each SEQ) and the time allotted shall be 110 minutes.
- II. "Oral/Practical/Clinical" examination shall have 140 marks in total.
- III. The continuous internal assessment through 'Block Examination' and other parameters specified, 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.

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



**Table 1**

<b>YEAR-3</b>						
<b>Subject</b>	<b>Theory</b>		<b>Practical</b>			<b>Total</b>
<b>BLOCK 7</b> <b>Modules</b> (Foundation-II + Hematopoietic, Immunity & Implant + General & Clinical Pharmacology + Forensic Medicine & Toxicology-I)	Part I MCQs (90)	90 Marks	Practical /Clinical Examination	11 OSPE 01 OSCE 03 OSVE	Marks 88 10 42	<b>350</b>
	Part II SEQs (10)	50 Marks				
	Internal Assessment 10%	35 Marks	Internal Assessment 10%	35 Marks		
	<b>Total</b>	<b>175</b>	<b>Total</b>	<b>175</b>		
<b>BLOCK 8</b> <b>Modules</b> (Neoplasia + Infectious Diseases + Musculoskeletal & Locomotion-II + Forensic Medicine & Toxicology- II)	Part I MCQs (90)	90 Marks	Practical /Clinical Examination	11 OSPE 01 OSCE 03 OSVE	Marks 88 10 42	<b>350</b>
	Part II SEQs (10)	50 Marks				
	Internal Assessment 10%	35 Marks	Internal Assessment 10%	35 Marks		
	<b>Total</b>	<b>175</b>	<b>Total</b>	<b>175</b>		
<b>BLOCK 9</b> <b>Modules</b> (Cardiovascular -II + Respiratory II + Community Medicine & Public Health + Family Medicine I + Forensic Medicine & Toxicology- III)	Part I MCQs (90)	90 Marks	Practical /Clinical Examination	11 OSPE 01 OSCE 03 OSVE	Marks 88 10 42	<b>350</b>
	Part II SEQs (10)	50 Marks				
	Internal Assessment 10%	35 Marks	Internal Assessment 10%	35 Marks		
	<b>Total</b>	<b>175</b>	<b>Total</b>	<b>175</b>		
<b>Total Marks:</b>						<b>1050</b>

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14. No grace marks shall be allowed in any examination or practical under any guise or name.

15. At least 50% MCQs & 50% SEQs shall be based on applied/clinical/case scenario to assess high order thinking in the papers set for the students of Third Professional MBBS Examinations.



## Regulations

1. Professional examination shall be open to any student who: -
  - a. has been enrolled/registered and completed one academic year preceding the concerned professional examination in a constituent/affiliated college of the University.
  - b. has his/her name submitted to the Controller of Examinations, for the purpose of examination, by the Principal of the college in which he / 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 7,8, and 9 for the third 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

*E.M. Singh*  
*9*

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not appear 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:
  - a. 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.
  - b. 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.
  - c. 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/man-made 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 examination 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 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, Second & Third 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 for third year will be sent according to the following scheme:

2. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.



## Internal Assessment (Theory)

| Sr # | Scoring Parameter   | Marks out of 20%  | Marks distribution                               |
|------|---|---|--|
| 1    | Attendance in Lectures  | 85-90%=1%, > 90%=2%   | 85-90%= <b>01</b> mark<br>> 90%= <b>02</b> marks |
|      |   | Remedial classes – re-sit examination allowed only after case endorsed and submitted by the college <b>Principal</b> and approval given by the <b>Competent Authority</b> . However, no marks given |  |
|      |   | Remedial classes – re-sit exam allowed only in genuine cases after approval from <b>Competent Authority</b> . However, no marks given   |  |
| 2    | Block Examination   | 15%   | <b>27</b>  |
| 3    | Continuous Internal Assessment/Class Quiz/Class participation/ Professional Behaviour/ Ethical practices/ Leadership traits/ Module Exam Discipline/Punctuality | 3%  | <b>06</b>  |

## Internal Assessment (Practical & Behavioral)

| Sr # | Scoring Parameter  | Marks out of 20%  | Marks distribution                               |
|------|--|---|--|
| 1    | Attendance in Practicals & Rotations                                       | 85-90%=1%, > 90%=2%   | 85-90%= <b>01</b> mark<br>> 90%= <b>02</b> marks |
|      |  | Remedial classes – re-sit examination allowed only after case endorsed and submitted by the college <b>Principal</b> and approval given by the <b>Competent Authority</b> . However, no marks given |  |
|      |  | Remedial classes – re-sit exam allowed only in genuine cases after approval from <b>Competent Authority</b> . However, no marks given   |  |
| 2    | Block Examination (OSPE/OSCE/OSVE)   | 13%   | <b>23</b>  |
| 3    | CFRC Log Book / PERLs Portfolio  | 02%   | <b>06</b>  |
| 4    | Ward / Clinical / Bedside assessment based on the clinical rotation / DOPS | 02%   | <b>04</b>  |

# MBBS 3<sup>rd</sup> Professional

## Block-7

| Subject            | Written Exam    |                      |            | Oral/Practical/Clinical Exam             |                                  |                                  |            |
|--------------------|-----------------|----------------------|------------|--|----------------------------------|----------------------------------|------------|
|                    | MCQ<br>(1 mark) | SEQ<br>(5 mark each) | Marks      | OSPE<br>/OSCE<br>(8 marks each observed) | OSCE<br>(10 marks each observed) | OSVE<br>(14 marks each observed) | Marks      |
| Pharmacology       | 30              | 05                   | 55         | 03                                       | -                                | 01                               | 38         |
| Pathology          | 30              | 04                   | 50         | 03                                       | -                                | 01                               | 38         |
| Family Medicine    | -               | -                    | -          | -  | -                                | -                                | -          |
| Community Medicine | 02              | -                    | 02         | 01                                       | -                                | -                                | 08         |
| Surgery            | 05              | -                    | 05         | 01                                       | -                                | -                                | 08         |
| Medicine           | 05              | -                    | 05         | 01                                       | -                                | -                                | 08         |
| Forensic           | 13              | 01                   | 18         | 01                                       | -                                | 01                               | 22         |
| Behavioral         | 02              | -                    | 02         | -  | -                                | -                                | -          |
| Patient Safety     | 03              | -                    | 03         | -  | -                                | -                                | -          |
| CFRC               | -               | -                    | -          | 01                                       | -                                | -                                | 08         |
| PERLs + Expository | -               | -                    | -          | -  | 01                               | -                                | 10         |
| <b>Total</b>       | <b>90</b>       | <b>10x5=50</b>       | <b>140</b> | <b>11 stations x 08 = 88</b>             | <b>01 stations x 10 = 10</b>     | <b>03 stations x 14=42</b>       | <b>140</b> |

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# MBBS 3<sup>rd</sup> Professional

## Block-8

| Subject            | Written Exam    |                      |            | Oral/Practical/Clinical Exam             |                                  |                                  |            |
|--------------------|-----------------|----------------------|------------|--|----------------------------------|----------------------------------|------------|
|                    | MCQ<br>(1 mark) | SEQ<br>(5 mark each) | Marks      | OSPE<br>/OSCE<br>(8 marks each observed) | OSCE<br>(10 marks each observed) | OSVE<br>(14 marks each observed) | Marks      |
| Pharmacology       | 12              | 02                   | 22         | 03                                       | -                                | 01                               | 38         |
| Pathology          | 30              | 05                   | 55         | 04                                       | -                                | 02                               | 60         |
| Family Medicine    | -               | -                    | -          | -  | -                                | -                                | -          |
| Community Medicine | 04              | -                    | 04         | -  | -                                | -                                | -          |
| Surgery            | 15              | 01                   | 20         | 01                                       | -                                | -                                | 08         |
| Medicine           | 15              | 01                   | 20         | 01                                       | -                                | -                                | 08         |
| Forensic           | 10              | 01                   | 15         | 01                                       | -                                | -                                | 08         |
| Behavioral         | 02              | -                    | 02         | -  | -                                | -                                | -          |
| Patient Safety     | 02              | -                    | 02         | -  | -                                | -                                | -          |
| CFRC               | -               | -                    | -          | 01                                       | -                                | -                                | 08         |
| PERLs + Expository | -               | -                    | -          | -  | 01                               | -                                | 10         |
| <b>Total</b>       | <b>90</b>       | <b>10x5=50</b>       | <b>140</b> | <b>11 stations x 08 = 88</b>             | <b>01 stations x 10 = 10</b>     | <b>03 stations x 14=42</b>       | <b>140</b> |

25  
 17  
 29  
 3  
 29  
 29



# MBBS 3<sup>rd</sup> Professional

## Block-9

| Subject            | Written Exam    |                      |            | Oral/Practical/Clinical Exam             |                                  |                                  |            |
|--------------------|-----------------|----------------------|------------|--|----------------------------------|----------------------------------|------------|
|                    | MCQ<br>(1 mark) | SEQ<br>(5 mark each) | Marks      | OSPE<br>/OSCE<br>(8 marks each observed) | OSCE<br>(10 marks each observed) | OSVE<br>(14 marks each observed) | Marks      |
| Pharmacology       | 09              | 02                   | 19         | 02                                       | -                                | 01                               | 30         |
| Pathology          | 12              | 02                   | 22         | 02                                       | -                                | -                                | 16         |
| Family Medicine    | 05              | -                    | 05         | -  | -                                | -                                | -          |
| Community Medicine | 27              | 03                   | 42         | 03                                       | -                                | 01                               | 38         |
| Surgery            | 10              | 01                   | 15         | -  | -                                | -                                | -          |
| Medicine           | 10              | 01                   | 15         | 01                                       | -                                | -                                | 08         |
| Forensic           | 15              | 01                   | 20         | 02                                       | -                                | 01                               | 30         |
| Behavioral         | 02              | -                    | 02         | -  | -                                | -                                | -          |
| Patient Safety     | -               | -                    | -          | -  | -                                | -                                | -          |
| CFRC               | -               | -                    | -          | 01                                       | -                                | -                                | 08         |
| PERLs + Expository | -               | -                    | -          | -  | 01                               | -                                | 10         |
| <b>Total</b>       | <b>90</b>       | <b>10x5=50</b>       | <b>140</b> | <b>11 stations x 08 = 88</b>             | <b>01 stations x 10 = 10</b>     | <b>03 stations x 14=42</b>       | <b>140</b> |

*Handwritten notes in blue ink:*  
 12, 9/11, 9, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100







## **LIST OF RESOURCES**





### **Anatomy**

- Snell's Clinical Anatomy 10<sup>th</sup> ed.
- Langman's Medical Embryology 12<sup>th</sup> 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 Mitchell, 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 & Michael 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 Beverly 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 & Michael 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. Nasib R. 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. DeMaio
- Knight B. Simpson's Forensic Medicine.
- Knight and Pekka. Principles of Forensic Medicine

## **Forensic Pathology**

- Forensic pathology 2nd edition by V.J. DeMaio 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 peds 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

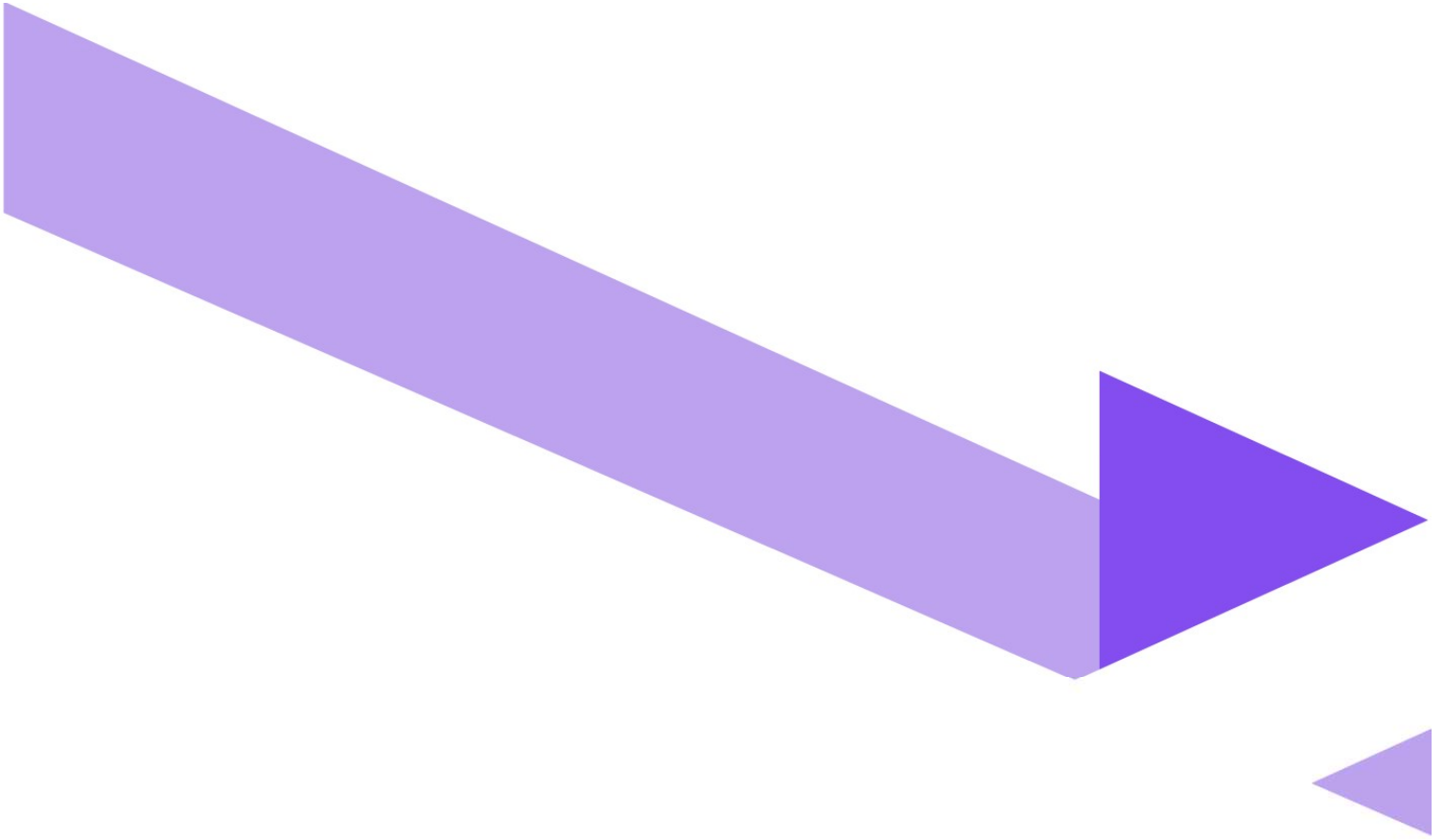


**University of Health  
Sciences Lahore**



**Department of Medical  
Education & International  
Linkages**





# **FEEDBACK PROFORMA**



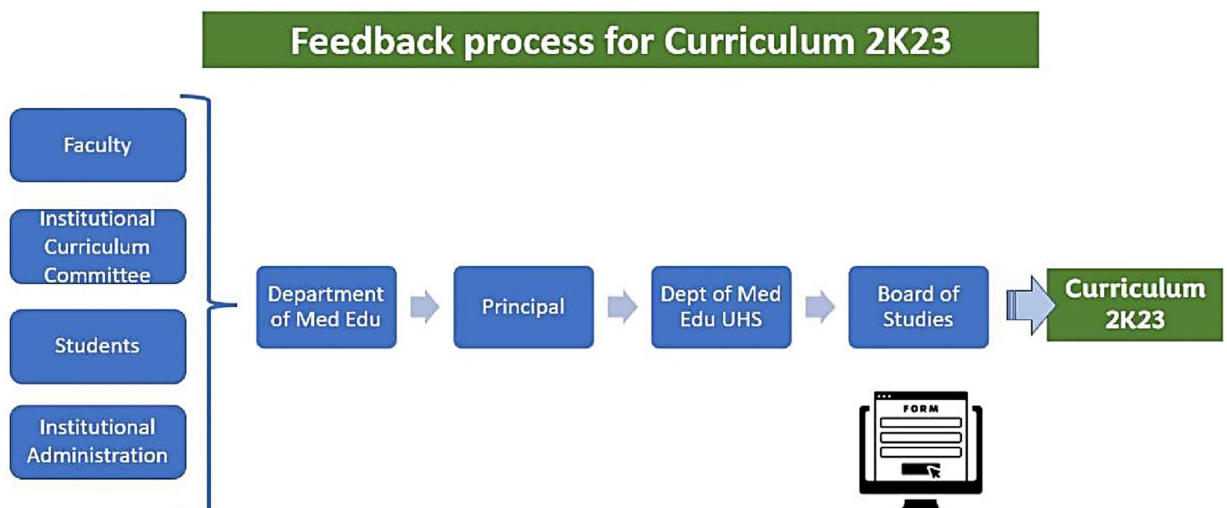


## Program Evaluation & Feedback

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



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

**Any recommended solution:**

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**FOR OFFICE USE**

Remarks by Director Medical Education

Signature Director Medical Education: \_\_\_\_\_

Name & Stamp: \_\_\_\_\_

Date: \_\_\_\_\_

Remarks by Principal

Signature: \_\_\_\_\_

Name & Stamp: \_\_\_\_\_

Date: \_\_\_\_\_



# **LIST OF ANNEXURES**



# MODULAR INTEGRATED CURRICULUM 2K23

*version 3.0*

## VOLUME:03



Clerkships

Rotation

Foundation

Clinical Skills -FRC



## LOGBOOK

CLINICAL-FOUNDATION  
ROTATION CLERKSHIP

## C-FRC

# LOGBOOK C-FRC

## C-FRC-3 YEAR-3





## C-FRC IMPLEMENTATION

C-FRC is a spiral which ensures the psychomotor skill development. The framework provides as a basis for skill development relevant to different study modules and ward rotations. All the psychomotor and affective skill development has also been mentioned in the module's sections of the **Curriculum 2K23 version 3.0**.

Considering the institutional diversity in terms of the student strength, resources and clinical rotation schedules, the C-FRC module and logbook can be adopted and implemented by every affiliated institution with an adaptive approach.

The logbook of C-FRC has been categorized in sections to establish relevance with the modules as well as the ward rotations independent of the module. This division can provide diverse learning opportunities for the students.

Comprehensiveness of training based on the provided framework will be enhanced by the respective institutional learning opportunities, ward rotation plans, tangible resources, timetables, skill labs, manikins, laboratory setups and virtual learning platforms.

The spiral of the C-FRC has the core concept that the student's skill acquisition should be aligned for better outcomes as they proceed to the clerkship year. The utilization of the allotted hours by PMDC and UHS should be utilized in an effective manner, maximizing the utility of the available resources. It is suggested that the **Academic Council** along with the **Department of Medical Education** should discuss and document the following:

- Institutional 'Clinics rotation plan'.
- Community rotations schedule
- Family Medicine rotations
- **EOR-assessment** ('end-of-rotation assessment') framework with block wise vs batch wise details.
- **EOR-assessment** methodologies ( as mentioned in the following section ) to be adopted.
- Planner for timely internal assessment submission

Based on the decisions made by the college academic council, the Departments of Medical Institution can develop their own respective rotation plans keeping in view the sections and coding. The Principal/DMEs will ensure the following principles while developing the rotational plans:

- Third year students will have laboratory, community and clinical rotations to maximize all the learning content mentioned in the main **Curriculum 2K23 version 3.0** as well as the **C-FRC logbook**.
- At least one third of the logbook entries must be completed for each block to secure marks in the internal assessment.
- DMEs will manage, monitor and document clinical assessments conducted as **EOR-assessment** ('end-of-rotation assessment').
- The **EOR-assessments** can comprise of at least two of the following workplace-based methods.
  - OSCE
  - Case-based discussion
  - Clinical Viva
  - Clinical encounter cards
- The **EOR-assessment** plan will be developed and submitted to the examination department UHS with the students' scores as part of the internal assessment.
- The **Prescription Inference Cards** will be a part of the log-book entries.
- At least two **Prescription Inference Cards** per block will be a part of the log entries
- The marks obtained by the students will be based on the log-book entries, and the Prescription Inference Cards
- Principal/DME will ensure that in addition to securing marks in the internal assessment the ward assessments are a college's internal criteria for proceeding to the block examination.
- Principal/DME will ensure that all the sections have been filled out before final submission to the University for the professional Examination.
- Before signing the log book entry, the DME/HOD will ensure that the skill/task has been achieved by the student.

### 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



## BLOCK 7

| CFRC Code | Task/Skill  | Discipline                                | Module              | Signature DME/HOD   |
|-----------|---|---|---------------------|---------------------|
| CFRC3-001 | Prescribing antihypertensives   | All rotations/Pharmacology Lab/Skills Lab | <b>Pharmacology</b> |                     |
| CFRC3-002 | Prescribing antibiotics for infection   |   |                     |                     |
| CFRC3-003 | Monitoring for drug side effects  |   |                     |                     |
| CFRC3-004 | Adjusting medications based on response   |   |                     |                     |
| CFRC3-005 | Knowledge of common drug classes relevant to foundational clinical care (e.g., antibiotics, analgesics, antihypertensives). |   |                     |                     |
| CFRC3-006 | Ability to calculate and adjust dosages for common medications based on patient factors.                                    |   |                     |                     |
| CFRC3-007 | Perform proper hand hygiene, aseptic techniques, and basic infection control protocols.                                     | All rotations                             | <b>Foundation</b>   |                     |
| CFRC3-008 | Demonstrate appropriate use of PPE and understand its importance in preventing healthcare-associated infections.            | All rotations /Skill lab                  |                     |                     |
| CFRC3-009 | Take detailed patient history and perform general physical exams.   | All rotations                             |                     |                     |
| CFRC3-010 | Understand fluid compartments and the basics of electrolyte balance.  |   |                     |                     |
| CFRC3-011 | Offer guidance on health maintenance, such as hygiene, nutrition, and medication adherence.                                 |   |                     |                     |
| CFRC3-012 | Perform and interpret measurements of vital signs (e.g., BP, pulse, temperature, respiratory rate).                         |   |                     | <b>Hematopoetic</b> |

|           |   |  |  |  |
|-----------|---|--|--|--|
| CFRC3-013 | Recognize abnormal vital signs and escalate care accordingly.   |  |  |  |
| CFRC3-014 | Perform basic blood sampling (e.g., venipuncture) with proper aseptic technique.                            |  |  |  |
| CFRC3-015 | Order common hematologic tests (e.g., CBC, blood typing, coagulation profile).                              |  |  |  |
| CFRC3-016 | Interpret basic hematologic lab results, including CBC parameters (e.g., hemoglobin, WBC count, platelets). |  |  |  |

**Note: Before signing the logbook entry, the DME/HOD will ensure that the skill/task has been achieved by the student.**

## BLOCK 8

| CFRC Code | Task/Skill   | Discipline                           | Module     | Signature<br>DME/HOD |
|-----------|--|--------------------------------------|------------|----------------------|
| CFRC3-017 | Joint injury history   | Surgery and<br>Allied<br>/Orthopedic | <b>MSK</b> |                      |
| CFRC3-018 | Fracture history   |                                      |            |                      |
| CFRC3-019 | Inspection of joints and fractures                               |                                      |            |                      |
| CFRC3-020 | Palpation for tenderness and deformities                         |                                      |            |                      |
| CFRC3-021 | Range of motion examination                                      |                                      |            |                      |
| CFRC3-022 | Basic fracture management (splinting, casting)                   |                                      |            |                      |
| CFRC3-023 | Wound management and suturing                                    |                                      |            |                      |
| CFRC3-024 | History of infections related to surgical wounds                 |                                      |            |                      |
| CFRC3-026 | Inspecting and diagnosing surgical wound infections              |                                      |            |                      |
| CFRC3-027 | Antimicrobial prophylaxis and post-surgical infection management |                                      |            |                      |

**Note: Before signing the logbook entry, the DME/HOD will ensure that the skill/task has been achieved by the student.**

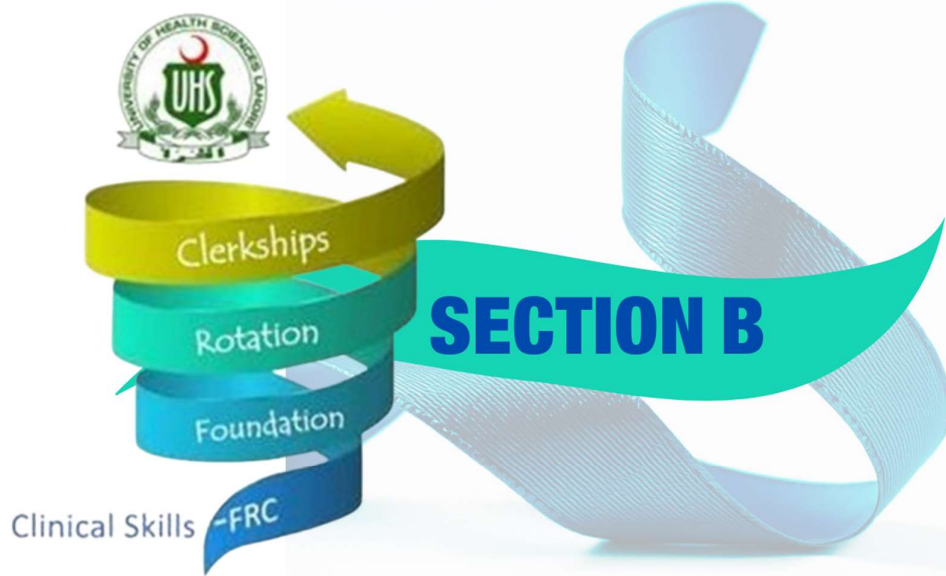
## BLOCK 9

| CFRC Code | Task/Skill   | Discipline  | Module                        | Signature<br>DME/HOD                                |
|-----------|--|---|-------------------------------|---|
| CFRC3-028 | Chest pain history   | Medicine<br>and<br>Allied/Surg<br>ery               | <b>Cardiovascular-<br/>II</b> |   |
| CFRC3-029 | Dyspnea (shortness of breath) history  |   |                               |   |
| CFRC3-030 | Palpitations history   |   |                               |   |
| CFRC3-031 | Inspection of precordium and JVP   |   |                               |   |
| CFRC3-032 | Palpation (apex beat, peripheral pulses)                                       |   |                               |   |
| CFRC3-033 | Auscultation (heart sounds, murmurs)   |   |                               |   |
| CFRC3-034 | Rate, rhythm, axis interpretation  |   |                               | Skill<br>Lab/Medici<br>ne and<br>Allied/Surg<br>ery |
| CFRC3-035 | ST segment changes, T-wave abnormalities                                       | Skill<br>Lab/Medici<br>ne and<br>Allied/Surg<br>ery |                               |   |
| CFRC3-036 | Hypertension diagnosis   | Medicine<br>and Allied                              | <b>Respiratory-II</b>         |   |
| CFRC3-037 | Heart failure diagnosis  |   |                               |   |
| CFRC3-038 | Ischemic heart disease diagnosis   |   |                               |   |
| CFRC3-039 | Cough and sputum production history  |   |                               |   |
| CFRC3-040 | Dyspnea (shortness of breath) history  |   |                               |   |
| CFRC3-041 | Wheezing history   |   |                               |   |
| CFRC3-042 | Inspection of respiratory effort, cyanosis                                     |   |                               |   |
| CFRC3-043 | Palpation for chest expansion, tactile fremitus                                |   |                               |   |
| CFRC3-044 | Percussion of the lungs  |   |                               |   |
| CFRC3-045 | Auscultation (breath, sounds, wheezing, crackles)                              |   |                               |   |
| CFRC3-046 | Recognize obstructive vs restrictive patterns                                  |   |                               |   |
| CFRC3-047 | Perform history and physical examination , suggesting to a diagnosis of asthma |   |                               |   |

|           |  |  |  |  |
|-----------|--|--|--|--|
| CFRC3-048 | Perform history and physical examination , suggesting to a diagnosis COPD                |  |  |  |
| CFRC3-049 | Perform history and physical examination , suggesting to a diagnosis Pneumonia           |  |  |  |
| CFRC3-050 | Focused history-taking for common presentations (e.g., respiratory infections, diabetes) | Medicine and Allied (overarching competency) |  |  |
| CFRC3-051 | Patient-centered clinical decision-making  | All clinical rotations                       |  |  |
| CFRC3-052 | Provide evidence-based management for common primary care conditions                     |  |  |  |
| CFRC3-053 | Develop comprehensive care plans (biological, psychological, social factors)             |  |  |  |
| CFRC3-054 | Effective communication during consultations (shared decision-making)                    |  |  |  |
| CFRC3-055 | Ethical considerations (confidentiality, informed consent)                               | All clinical rotations/community medicine    |  |  |

**Note: Before signing the logbook entry, the DME/HOD will ensure that the skill/task has been achieved by the student.**





| General Surgery |   |                           |                   |
|-----------------|---|---------------------------|-------------------|
| CFRC Code       | Task/Skill  | Discipline                | Signature DME/HOD |
| CFRC3-056       | Focused surgical history-taking (neck lump, trauma, abdominal pain etc) | <b>Surgery and Allied</b> |                   |
| CFRC3-057       | Formulate a diagnosis from surgical complaints                          |                           |                   |
| CFRC3-058       | Able to scrub in for major and minor surgical procedures                |                           |                   |
| CFRC3-059       | Assist in minor surgical procedures (observed in OT)                    |                           |                   |
| CFRC3-060       | Manage patients pre- and post-operatively                               |                           |                   |

**Note: Before signing the logbook entry, the DME/HOD will ensure that the skill/task has been achieved by the student.**

| Medicine  |   |            |                   |
|-----------|---|------------|-------------------|
| CFRC Code | Task/Skill  | Discipline | Signature DME/HOD |
| CFRC3-061 | General physical examination  |            |                   |
| CFRC3-062 | System-specific examinations<br>1. GIT<br>2. cardiovascular<br>3. respiratory<br>4. endocrine |            |                   |
| CFRC3-063 | Formulate a diagnosis from patient findings   |            |                   |
| CFRC3-064 | Learn how to write SOAP notes   |            |                   |

**Note: Before signing the logbook entry, the DME/HOD will ensure that the skill/task has been achieved by the student.**

## Gynecology and Obstetrics

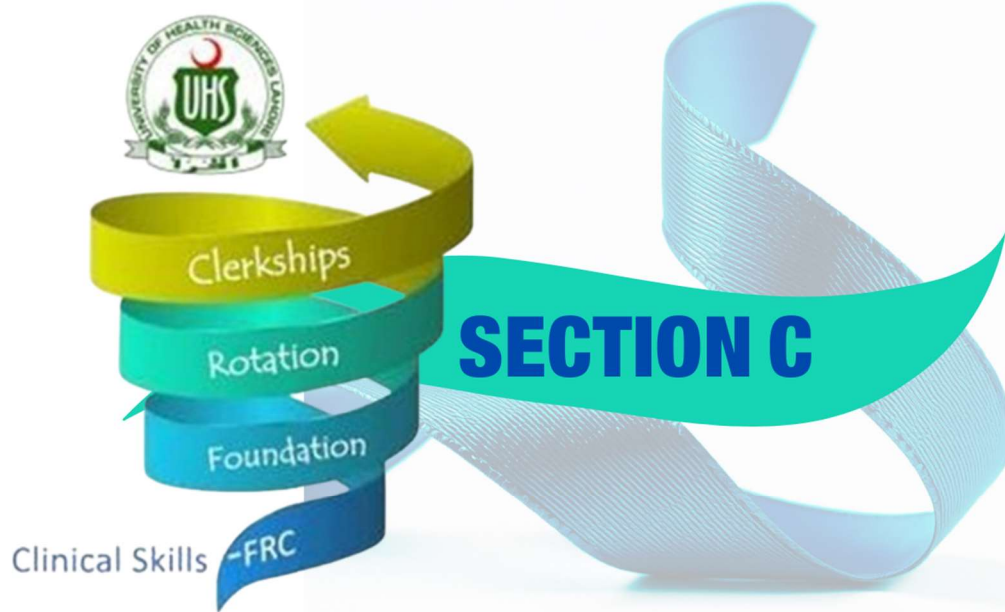
| CFRC Code | Task/Skill                         | Discipline | Signature DME/HOD |
|-----------|------------------------------------|------------|-------------------|
| CFRC3-065 | Discuss calculation of LMP and EDD | Obstetrics |                   |
| CFRC3-066 | Take a basic antenatal history     |            |                   |
| CFRC3-067 | Take a gynecological history       | Gynecology |                   |

**Note: Before signing the logbook entry, the DME/HOD will ensure that the skill/task has been achieved by the student.**

## Pediatrics

| CFRC Code | Task/Skill                     | Discipline                                    | Signature DME/HOD |
|-----------|--------------------------------|---|-------------------|
| CFRC3-068 | Take a basic pediatric history | Pediatrics                                    |                   |
| CFRC3-069 | Knowledge of the EPI schedule  | Pediatrics/Family Medicine/Community Medicine |                   |

**Note: Before signing the logbook entry, the DME/HOD will ensure that the skill/task has been achieved by the student**



## Case-Based Discussion (CBD) Form for Third-Year MBBS

| Section                     | Field                        | Options/Notes  |
|-----------------------------|------------------------------|--|
| <b>Trainee Information</b>  | Name                         |  |
|                             | Student ID                   |  |
|                             | Assessment Date              |  |
|                             | Location of CBD              |  |
| <b>Assessor Information</b> | Name                         |  |
|                             | Designation                  |  |
|                             | Department                   |  |
| <b>Case Details</b>         | Clinical Setting             | <input type="checkbox"/> Inpatient <input type="checkbox"/> Outpatient <input type="checkbox"/> Emergency <input type="checkbox"/> Elective  |
|                             | Complexity of Case           | <input type="checkbox"/> Basic (third-year level) <input type="checkbox"/> Moderate <input type="checkbox"/> Complex   |
|                             | Focus of Encounter           | <input type="checkbox"/> History <input type="checkbox"/> Physical Examination <input type="checkbox"/> Diagnosis <input type="checkbox"/> Initial Management<br><br><input type="checkbox"/> Patient Education <input type="checkbox"/> Documentation |
|                             | Summary of Case              |  |
| <b>Assessment Areas</b>     | Medical Record Keeping       | <input type="checkbox"/> Outstanding <input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs Improvement  |
|                             | Clinical Assessment          | <input type="checkbox"/> Outstanding <input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs Improvement  |
|                             | Diagnostic Skills            | <input type="checkbox"/> Outstanding <input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs Improvement  |
|                             | Initial Management Plan      | <input type="checkbox"/> Outstanding <input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs Improvement  |
|                             | Communication Skills         | <input type="checkbox"/> Outstanding <input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs Improvement  |
|                             | Professionalism              | <input type="checkbox"/> Outstanding <input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs Improvement  |
| <b>Feedback</b>             | Strengths                    |  |
|                             | Areas for Development        |  |
|                             | Recommended Actions          |  |
| <b>Trainee Reflection</b>   | Learning from the Experience |  |

|                   |                      |
|-------------------|----------------------|
|                   | Strengths            |
|                   | Improvement Points   |
| <b>Signatures</b> | Trainee's Signature  |
|                   | Assessor's Signature |

- i. At least 1/3rd of entries per block (DME to decide the codes of entries to be entered for each student)
- ii. One OSCE/CBD/Mini-CEX for every student as **EOR Assessment** for every block



## **PRESCRIPTION INFERENCE CARD**

### **Learning Outcome:**

This structured "**Prescription Inference Card**" will guide students to make a foundation in clinical pharmacology, building their understanding of drug's theoretical and clinical application.

### **Instructions/Protocols**

The students will gather three real time prescriptions during each module in third & fourth year in morning /evening time.

It will be then discussed in coming pharmacology lecture/practical/tutorial time

At the end of each module the cards will be submitted for assessment, grading and awarding marks by Pharmacology department for formative & summative assessment.

### **Prescription Collection:**

Ensure to collect three prescriptions from different patients in each module

### **Documentation:**

Keep a record of all activities for personal learning and to share with mentors or faculty as required for assessment and marks

# PRESCRIPTION INFERENCE CARD

Student's Name: \_\_\_\_\_

MBBS Year: \_\_\_\_\_ Roll no: \_\_\_\_\_ UHS Registration no: \_\_\_\_\_

Block: \_\_\_\_\_ Module: \_\_\_\_\_

Provisional Diagnosis: \_\_\_\_\_

|   |  |  |  |
|---|--|--|--|
| Date                                      |  |  |  |
| Drug & Group                              |  |  |  |
| Brand Name                                |  |  |  |
| Generic Name                              |  |  |  |
| Purpose of drug<br>(Symptomatic/Specific) |  |  |  |
| Dosage & Form                             |  |  |  |
| Route of Administration                   |  |  |  |
| Monitoring Parameters                     |  |  |  |
| <b>ADVERSE EFFECTS</b>                    |  |  |  |
| Observations / Text Book                  |  |  |  |
| <b>DRUG INTERACTIONS</b>                  |  |  |  |
| Observations / Text Book                  |  |  |  |
| <b>CONTRAINDICATIONS</b>                  |  |  |  |
| Observations / Text Book                  |  |  |  |
| <b>PRECAUTIONS</b>                        |  |  |  |
| Specifically Advised                      |  |  |  |
| Comments / Instructions                   |  |  |  |
| HOD Pharmacology<br>Sign & Stamp          |  |  |  |

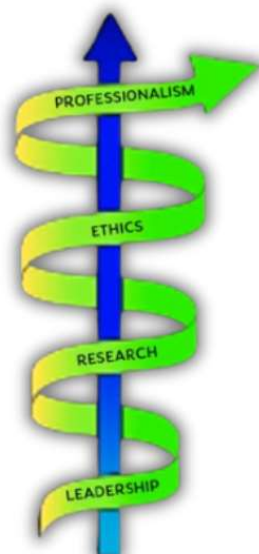


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Volume: 03



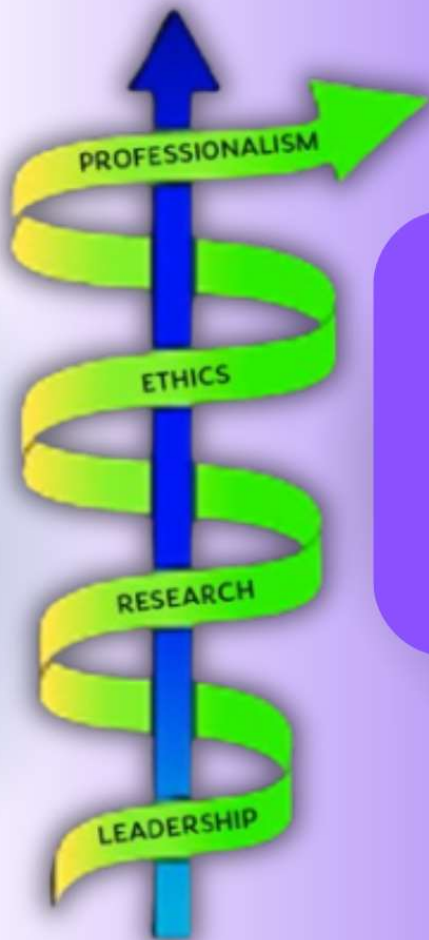
Modular Integrated  
Curriculum 2K23  
*Version 3.0*



**PERLS**  
**ExposiTory**  
**Portfolio**



**Modular Integrated  
Curriculum 2K23**  
*Version 3.0*



# PERLS

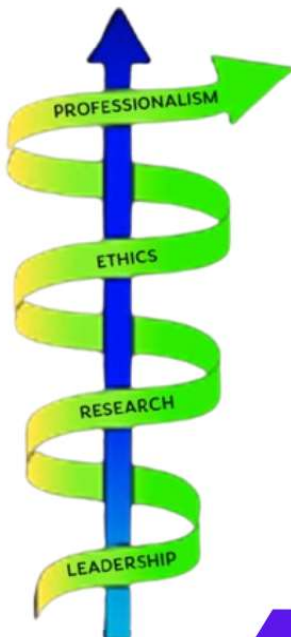
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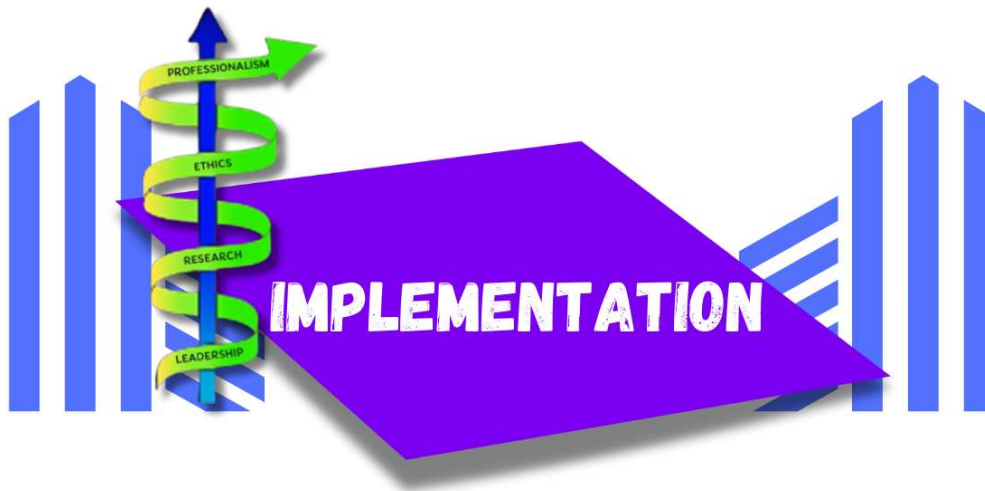
**PROFESSIONALISM  
ETHICS, RESEARCH  
LEADERSHIP SKILLS**



# PERLS-III

## Year-III





## 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.

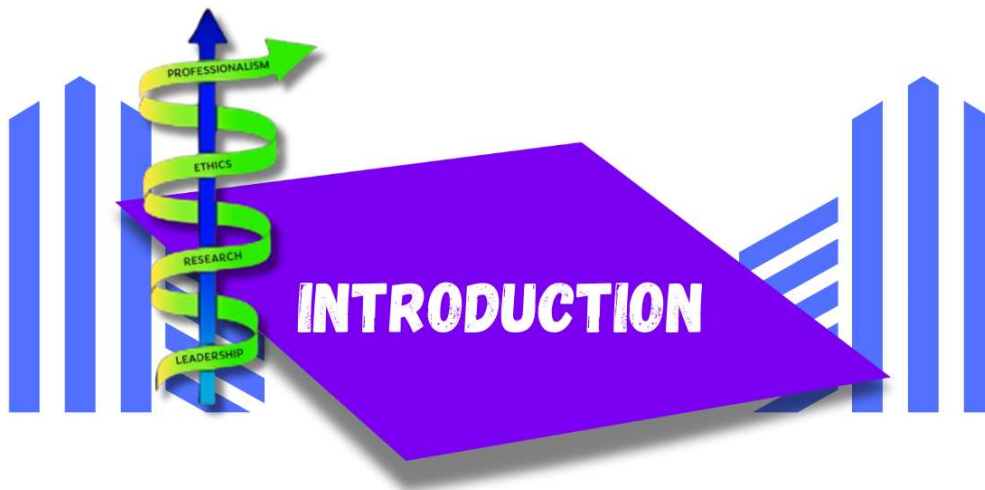
### Developed by

**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/physician-charter&#8203;;contentReference\[oaicite:0\]{index=0}](https://www.abimfoundation.org/what-we-do/physician-charter&#8203;;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&#8203;;contentReference\[oaicite:1\]{index=1}](https://doi.org/10.1080/0142159X.2018.1464133&#8203;;contentReference[oaicite:1]{index=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&#8203;;contentReference\[oaicite:2\]{index=2}](https://doi.org/10.1080/10872981.2021.1983926&#8203;;contentReference[oaicite:2]{index=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&#8203;;contentReference\[oaicite:3\]{index=3}](https://doi.org/10.1080/08998280.2007.11928225&#8203;;contentReference[oaicite:3]{index=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&#8203;;contentReference\[oaicite:0\]{index=0}](https://doi.org/10.26481/dis.20150521ma&#8203;;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>
- National Center for Healthcare Leadership. (2018). Health Leadership Competency Model 3.0. Chicago, IL: National Center for Healthcare Leadership. <https://nchl.org>
- 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](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 EXPLANATION

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:

1. **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

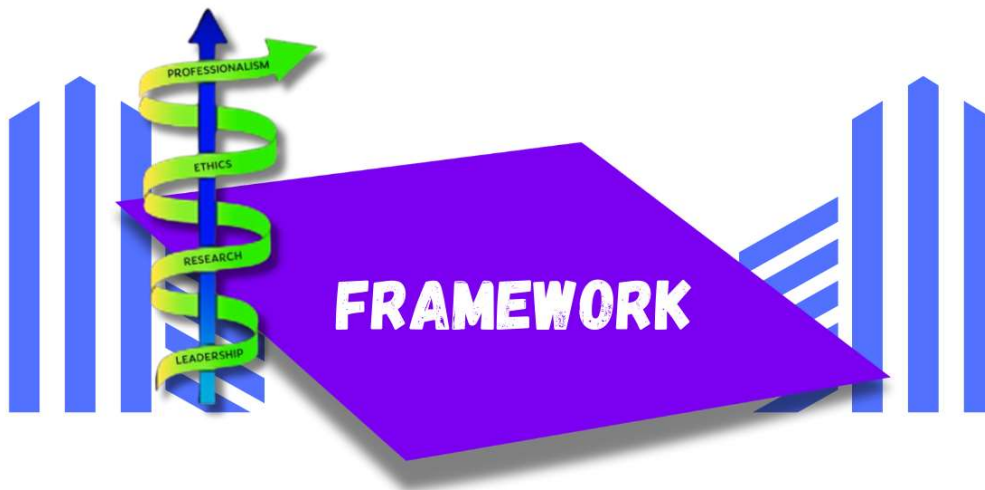
**As a facilitator, your role in the evaluation of the UHS PERL module is crucial for ensuring its effectiveness and relevance. Key responsibilities include:**

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.





**FOUNDATION-II & EBM**

*\*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 = 7.5**

| <b>Code</b> | <b>Domain</b>          | <b>Topic</b>                                      | <b>Specific Learning Objectives</b>   | <b>Proposed Portfolio Entry</b>   |
|-------------|------------------------|---|---|---|
|             | <b>Professionalism</b> | Professional Responsibility in Clinical Rotations | <ul style="list-style-type: none"> <li>• Understand the basic professional behaviours expected in clinical rotations, such as punctuality, appropriate communication, and respectful interactions with patients and staff.</li> <li>• Observe a clinical setting and identify key professional behaviours demonstrated by healthcare staff, such as maintaining punctuality and professional communication</li> </ul> | A brief reflection on the key professional behaviours observed during the first clinical rotation session, noting how these behaviours contribute to patient care and professional conduct.             |
|             | <b>Research</b>        | Evidence-Based Practice for Disease Management    | <ul style="list-style-type: none"> <li>• Understand the principles of evidence-based practice (EBP) and how to apply current research findings to clinical decision-making for disease management.</li> <li>• Apply evidence-based guidelines to develop a disease management plan.</li> </ul>  | Create a case report detailing the application of EBP to a specific disease management scenario, including references to the literature   |
|             | <b>Research</b>        | Investigating medical errors                      | <ul style="list-style-type: none"> <li>• Describe the process of investigating medical errors, including Root Cause Analysis (RCA) and the Swiss Cheese Model, to identify contributing factors and prevent future errors.</li> <li>• Analyze a medical error case, conduct a root cause analysis, apply the Swiss Cheese Model and propose preventive measures to</li> </ul>   | Poster Submission of a medical error case, including both root cause analysis and a Swiss Cheese Model diagram that illustrates the alignment of system failures – along with proposed recommendations. |

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|  |                   |                                     | strengthen system defenses.  |  |
|  | <b>Ethics</b>     | Reporting medical errors            | <ul style="list-style-type: none"> <li>Discuss the ethical obligations in reporting medical errors and the role of transparency in maintaining patient trust and improving care quality.</li> <li>Draft an incident report on a simulated medical error, outlining the ethical considerations and steps taken to address the issue</li> </ul>  | Submit a written incident report on a simulated or real medical error, including the ethical implications and actions taken. |
|  | <b>Leadership</b> | Role Modelling/ Mentoring Session V | <ul style="list-style-type: none"> <li>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 and professional development. Discuss any challenges faced while carrying out any action plan if already created and related solutions to overcome those challenges.</li> </ul> | Mentoring Session V<br>Key decisions   |

**GENERAL & CLINICAL PHARMACOLOGY**

*\*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 = 06**

| <b>Code</b> | <b>Domain</b>          | <b>Topic</b>                              | <b>Specific Learning Objectives</b>   | <b>Proposed Portfolio Entry</b>   |
|-------------|------------------------|---|---|---|
|             | <b>Professionalism</b> | Responsible use of social media Platforms | <ul style="list-style-type: none"> <li>Discuss the principles of responsible use of social media platforms, including safeguarding patient confidentiality, conducting ethical interactions, and practising careful online sharing. Discuss available social media use guidelines in healthcare.</li> </ul> | Develop and submit personal social media guidelines that reflect ethical use in professional and medical contexts |

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|  | <b>Ethics</b>   | Conflict of interest, Dealing with Pharmaceuticals | <ul style="list-style-type: none"> <li>Explain the ethical challenges related to conflicts of interest in healthcare, particularly when dealing with pharmaceutical companies, and understand how to manage these situations to maintain professional integrity. Analyze a case study where a conflict of interest occurred involving pharmaceutical companies, and propose strategies for ethically managing such situations</li> </ul> | Submit an analysis of a case involving a conflict of interest in pharmaceutical dealings, including recommendations for handling the situation ethically and how such conflicts can be avoided in future practice. |
|  | <b>Research</b> | Gaps in Literature                                 | <ul style="list-style-type: none"> <li>Analyze existing research in a specific medical field to identify gaps in literature that need further exploration.</li> <li>Appreciate the importance of recognizing these gaps to formulate meaningful research problems. Identify and submit at least one significant gap in the literature, and propose a research question or hypothesis to address this gap.</li> </ul>                     | Submit a literature review summary identifying key gaps in the research.   |
|  | <b>Leader</b>   | Artificial Intelligence in Research                | <ul style="list-style-type: none"> <li>Explore the role of artificial intelligence (AI) in medical research, including its applications, potential benefits, and challenges, while identifying ways AI can innovate and enhance research methodologies.</li> <li>Discuss the ethical implications of using AI in research, including</li> </ul>  | Develop and submit a code of conduct for the responsible use of AI tools in research, focusing on ethical issues such as bias, data privacy, informed consent, and transparency.                                   |



|  |  |  |   |  |
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|  |  |  | <p>bias, data privacy, transparency, and accountability concerns.</p> <ul style="list-style-type: none"><li>• Demonstrate the use of AI tools as supplementary tools in research.</li></ul> |  |
|--|--|--|---|--|

## HEMATOPOETIC, IMMUNITY & TRANSPLANT

*\*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                 | Topic                               | Specific Learning Objectives  | Proposed Portfolio Entry  |
|------|------------------------|-------------------------------------|---|---|
|      | <b>Professionalism</b> | Maintaining Patient Confidentiality | <ul style="list-style-type: none"> <li>Discuss the principles for maintaining patient confidentiality.</li> <li>Appreciate the importance of maintaining patient confidentiality in clinical practice.</li> <li>Discuss legal and ethical implications of patient confidentiality.</li> </ul> | Reflective entry on a clinical case where confidentiality was maintained, detailing the challenges and how they were addressed. |

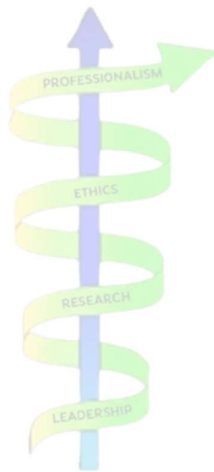
## FORENSIC MEDICINE & TOXICOLOGY

*\*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 = 4.5**

| Code | Domain          | Topic                                 | Specific Learning Objectives   | Proposed Portfolio Entry   |
|------|-----------------|---------------------------------------|--|--|
|      | <b>Ethics</b>   | Human Rights & Malpractice            | <ul style="list-style-type: none"> <li>Discuss ethical principles surrounding human rights in healthcare, particularly in malpractice cases, and recognize the professional obligations to uphold patients' rights while preventing and addressing malpractice.</li> </ul>   | Case analysis of a malpractice incident, discussing the implications of human rights and detailing measures that could have been implemented to avoid the violation of patient rights. |
|      | <b>Research</b> | Legal and Ethical Aspects of Research | <ul style="list-style-type: none"> <li>Discuss the legal and ethical frameworks governing medical research, including protecting human subjects, informed consent, privacy, and compliance with national and international regulations.</li> <li>Discuss the role of Institutional Review Boards in the research process.</li> </ul> | Review and submit the Patient Information Sheet/ Informed Consent Sheet of your College IRB and propose any improvement if needed.   |

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|--|-------------------|--------------------|---|---|
|  | <b>Leadership</b> | Project Management | <ul style="list-style-type: none"> <li>• Introduce the basic concepts of project management in healthcare, including planning, organizing, and executing small projects, such as case studies or group assignments.</li> </ul> <p>Participate in a class activity, where they will plan and organize tasks, set timelines, and assign roles to ensure the project is completed efficiently.</p> | <p>Write a Class activity report with assigned roles taken by each group member. Critically evaluate the challenges observed with proposed recommendations.</p> |
|--|-------------------|--------------------|---|---|





## MUSCULOSKELETAL AND LOCOMOTION-II

*\*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 = 06**

| Code | Domain                 | Topic  | Specific Learning Objectives  | Proposed Portfolio Entry  |
|------|------------------------|--|---|---|
|      | <b>Research</b>        | Identification of Research Problem           | <ul style="list-style-type: none"> <li>Describe the process of identifying a viable research problem based on gaps in existing literature.</li> <li>Draft a research problem statement in a relevant medical field and formulate a research question based on the current literature.</li> <li>Submit a well-defined research problem statement that highlights a gap in the literature and explains the importance of investigating this issue further.</li> </ul> | Evidence of submitted Research Problem to assigned Research Mentor.   |
|      | <b>Professionalism</b> | Adapting to the Physician's Role             | <ul style="list-style-type: none"> <li>Appreciate the skills to adapt to the physician's role, including managing stress, handling uncertainty, and making clinical decisions, while demonstrating professionalism in diverse clinical settings. (skills include emotional resilience, critical thinking, communication, and time management)</li> </ul>  | Submit a reflective essay on a clinical experience where you applied these skills to manage stress, handle uncertainty, and make clinical decisions, proposing strategies to develop your adaptability further. |
|      | <b>Ethics</b>          | Autonomy in rehabilitation, Informed consent | <ul style="list-style-type: none"> <li>Discuss the process of obtaining informed consent, ensuring patients are fully aware of their treatment options, risks, and potential outcomes.</li> <li>Ensure the patient's autonomy is respected throughout the</li> </ul>  | Develop an Informed consent Sheet for patients undergoing rehabilitation after trauma.  |

|  |                   |                                |  |   |
|--|-------------------|--------------------------------|--|---|
|  |                   |                                | decision-making process.   |   |
|  | <b>Leadership</b> | Entrepreneurship in Healthcare | <ul style="list-style-type: none"> <li>Discuss the basic principles of entrepreneurship in healthcare, including identifying gaps in healthcare services, understanding innovation, and exploring how entrepreneurial thinking can improve patient care and healthcare delivery.</li> <li>Identify a gap or unmet need in the healthcare system (e.g., a service or technology that could improve patient outcomes) and suggest an innovative solution or approach.</li> </ul> | Propose an innovative solution that could address the gap or improve patient care, with a focus on how entrepreneurial thinking can be applied. |

### INFECTIOUS DISEASES

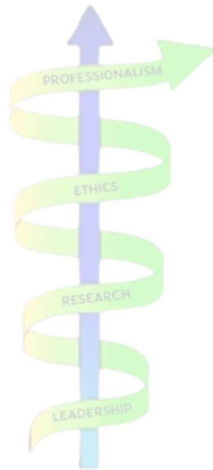
*\*Proposed Sequence of Topics Mentioned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block*

**Total Hours = 06**

| Code | Domain                 | Topic  | Specific Learning Objectives  | Proposed Portfolio Entry                             |
|------|------------------------|--|---|--|
|      | <b>Professionalism</b> | Professional Responsibility in Public Health | <ul style="list-style-type: none"> <li>Recognize the professional duty of healthcare workers to protect vulnerable patients, colleagues, and the community by adhering to infection control protocols and promoting public health measures.</li> </ul> <p>Effectively communicate the risks and management strategies related to contagious diseases to patients and their families (i.e Tuberculosis) balancing public health concerns with individual patient rights and privacy.</p> | Make a public awareness poster on infection control. |

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|---|-----------------|--|--|--|
|   | <b>Ethics</b>   | End-of-life decisions, ventilator use        | <ul style="list-style-type: none"> <li>Explore the ethical considerations involved in end-of-life decisions, including using ventilators, balancing patient autonomy, family wishes, and medical judgment in making these decisions.</li> </ul>  | Write a case analysis on end-of-life decisions, particularly regarding ventilator use, and propose an ethically sound approach to decision-making.   |
|   | <b>Research</b> | Developing Research Hypotheses and Questions | <ul style="list-style-type: none"> <li>Understand the process of formulating research hypotheses and developing research questions, with a focus on creating clear, testable, and relevant questions using PICO</li> <li>Formulate a research question and corresponding hypothesis based on a gap identified in the existing literature related to the research problem identified previously.</li> <li>Submit a research proposal with a problem statement supported by a brief literature review, a well-defined research question and a hypothesis.</li> </ul> | Evidence of submitted research hypothesis/question to assigned Research Mentor.  |
|   | <b>Research</b> | Introducing Clinical Audit                   | <ul style="list-style-type: none"> <li>Understand the basic concept of a clinical audit and how it can help improve healthcare practices, particularly in infection control, by comparing current practices to standards.</li> </ul>   | Submit a brief reflection on an infection control practice you observed during your clinical rotation. Suggest one area that could be audited to improve the quality of care and explain why this area was chosen. |
| <b>NEOPLASIA</b>  |                 |  |  |  |
| *Proposed Sequence of Topics Mentioned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block |                 |  |  | <b>Total Hours = 1.5</b>   |
| <b>Code</b>   | <b>Domain</b>   | <b>Topic</b>                                 | <b>Specific Learning Objectives</b>  | <b>Proposed Portfolio Entry</b>  |

|  |               |  |   |   |
|--|---------------|--|---|---|
|  | <b>Ethics</b> | Cultural/religious views on Do Not Resuscitate | Explore the diverse cultural and religious perspectives on Do Not Resuscitate (DNR) orders and understand how these views influence end-of-life decisions in the context of neoplasia care. | Submit your hospital Protocol for Do-Not-Resuscitate. |
|--|---------------|--|---|---|







## CARDIOVASCULAR-II

*\*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          | Topic                                  | Specific Learning Objectives   | Proposed Portfolio Entry  |
|------|-----------------|--|--|---|
|      | <b>Research</b> | Research Methodology:<br>Study designs | <ul style="list-style-type: none"> <li>Describe the different types of study designs in medical research.</li> <li>Evaluate selecting an appropriate study design based on the identified research question.</li> <li>Submit a short report outlining a research question and the selected study design, explaining why this design is chosen and how it addresses the research objectives.</li> </ul> | Evidence of submitting Research population selection and size calculation to Research Mentor. |

## RESPIRATORY-II

*\*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 = 4.5**

| Code | Domain          | Topic   | Specific Learning Objectives  | Proposed Portfolio Entry  |
|------|-----------------|---|---|---|
|      | <b>Research</b> | Research Methodology:<br>Population selection and sample size | <ul style="list-style-type: none"> <li>Describe the principles of population selection and determining sample size in medical research</li> <li>Evaluate how these factors impact the validity and generalizability of research findings.</li> <li>Select a population for a hypothetical research study and calculate an appropriate sample size, providing a rationale based on the research question and study design chosen earlier.</li> <li>Submit a brief report detailing the population selection and sample size calculation for your planned study,</li> </ul> | Evidence of submitting Research population selection and size calculation to Research Mentor. |

|  |                   |  |  |   |
|--|-------------------|--|--|---|
|  |                   |  | including an explanation of the criteria for choosing the population and determining the sample size.  |   |
|  | <b>Ethics</b>     | Ethical clinical trials, drug safety in trials | <ul style="list-style-type: none"> <li>• Discuss the ethical considerations in clinical trials, including the importance of informed consent, patient safety, and drug safety throughout the trial process.</li> <li>• Discuss the importance of Clinical Trial Registration for Clinical Trials.</li> </ul>   | Provide recommendations on how the trial could better ensure ethical compliance and drug safety.  |
|  | <b>Leadership</b> | Team Leadership                                | <ul style="list-style-type: none"> <li>• Discuss the key qualities and skills required for effective team leadership in a healthcare setting, including communication, delegation, and conflict resolution, to foster a collaborative and efficient work environment.</li> <li>• Participate in a group project, take on the team leader role, and practice delegation, communication, and conflict resolution skills. Reflect on the challenges faced and strategies used to ensure team success</li> </ul> | As a team, create a simple poster or video presentation on how you managed team dynamics to achieve project goals. Focus on key takeaways and provide basic recommendations for effective team leadership in healthcare settings. |

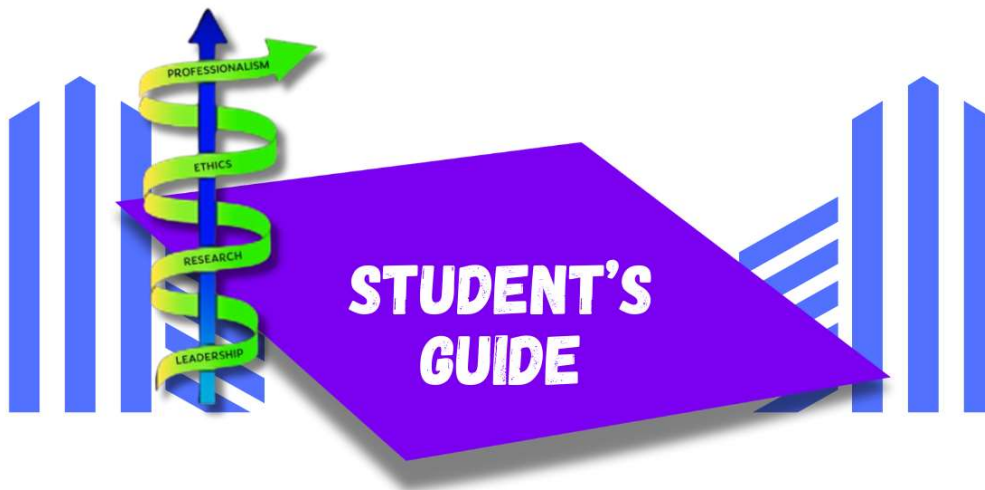
## COMMUNITY MEDICINE & FAMILY HEALTH-I

*\*Proposed Sequence of Topics Mentioned below. Medical Colleges are at liberty to manage according to their resources. Topics can switch within each Block*

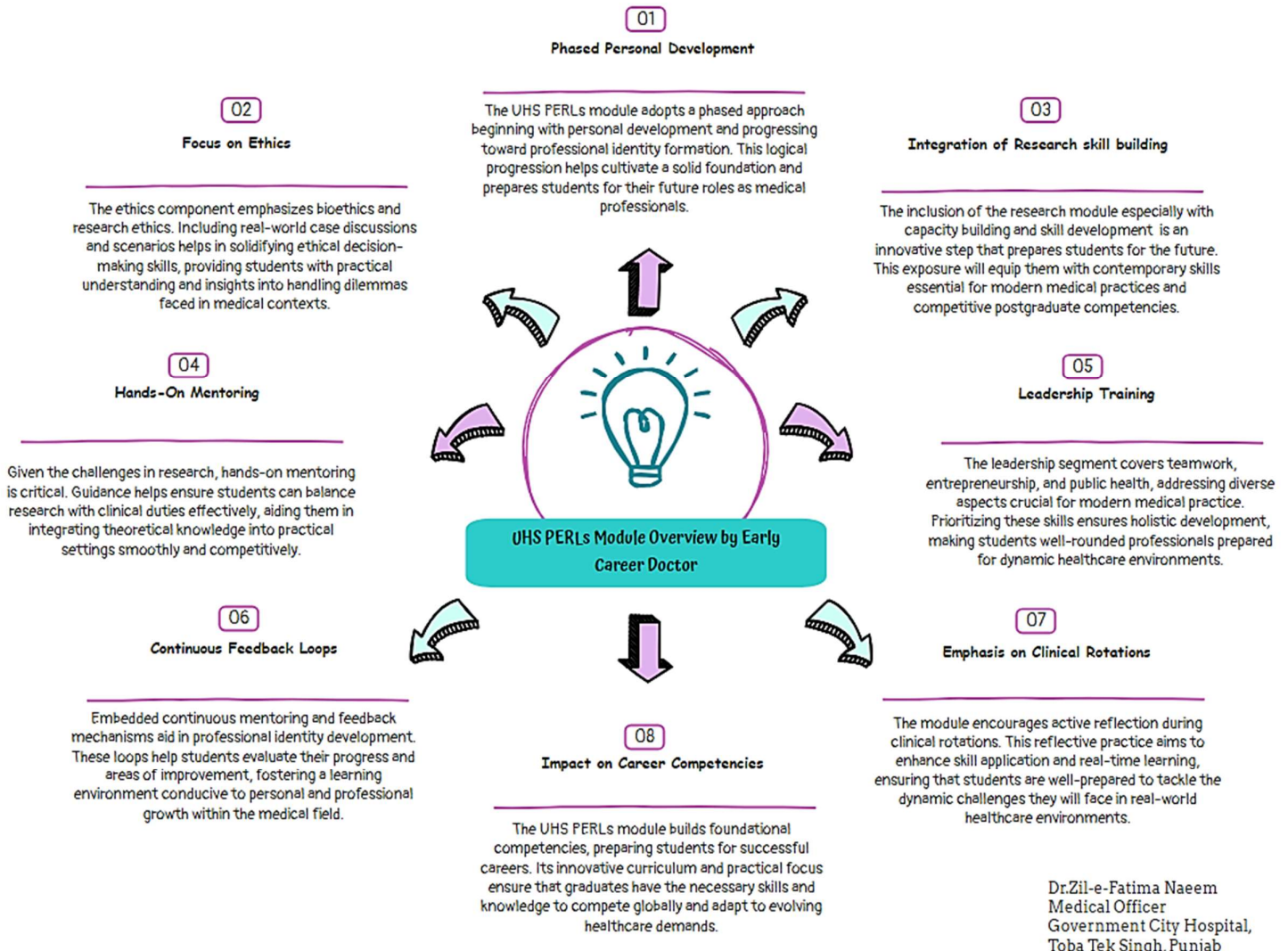
**Total Hours = 4.5**

| Code | Domain            | Topic  | Specific Learning Objectives   | Proposed Portfolio Entry  |
|------|-------------------|--|--|---|
|      | <b>Ethics</b>     | Health Equity:<br>Resource allocation          | <ul style="list-style-type: none"> <li>Understand the ethical principles behind resource allocation in healthcare, particularly in promoting health equity, and how decisions about resource distribution impact vulnerable populations.</li> </ul>                  | Create a basic plan to distribute a limited supply of healthcare resources (e.g., vaccines, beds, or medications) in a community clinic. Explain how you would ensure fair treatment for everyone, especially vulnerable patients, and briefly discuss the ethical reasons behind your choices. |
|      | <b>Leadership</b> | Role Modelling<br>via Mentoring<br>Session VII | <ul style="list-style-type: none"> <li>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 and professional development</li> </ul> | 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.   |
|      | <b>Research</b>   | Research<br>Methodology:<br>Study designs      | <ul style="list-style-type: none"> <li>Describe the different types of study designs in medical research.</li> <li>Evaluate selecting an appropriate study design based on the identified research question.</li> </ul>  | To be submitted in next module.   |





# What your Seniors say



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
  - 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.

## 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.

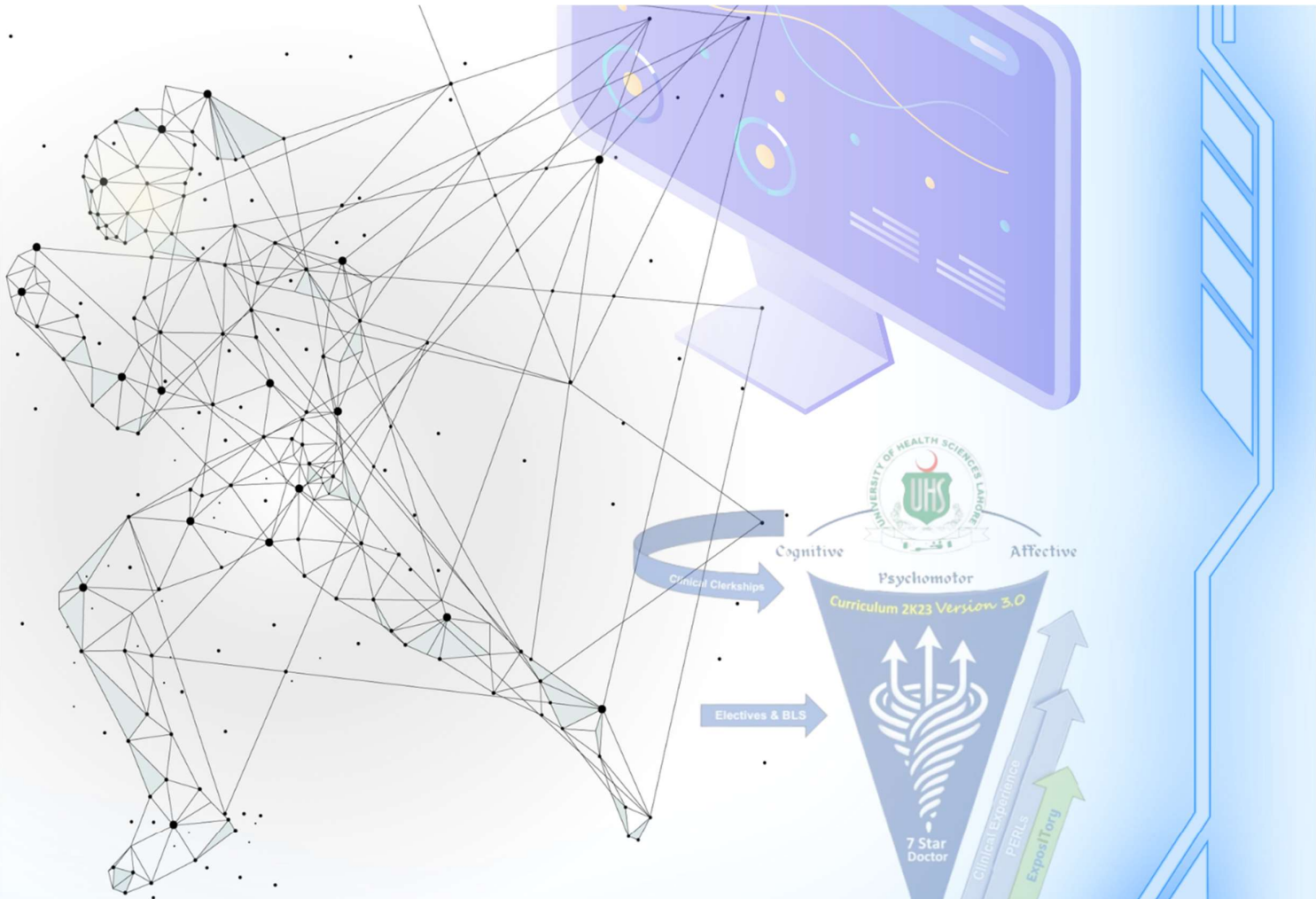
## PEEL PORTFOLIO TEMPLATE

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.



# Expository



Volume: 03

Curriculum 2K23



## 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 Khalid**  
Associate Professor of Physiology

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

## Year 3: Expository Writing III Research writing, data handling, and presentation skills

### THEORY

| Code | Subject: Expository writing & IT  |  | Total Hours =10  |
|------|---|--|--|
|      | Specific Learning Outcome   | Integrating Disciplines  | Topics   |
|      | <p><b>Expository Writing Focus:</b></p> <ol style="list-style-type: none"> <li>1. To use Advanced grammar for, sentence structure, and writing persuasive essays and case reports with medical evidence.</li> <li>2. To write full-length review articles and case studies.</li> </ol> <p><b>IT Integration:</b></p> <p><b>IT Skills:</b></p> <ol style="list-style-type: none"> <li>3. To use Excel &amp; SPSS for Making tables, graphs, pie charts of medical data</li> <li>4. To use AI Tools for creating professional presentations.</li> </ol> <p><b>Writing Application:</b></p> <ol style="list-style-type: none"> <li>5. Learn to use tools (e.g., Excel) &amp; SPSS for making managing patient data.</li> <li>6. To create clear, visually appealing presentations for research projects using AI tools.</li> </ol> | <p style="text-align: center;">PERLS,<br/>Pharmacology,<br/>Community<br/>Medicine, Pathology,<br/>Forensic Medicine</p> | <ul style="list-style-type: none"> <li>• Writing essays and case reports with differential diagnosis</li> <li>• Introduction to Excel &amp; SPSS for making tables, graphs, pie charts of medical data</li> <li>• Making Presentations with AI tools.</li> </ul> |



**University of  
Health Sciences  
Lahore**



**Department of Medical  
Education & International  
Linkages**

*Innovating & Strategizing  
Healthcare Academia*





Volume:03

# STUDENT



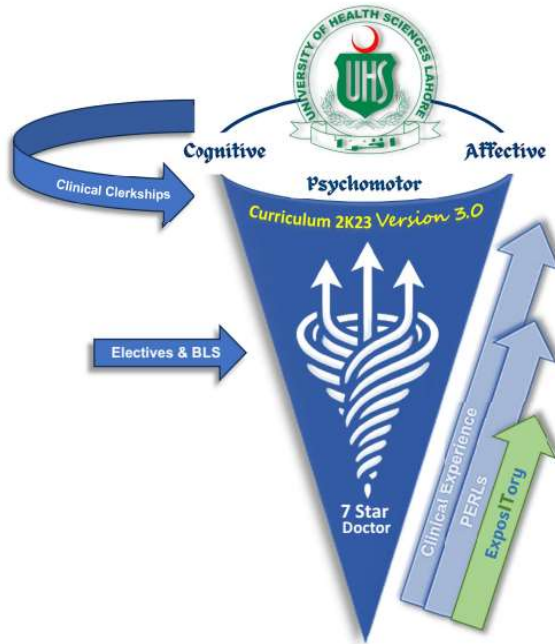
university of  
Health Sciences  
Lahore

# Journal





## Curriculum 2K23 Version 3.0



### MODULE: FOUNDATION II & EBM

DATE FROM: \_\_\_\_\_

DATE TO: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_



|  |  |
|--|--|
| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| Create a case report detailing the application of EBP to a specific disease management scenario, including references to the literature. |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |

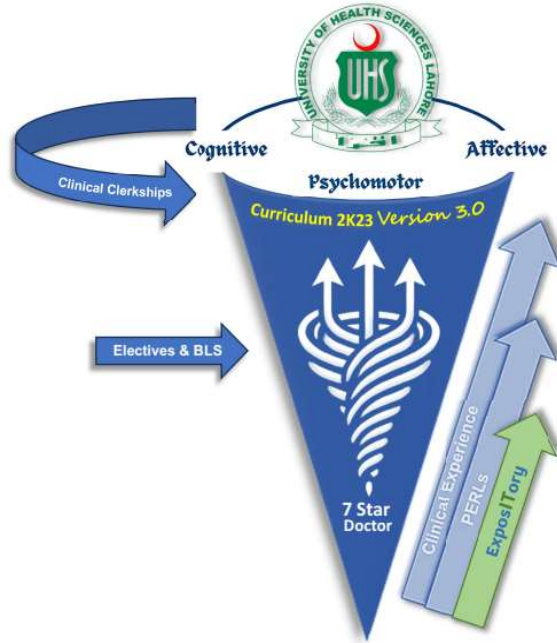
|   |  |
|---|--|
| <b>Roll No:</b>   |  |
| <b>Assignment Topic:</b>  |  |
| <b>Date:</b>  |  |
| Poster Submission of a medical error case, including both root cause analysis and a Swiss Cheese Model diagram that illustrates the alignment of system failures – along with proposed recommendations. |  |
|   |  |
| <b>Facilitator Remarks:</b>   |  |



|  |  |
|--|--|
| <b>Roll No:</b>                          |  |
| <b>Assignment Topic:</b>                 |  |
| <b>Date:</b>                             |  |
| <b>Mentoring Session V Key decisions</b> |  |
|  |  |
| <b>Facilitator<br/>Remarks:</b>          |  |



## Curriculum 2K23 Version 3.0



### MODULE: GENERAL & CLINICAL PHARMACOLOGY

DATE FROM: \_\_\_\_\_

DATE TO: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_



|  |  |
|--|--|
| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| Develop and submit personal social media guidelines that reflect ethical use in professional and medical contexts. |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |

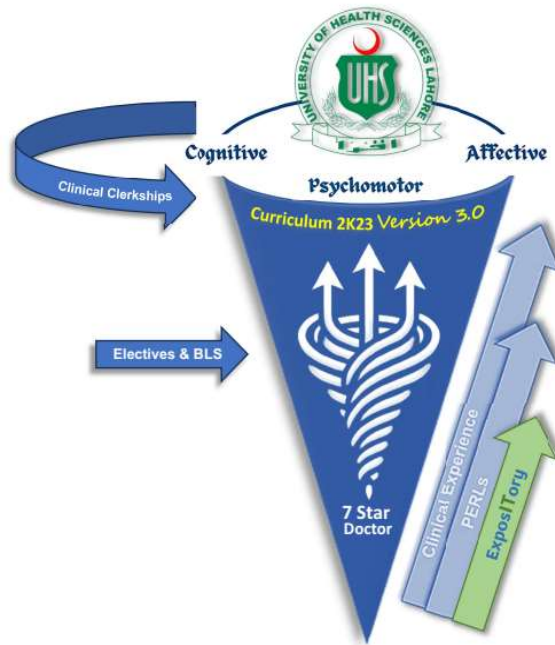


|  |  |
|--|--|
| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| Submit a literature review summary identifying key gaps in the research. |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |

|  |  |
|--|--|
| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| Develop and submit a code of conduct for the responsible use of AI tools in research, focusing on ethical issues such as bias, data privacy, informed consent, and transparency. |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |



## Curriculum 2K23 Version 3.0



### MODULE: HEMATOPOETIC, IMMUNITY & TRANSPLANT

DATE FROM: \_\_\_\_\_

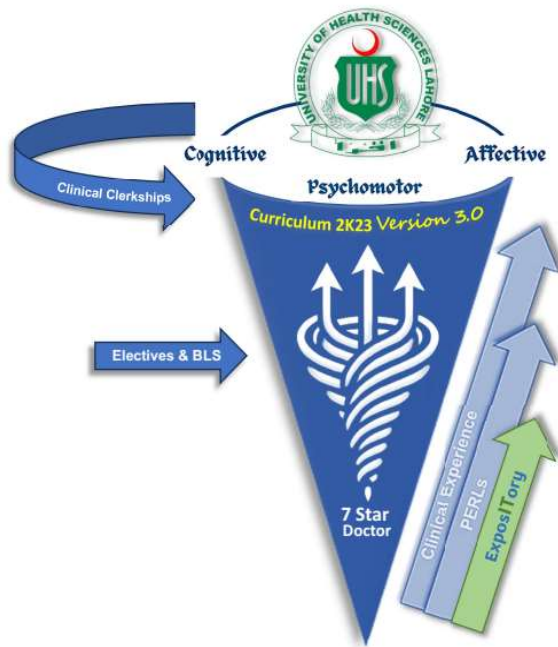
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|--|--|
| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| <p>Reflective entry on a clinical case where confidentiality was maintained, detailing the challenges and how they were addressed.</p> |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |



## Curriculum 2K23 Version 3.0



### MODULE: FORENSIC MEDICINE & TOXICOLOGY-I

DATE FROM: \_\_\_\_\_

DATE TO: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_





|  |  |
|--|--|
| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| Review and submit the Patient Information Sheet/ Informed Consent Sheet of your College IRB and propose any improvement if needed. |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |

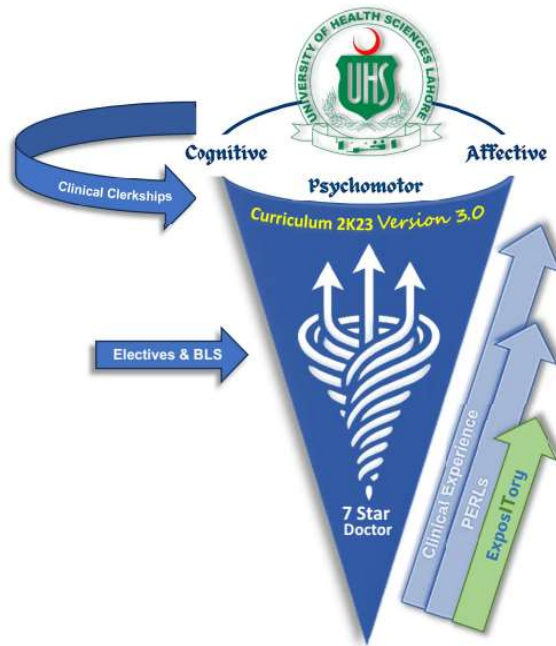
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| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| Write a Class activity report with assigned roles taken by each group member. Critically evaluate the challenges observed with proposed recommendations. |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |

|  |  |
|--|--|
| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| Review and submit the Patient Information Sheet/ Informed Consent Sheet of your College IRB and propose any improvement if needed. |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |





## Curriculum 2K23 Version 3.0



### MODULE: MUSCULOSKELETAL & LOCOMOTION-II

DATE FROM: \_\_\_\_\_

DATE TO: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

|   |  |
|---|--|
| <b>Roll No:</b>   |  |
| <b>Assignment Topic:</b>  |  |
| <b>Date:</b>  |  |
| Evidence of submitted Research Problem to assigned Research Mentor. |  |
|   |  |
| <b>Facilitator Remarks:</b>   |  |

|                          |  |
|--------------------------|--|
| <b>Roll No:</b>          |  |
| <b>Assignment Topic:</b> |  |
| <b>Date:</b>             |  |

Submit a reflective essay on a clinical experience where you applied these skills to manage stress, handle uncertainty, and make clinical decisions, proposing strategies to develop your adaptability further.

|                             |  |
|-----------------------------|--|
| <b>Facilitator Remarks:</b> |  |
|-----------------------------|--|

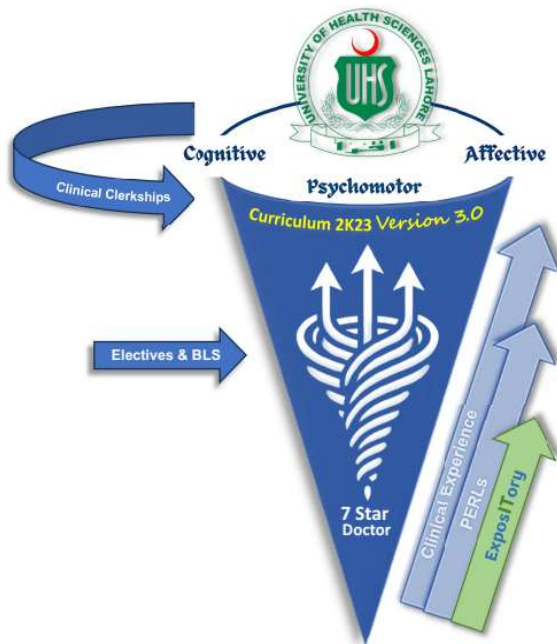
|  |  |
|--|--|
| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| Develop an Informed consent Sheet for patients undergoing rehabilitation after trauma. |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |



|   |  |
|---|--|
| <b>Roll No:</b>   |  |
| <b>Assignment Topic:</b>  |  |
| <b>Date:</b>  |  |
| Propose an innovative solution that could address the gap or improve patient care, with a focus on how entrepreneurial thinking can be applied. |  |
|   |  |
| <b>Facilitator Remarks:</b>   |  |



## Curriculum 2K23 Version 3.0



### MODULE: INFECTIOUS DISEASES

DATE FROM: \_\_\_\_\_

DATE TO: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

|                          |  |
|--------------------------|--|
| <b>Roll No:</b>          |  |
| <b>Assignment Topic:</b> |  |
| <b>Date:</b>             |  |

Make a public awareness poster on infection control.

|  |  |
|--|--|
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|                             |  |
|-----------------------------|--|
| <b>Facilitator Remarks:</b> |  |
|-----------------------------|--|



|   |  |
|---|--|
| <b>Roll No:</b>   |  |
| <b>Assignment Topic:</b>  |  |
| <b>Date:</b>  |  |
| Evidence of submitted research hypothesis/question to assigned Research Mentor. |  |
|   |  |
| <b>Facilitator Remarks:</b>   |  |

|  |  |
|--|--|
| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| <p>Submit a summary of your progress from your last mentoring session, including feedback, areas identified for improvement, and the action plan you developed with your mentor to enhance your professional growth. Submit a brief reflection on an infection control practice you observed during your</p> |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |



## Curriculum 2K23 Version 3.0



### MODULE: NEOPLASIA

DATE FROM: \_\_\_\_\_

DATE TO: \_\_\_\_\_

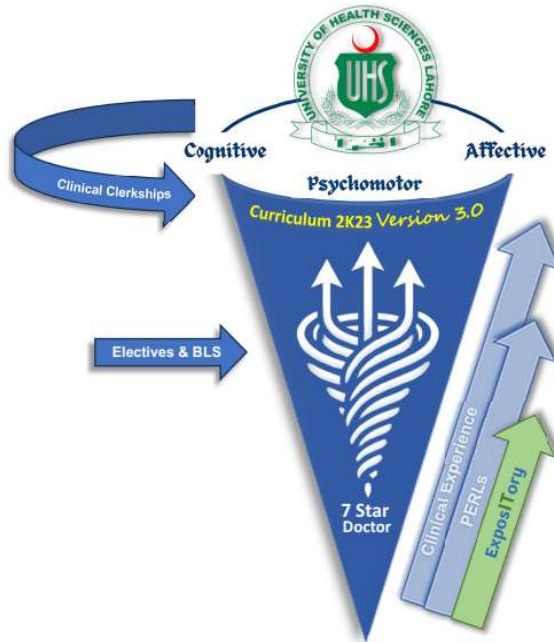
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|---|--|
| <b>Roll No:</b>                                       |  |
| <b>Assignment Topic:</b>                              |  |
| <b>Date:</b>  |  |
| Submit your hospital Protocol for Do-Not-Resuscitate. |  |
|   |  |
| <b>Facilitator Remarks:</b>                           |  |





## Curriculum 2K23 Version 3.0



### MODULE: CARDIOVASCULAR-II

DATE FROM: \_\_\_\_\_

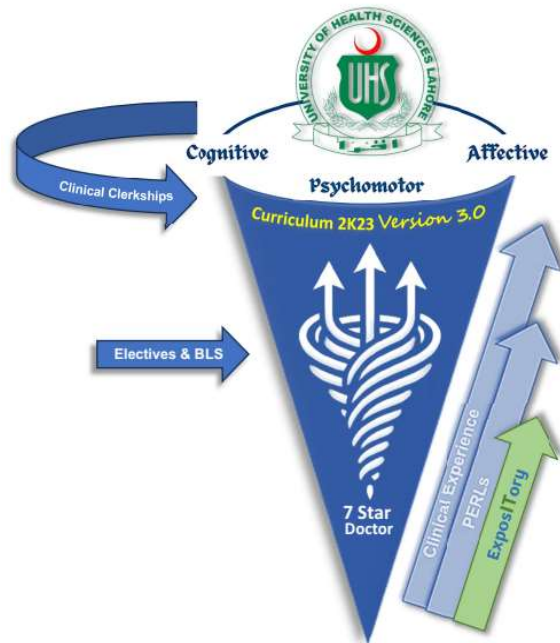
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|---|--|
| <b>Roll No:</b>   |  |
| <b>Assignment Topic:</b>  |  |
| <b>Date:</b>  |  |
| Evidence of submitting Research population selection and size calculation to Research Mentor. |  |
|   |  |
| <b>Facilitator Remarks:</b>   |  |



## Curriculum 2K23 Version 3.0



### MODULE: RESPIRATORY-II

DATE FROM: \_\_\_\_\_

DATE TO: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

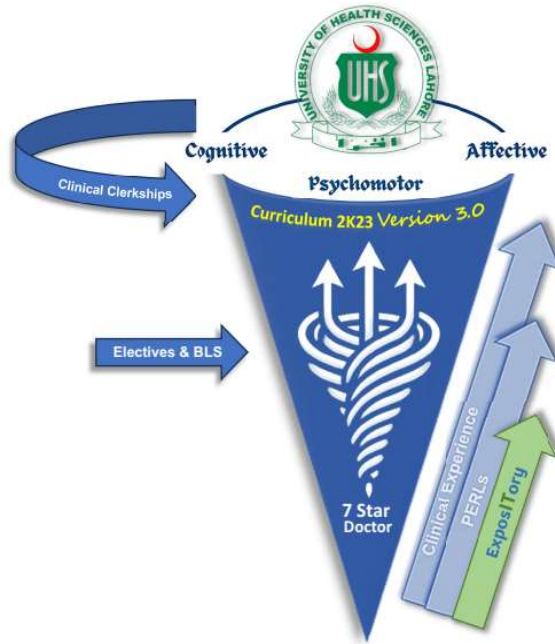
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| <b>Roll No:</b>   |  |
| <b>Assignment Topic:</b>  |  |
| <b>Date:</b>  |  |
| Evidence of submitting Research population selection and size calculation to Research Mentor. |  |
|   |  |
| <b>Facilitator Remarks:</b>   |  |



|  |  |
|--|--|
| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| <p>As a team, create a simple poster or video presentation on how you managed team dynamics to achieve project goals. Focus on key takeaways and provide basic recommendations for effective team leadership in healthcare settings.</p> |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |



## Curriculum 2K23 Version 3.0



### MODULE: COMMUNITY MEDICINE & FAMILY HEALTH-I

DATE FROM: \_\_\_\_\_

DATE TO: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

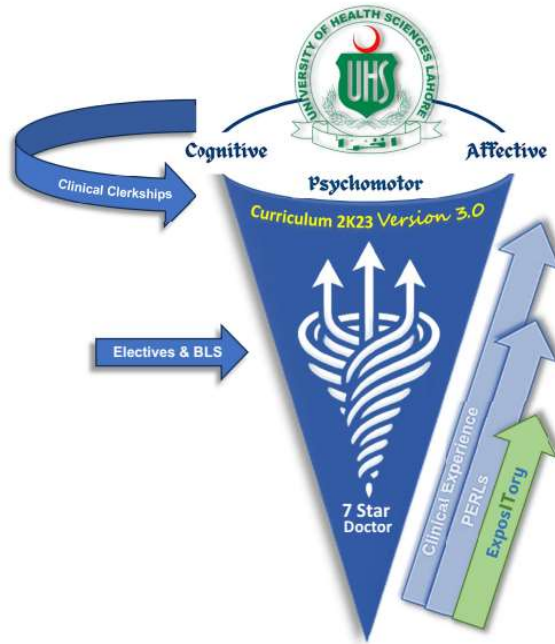
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|--|--|
| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| <p>Create a basic plan to distribute a limited supply of healthcare resources (e.g., vaccines, beds, or medications) in a community clinic. Explain how you would ensure fair treatment for everyone, especially vulnerable patients, and briefly discuss the ethical reasons behind your choices.</p> |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |



|   |  |
|---|--|
| <b>Roll No:</b>   |  |
| <b>Assignment Topic:</b>  |  |
| <b>Date:</b>  |  |
| 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. |  |
|   |  |
| <b>Facilitator Remarks:</b>   |  |



## Curriculum 2K23 Version 3.0



### MODULE: Expository Writing III & Data Management IT Skills

DATE FROM: \_\_\_\_\_

DATE TO: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

|  |                             |
|--|-----------------------------|
| <b>Roll No:</b>  |                             |
| <b>Assignment Topic:</b>   | Persuasive Essay Submission |
| <b>Date:</b>   |                             |
| Submit essays that showcase advanced grammar and persuasive writing techniques. (Include a focus on building logical arguments supported by medical evidence.) |                             |
|  |                             |
| <b>Facilitator Remarks:</b>  |                             |

|   |   |
|---|---|
| <b>Roll No:</b>   |   |
| <b>Assignment Topic:</b>  | Case Report with Differential Diagnosis |
| <b>Date:</b>  |   |
| <p>Write and include a detailed case report that demonstrates critical thinking and differential diagnosis. The report should reflect the integration of clinical knowledge with effective writing practices.</p> |   |
|   |   |
| <b>Facilitator Remarks:</b>   |   |

|   |                            |
|---|----------------------------|
| <b>Roll No:</b>   |                            |
| <b>Assignment Topic:</b>  | Full-length Review Article |
| <b>Date:</b>  |                            |
| Write a comprehensive review article on a relevant medical topic. Include drafts and revisions to show the progression of work and the application of feedback. |                            |
|   |                            |
| <b>Facilitator Remarks:</b>   |                            |

|  |  |
|--|--|
| <b>Roll No:</b>  |  |
| <b>Assignment Topic:</b>   |  |
| <b>Date:</b>   |  |
| Attach reports showcasing the use of Excel and SPSS for creating tables, graphs, and pie charts from a set of medical data. Ensure that the report demonstrates correct data handling and visual representation. |  |
|  |  |
| <b>Facilitator Remarks:</b>  |  |

# Skill Acquisition Workshops



University of Health Sciences  
Lahore



**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 <sup>st</sup> Year / 2 <sup>nd</sup> Year | 2 days   | Eligibility requirement for appearing in the 4 <sup>th</sup> Professional Examination      |
| 2.      | Advanced Life Support              | 3 <sup>rd</sup> Year / 4 <sup>th</sup> Year | 1 day    | Eligibility requirement for appearing in the Surgical Clerkship examination                |
| 3.      | Cardiac First Response             | 3 <sup>rd</sup> Year / 4 <sup>th</sup> Year | 1 day    | Eligibility requirement for appearing in the Medicine Clerkship examination                |
| 4.      | Trauma first responders            | 3 <sup>rd</sup> Year / 4 <sup>th</sup> Year | 1 day    | Eligibility requirement for appearing in the Surgical Clerkship examination                |
| 5.      | Emergency Neonatal Resuscitation   | 3 <sup>rd</sup> Year / 4 <sup>th</sup> Year | 1 day    | Eligibility requirement for appearing in the Pediatrics Clerkship examination              |
| 6.      | Emergency Obstetrics Resuscitation | 3 <sup>rd</sup> Year / 4 <sup>th</sup> Year | 1 day    | Eligibility requirement for appearing in the Gynecology / Obstetrics Clerkship Examination |



C2K23

ACADEMIC  
CALENDER

V:3.0

**MODULAR INTEGRATED CURRICULUM 2K23 VERSION 3.0, VOLUME-03**

**YEAR-III PLANNER**

| BLOCK                        | BLOCK-07                             |   |   |   |   |   |   | BLOCK-08                           |   |    |    |    |    |    |                                    |                                      |    |    | BLOCK-09 |    |    |                                    |                      |    |    |    |    |    |                   |                   |                  |    |    |    |    |  |  |                   |
|------------------------------|--------------------------------------|---|---|---|---|---|---|------------------------------------|---|----|----|----|----|----|------------------------------------|--------------------------------------|----|----|----------|----|----|------------------------------------|----------------------|----|----|----|----|----|-------------------|-------------------|------------------|----|----|----|----|--|--|-------------------|
| WEEKS                        | 1                                    | 2 | 3 | 4 | 5 | 6 | 7 | 8                                  | 9 | 10 | 11 | 12 | 13 | 14 | 15                                 | 16                                   | 17 | 18 | 19       | 20 | 21 | 22                                 | 23                   | 24 | 25 | 26 | 27 | 28 | 29                | 30                | 31               | 32 | 33 | 34 | 35 |  |  |                   |
| <b>MODULES &amp; SPIRALS</b> | Foundation-2 & EBM                   |   |   |   |   |   |   | CIA Expository, PERLs              |   |    |    |    |    |    | <b>Block Exam</b>                  | Musculoskeletal & Locomotion-2       |    |    |          |    |    |                                    | CIA Expository PERLs |    |    |    |    |    |                   | <b>Block Exam</b> | Cardiovascular-2 |    |    |    |    |  |  | <b>Block Exam</b> |
|                              | General & Clinical Pharmacology      |   |   |   |   |   |   | Infectious Diseases                |   |    |    |    |    |    |                                    | Respiratory-2                        |    |    |          |    |    |                                    |                      |    |    |    |    |    |                   |                   |                  |    |    |    |    |  |  |                   |
|                              | Haematopoetic, Immunity & Transplant |   |   |   |   |   |   | Neoplasia                          |   |    |    |    |    |    |                                    | Community Medicine & Family Health-1 |    |    |          |    |    |                                    |                      |    |    |    |    |    |                   |                   |                  |    |    |    |    |  |  |                   |
|                              | Forensic Medicine & Toxicology-1     |   |   |   |   |   |   | Forensic Medicine & Toxicology-2   |   |    |    |    |    |    | Forensic Medicine & Toxicology-3   |                                      |    |    |          |    |    | CIA Expository PERLs               |                      |    |    |    |    |    | <b>Block Exam</b> |                   |                  |    |    |    |    |  |  |                   |
|                              | Continuous Internal Assessment       |   |   |   |   |   |   | Continuous Internal Assessment     |   |    |    |    |    |    | Continuous Internal Assessment     |                                      |    |    |          |    |    | Continuous Internal Assessment     |                      |    |    |    |    |    |                   |                   |                  |    |    |    |    |  |  |                   |
|                              | PERLs Expository C-FRC (Rotations)   |   |   |   |   |   |   | PERLs Expository C-FRC (Rotations) |   |    |    |    |    |    | PERLs Expository C-FRC (Rotations) |                                      |    |    |          |    |    | PERLs Expository C-FRC (Rotations) |                      |    |    |    |    |    |                   |                   |                  |    |    |    |    |  |  |                   |

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

| WEEKS      |    |    |    |                       |    |    |    |    |                         |    |    |    |    |    |  |  |
|------------|----|----|----|-----------------------|----|----|----|----|-------------------------|----|----|----|----|----|--|--|
| 36         | 37 | 38 | 39 | 40                    | 41 | 42 | 43 | 44 | 45                      | 46 | 47 | 48 | 49 | 50 |  |  |
| Prep Leave |    |    |    | Professional Exam UHS |    |    |    |    | Summer and Winter Break |    |    |    |    |    |  |  |



University of Health  
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