

**RYK Medical College**

Department of Medical Education



**Study Guide M.B.B.S Second Professional**

**Module 11 (Block 6): Inflammation - 1**

**Academic Year 2025/26**

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| **TABLE OF CONTENTS** | **PAGE #** |
| Title page | ------- |
| Table of contents | 01 |
| List of abbreviations | 02 |
| Curriculum frame work | 03 |
| Introduction to study guide | 04 |
| Introduction to module, Themes & Clinical relevance | 05 |
| Year 2, Module, Mentoring, TBL, PBL & Planning committees/Coordinators | 06 |
| Teaching methodologies/strategies, Teaching faculty & venues | 07 |
| Time table | 08-09 |
| Distribution and duration of teaching activities | 10 |
| The module rational, aims & implementation TOR | 11 |
| Module outcomes | 12 |
| Specific Learning objectives, course contents and codes | 12-14 |
| Operational definitions | 15-17 |
| Assessment policy & table of specifications | 18-19 |
| Assessment schedule & OSPE/OSCE/OSVE and practical scheme | 20 |
| Assessment tools & Sample questions | 21 |
| The books and learning resources | 22 |

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| LIST OF ABBREVIATIONS | | | |
| A | Anatomy | **HCL** | Hydrochloric acid |
| ABG | Arterial blood gas | **H&E** | Hematoxylin and eosin |
| Ag | Aging | **HL** | Hematopoietic and lymphatic |
| AKI | Acute kidney injury | **HMP** | Hexose monophosphate |
| ALT | Alanine transaminase | **HNSS** | Head & neck special senses |
| AMP | Adenosine Monophosphate | **ICF** | Intra cellular fluid |
| ANS | Autonomic nervous system | **IL** | Interleukin |
| AST | Aspartate transaminase | **IN** | Inflammation |
| AV | Atrioventricular | **INR** | International normalized ratio |
| B | Biochemistry | **IUD** | Intrauterine device |
| Bhs | Behavioral sciences | **IUGR** | Intra uterine growth restriction |
| C | Civics | **JVP** | Jugular venous pressure |
| CBC | Complete blood count | **LDH** | Lactate dehydrogenase |
| C-FRC | Clinical-Foundation Rotation Clerkship | **M** | Medicine |
| CK | Creatine kinase | **MALT** | Mucosa associated lymphoid tissue |
| CM | Community medicine | **MCH** | Mean corpuscular hematocrit |
| CNS | Central nervous system | **MCV** | Mean corpuscular volume |
| CO | Carbon monoxide | **MRI** | Magnetic resonance imaging |
| CO2 | Carbon dioxide | **MS** | Musculoskeletal |
| COPD | Chronic obstructive pulmonary disease | **MSD** | Musculoskeletal disorders |
| COX | Cyclooxygenase | **NEAA** | Non essential amino acids |
| CPR | Cardio pulmonary resuscitation | **NMJ** | Neuromuscular junction |
| CT | Computed tomography | **NS** | neurosciences |
| CV | Cardiovascular | **O** | Ophthalmology |
| CVA | Cerebral vascular accident | **Or** | Orientation |
| DALY | Disability adjusted life year | **P** | Physiology |
| DCMLS | Dorsal column medial lemniscus system | **Pa** | Pathology |
| DLC | Differential leukocyte count | **PAF** | Platelet activating factor |
| DNA | Deoxy ribonucleic acid | **PBL** | Problem based learning |
| ECF | Extra cellular fluid | **PCR** | Polymerase chain reaction |
| ECG | Electrocardiography | **PDGF** | Platelet derived growth factor |
| ECP | Emergency contraceptive pill | **Pe** | Pediatrics |
| EEG | Electroencephalogram | **PEM** | Protein energy malnutrition |
| EnR | Endocrinology and reproduction | **PERLs** | Professio Ethic Research Leadership |
| ENT | Ear Nose Throat | **PH** | Pharmacology |
| ER | Emergency room | **PNS** | Peripheral nervous system |
| F | Foundation | **Psy** | Psychiatry |
| FEV1 | Forced expiratory volume 1 | **PVC** | Premature ventricular contraction |
| FM | Forensic medicine | **QALY** | Quality adjusted life years |
| FVC | Forced vital capacity | **QI** | Quran & Islamiat |
| GFR | Glomerular filtration rate | **R** | Renal |
| GIT | Gastrointestinal tract | **Ra** | Radiology |
| GMP | Guanosine monophosphate | **RBCs** | Red blood cells |
| GO | Gynecology and obstetrics | **SA** | Sinoatrial |
| RDA | Recommended dietary allowance | **TCA** | Tricarboxylic acid cycle |
| Re | Respiratory | **TNA** | Tumor necrosis factor |
| RFLP | Restriction fragment length polymorphism | **USG** | Ultrasonography |
| RMP | Resting membrane potential | **UTI** | Urinary tract infection |
| RNA | Ribonucleic acid | **WBCs** | White blood cells |
| S | Surgery |  |  |

**CURRICULUM FRAMEWORK**

The University of Health Sciences Lahore has designed a five year modular framework

For integrated curriculum based on specific systems, clinical clerkships, Quran and

professionalism.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Curriculum framework** | | | | | | |
| **Year 01** | **Modules** | **Block 1** | | | **Block 2** | **Block 3** |
| * Foundation -1 * Hematopoietic & Lymphatic | | | * Musculoskeletal and locomotion - 1 | * Cardiovascular - * Respiratory - 1 |
| PERLS-1, Quran-1, Islamiat & Civics, Pakistan Studies, English | | | | |
| C-FRC -1(Clinical-Foundation, Rotation, Clerkship) | | | | |
|  | | | | | | |
| **Year 02** | **Modules** | **Block 4** | | | **Block 5** | **Block 6** |
| * GIT & Nutrition – * Renal – 1 | | | * Endocrinology & Reproduction – 1 * Head & Neck, Special senses | * Neurosciences –1 * Inflammation - 1 |
| PERLS-2, Quran Pak-2, Islamiat, Civics & Pakistan Studies, English | | | | |
| C-FRC -2(Clinical-Foundation, Rotation, Clerkship) | | | | |
|  | | | | | | |
| **Year 03** | **Modules** | **Block 7** | | **Block 8** | | **Block 9** |
| * Foundation – 2 * Infectious Diseases * Neoplasia * Musculoskeletal & Locomotion - 2 | | * Hematopoietic, Immunity & Transplant * Cardiovascular - 2 | | * Respiratory – 2 * Forensic Medicine * Community Medicine & Family Health -1 |
| PERLS - 3, Quran Pak – 3 | | | | |
| C-FRC -3 (Clinical-Foundation, Rotation, Clerkship) | | | | |
|  |  |  | | | | |
| **Year 04** | **Modules** | **Block 10** | **Block 11** | | | **Block 12** |
| * Renal – 2 * Endocrinology & Reproduction – 2 * GIT & Nutrition–2 * Neurosciences - 2 | * Maternal & Child Health * Ophthalmology * Otorhinolaryngology | | | * Community Medicine & Family Health -2 * Psychiatry & Behavioral Sciences |
| PERLS – 4, Quran Pak – 4, Electives & BLS Workshops | | | | |
| C-FRC - 4 (Clinical-Foundation, Rotation, Clerkship) | | | | |
|  | | | | | | |
| **Year 05** | **Modules** | * Gynecology & Obstetrics * Pediatrics * Medicine & Allied * Surgery & Allied | | | | |
| C-FRC -5 (Clinical-Foundation, Rotation, Clerkship) | | | | |

**INTRODUCTION TO STUDY GUIDE**

**WHAT IS A STUDY GUIDE?**

This study guide is prepared for the students of 2nd year MBBS admitted in RYKMC for session 2025-26 affiliated with University of Health Sciences Lahore (UHS). The learners (2nd year MBBS students) will be able to:-

* Organize the learning program module for the session 2025-26.
* Manage their studies as per guidance provided throughout the module.

Learn the assessment tools, rules & regulations governing the module.

**THE STUDY GUIDE:**

* Communicates information on organization and management of the module. This will help the student to contact the right person in case of any difficulty.
* Defines the objectives which are expected to be achieved at the end of the module.
* Identifies the learning strategies such as lectures, small group teachings, clinical skills, demonstration, tutorial and case based learning that will be implemented to achieve the module objectives.
* Provides a list of learning resources such as books, computer assisted learning programs, web- links, and journals for students to consult in order to maximize their learning.
* Highlights information on the contribution of continuous and Term examinations on the student’s overall performance.
* Includes information on the assessment methods that will be held to determine every student’s achievement of objectives.
* Focuses on information pertaining to examination policy, rules and regulations.

**MODULE INTRODUCTION**

**Module/ course Name:** Inflammation 1 (block 6)

**Block duration:** Nine (09) weeks

**Module duration**: Two (02) weeks

**Year:** 2nd Year MBBS

**Semester:** Two (2)

**Start Date:** ---/---/2026

**End Date:** ---/---/2026

**Departments** = Anatomy, Physiology, Biochemistry, pharmacology, pathology, community medicine, clinical skill foundation (hospital), medicine, surgery, gynecology & obstetrics, pediatrics, behavioral sciences, Quran/Islamiat & Pakistan studies.

**Daily timings:** 8:00 AM to 4:00 PM

**No. of hours:** 8 hours per day (20 min tea break & 40 min prayer/lunch break)

**Teaching hours:** 07 per day/35 hours per week

**Test dates: ---/---/2026, ---/---/2026, ---/---/2026**

**End module MCQ exam:**  ---/---/2026 (Theory), ---/---/2026 (OSPE, OSCE, OSVE etc)

**Interactive/ active learning session details**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subjects** | **TBL** | **PBL** | **CBL** | **SGD** | **Tutorial** | **Demo** |
| **Anatomy** | **1** | **×** | **×** | **×** | × | **1** |
| **Physiology** | **×** | **×** | **×** | **×** | **×** | **×** |
| **Biochemistry** | **×** | **×** | **×** | **×** | **×** | **×** |
| **Pharmacology** | **×** | **×** | **×** | **1** | **×** | **×** |
| **Pathology** | **×** | **×** | **×** | **1** | **×** | **×** |
| **Com medicine** | **×** | **×** | **×** | **×** | **×** | **×** |
| **Behav sciences** | **×** | **×** | **×** | **×** | **×** | **×** |

**Module themes**

• Role of inflammation in embryology

• Inflammatory response and role of leukocytes

• Eicosanoids

• Acute inflammation

• Chronic inflammation

• Cell repair

• Prostaglandin analogues

• Anti-inflammatory drugs

• Steroidal anti-inflammatory drugs

• Non-steroidal anti-inflammatory drugs

• COX- inhibitors

• Histamines and antihistamines

• Communicable diseases and their prevention

• Psychological stress and inflammation

• Aging

**Clinical relevance**

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

**YEAR 2 & MODULE COMMITTEES**

**Year 2 committee**

* Prof Dr Tariq M Rehan (HOD DME) (Principal)
* Prof Dr Tehseen Iqbal (HOD Physiology) (Vice. Principal)
* Prof Dr Ghaffar Ansari (HOD Anatomy), Prof Dr Zia ur Rehman Alvi
* Prof Dr Dr Shafqat Nazeer (HOD Biochemistry)
* Prof Dr Abdul Hakeem (HOD Pathology)
* Prof Dr M Amir Rafique (HOD Pharmacology)
* Prof Dr Javed Akhter (HOD Community Medicine)
* Prof Dr M saleem (HOD Forensic medicine)

**Module committee**

* Dr Raja Faisal Zulfiqar (Anatomy)
* Dr Rahil Adil (Physiology)
* Dr khalida anwar (Biochemistry)
* Dr Naqeeb (Pathology)
* Dr Ali Hussain (community medicine)

**PBL, TBL & CBL Committee**

* Prof Dr Tariq M Rehan (HOD DME) (Principal)
* Prof Dr Tehseen Iqbal (HOD Physiology) (Vice. Principal)
* Prof Dr Ghaffar Ansari (HOD Anatomy), Prof Dr Zia ur Rehman Alvi
* Prof Dr Dr Shafqat Nazeer (HOD Biochemistry

**Mentoring committee**

* Prof Dr Abdul Hakeem (HOD Pathology)
* Prof Dr M Amir Rafique (HOD Pharmacology)
* Prof Dr Javed Akhter (HOD Community Medicine)
* Prof Dr M saleem (HOD Forensic medicine)

**Module coordinator:**

* Anatomy: Dr Raja Faisal Zulfiqar
* Biochemistry: Dr Dost M kalhoro
* Physiology: Dr Sadia Javiad
* Pharmacology: Dr Tesneem Yasmin
* Pathology: Dr Syed Naqeeb
* Community medicine: Dr Ali Hussain
* Medicine: Dr Abdul Waheed
* Surgery: Dr Jahangeer
* Pediatrics: Dr Masood
* Gynecology & obstetrics: Dr Farhat Yasmeen
* Behavioral sciences: Dr Mehwish Adnan

**Planning committee**

Department of medical education

**TEACHING FACULTY**

* Anatomy: Prof Dr Ghaffar Ansari, Prof Dr Zia Ur Rehman Alvi, Dr Raja Faisal Zulfiqar
* Biochemistry: Prof Dr Shafqat Nazir, Dr Khalida Anwar, Dr Dost M kalhoro
* Physiology: Prof Dr Tehseen Iqbal, Dr Rahila Adil, Dr Sadia Javaid
* Pharmacology: M Amir Rafique
* Pathology: Prof Dr Abdul Hakeem, Dr Syed Naqeeb Ali
* Community medicine: Dr Ali Hussain,
* Medicine: Prof Dr Akhter Masood
* Surgery: Prof Dr Tariq Mehmood Rehan
* Pediatrics: Prof Dr Hafiz M Tayyab
* Gynecology & obstetrics: Assoc Prof Dr Iffat Yasmin
* Behavioral sciences: Dr Mehwish Adnan
* Holy Quran & Islamiyat: Miss Kanwal
* Pakistan studies: Mr Jaffar
* Civics: Dr A Majid
* PERLs: Dr M Tariq Karim
* English: Miss Anum

**TEACHING METHODOLOGIES/STRATEGIES**

* Large group interactive sessions
* Tutorials
* Demonstrations
* Lab practical
* Simulations (Skill lab)
* Team based learning
* Case based learning
* Problem based learning
* Small group discussions

|  |  |  |  |
| --- | --- | --- | --- |
| **VENUE FOUNDATION MODULE** | | | |
| **GROUPING** | **LECTURES** | **PBL/CBL** | **SMALL GROUP DISCUSSION** |
| **Group A** (1-33)  **Group B** (34-66)  **Group C** 67-100) | Anatomy → LH - 05  Physiology → LH - 02  Biochemistry → LH - 01  Pathology → LH 04  Pharmacology → LH 03  Com medicine → LH 03  Rest of all → LH 01 | Anatomy → DR - 05  Physio → DR - 02  Biochem → DR - 01  Patho → DR 04  Pharma → DR 03  Com med → DR 06 | SGD room  2nd floor |
| **TEAM BASED LEARNING** |
| * Multi - purpose hall * Skill lab * Corresponding lab |
| **(PRACTICALS)** |
| Corresponding labs |

**TIME TABLES**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(Week 1) Block 6 , Module 11: Inflammation: / /2025-26 to / /2025-26** | | | | | | | | |
| **Days** | **8:00 am**  **9:00 am** | **9:00 am**  **10:00 am** | **10:00**  **10:20 am** | **10:20 am**  **11:20 am** | **11:20 am**  **12:20 pm** | **12:20 pm**  **01:20 pm** | **01:20**  **02:00 pm** | **02:00 pm - 4:00 pm** |
| **Monday** | **Anatomy(H)**  Dr ZR.Alvi  IN-A-002 (a) | **Pharmacology**  Dr Zameer AS  IN-Ph-001 | **Tea break** | **Pathology**  Dr Hakeem  IN-Pa-001 (a) | **Community Medicine**  Dr Ali Hussain  IN-CM-001 (a) | **Pakistan studies**  Mr Jaffar  Ps-7  Health Problems | **Prayer & Lunch break** | Group A (**skill lab 1**)  Group B (**histology lab-1**)  Group C (**CSF-1**) |
| **Tuesday** | **Anatomy** **(E&PND)**  Dr G.Ansari  IN-A-001 (a) | **Pharmacology**  Dr Zameer AS  IN-Ph-002 | **Pathology**  Dr Naqeeb  IN-Pa-001(b) | **Biochemistry**  Dr Shafqat.N  IN-B-001 | **Civics**  Dr A Majid  Civ-12 (a)  Sovereignty | **Group A** Anatomy (Demo)  **Group B & C (SDL)** |
| **Wednesday** | **Anatomy (E&PND)**  Dr G.Ansari  IN-A-001 (b) | **Pharmacology**  Dr Zameer AS  IN-Ph-003 | **Pathology**  Dr Hakeem  IN-Pa-001 (c) | **PERLs**  Dr M Tariq K  PERLs-2-21 | **English 2**  Miss anum | Group A (**CSF-1**)  Group B (**Skill lab 1**)  Group C (**Histology lab-1**) |
| **Thursday** | **Anatomy** **(E&PND)**  Dr G.Ansari  IN-A-001 (c) | **Islamiat**  Miss Kanwal  Is-11  Hukok ul ibad | **Pathology**  Dr Naqeeb  IN-Pa-002 (a) | **Community Medicine**  Dr Ali Hussain  IN-CM-001 (b) | **Pathology**  **Dr Hakeem**  IN-Pa-002 (b) | Group A (**histology lab-1**)  Group B (**CSF-1**)  Group C (**skill lab 1**) |
| **Friday** | **Anatomy(H)**  Dr Faisal.R  IN-A-002 (a) | **Holy Quran**  Dr A Majid  HQ-9 (a)  Nikah-o-Talaq | **Pharmacology**  Dr Zameer AS  IN-Ph-004 | **Pathology**  Dr Naqeeb  IN-Pa-002 (c) | **Behavioral Sciences**  Dr Mehwish A  IN-BhS-001 | **Group B** Anatomy (Demo)  **Group A & C (SDL)** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(Week 2) Block 6 , Module 11: Inflammation: / /2025-26 to / /2025-26** | | | | | | | | |
| **Days** | **8:00 am**  **9:00 am** | **9:00 am**  **10:00 am** | **10:00**  **10:20 am** | **10:20 am**  **11:20 am** | **11:20 am**  **12:20 pm** | **12:20 pm**  **01:20 pm** | **01:20**  **02:00 pm** | **02:00 pm - 4:00 pm** |
| **Monday** | **Pathology**  Dr Hakeem  IN-Pa-003 (a) | **Aging**  Dr Dost M K  IN-Ag-001 | **Tea break** | **Community Medicine**  Dr Ali Hussain  IN-CM-001 (c) | **Pathology**  Dr Naqeeb  IN-Pa-003 (b) | **Pharmacology**  Dr Zameer AS  IN-Ph-005 (a) | **Prayer & Lunch break** | Group A (**Test patho & pharma**)  Group B (**histology lab-2**)  Group C (**Test anatomy**) |
| **Tuesday** | **Pathology**  Dr Hakeem  IN-Pa-003 (c) | **Civics**  Dr A Majid  Civ-12 (b)  Sovereignty | **Holy Quran**  Dr A Majid  HQ-9 (b)  Nikah-o-Talaq | **Pathology**  Dr Naqeeb  IN-Pa-004 (a) | **Pharmacology**  Dr Zameer AS  IN-Ph-005 (b) | Group A (**histology lab-2**)  Group B (**Test anatomy**)  Group C (**Test patho & pharma**) |
| **Wednesday** | **Pathology**  Dr Hakeem  IN-Pa-004 (b) | **PERLs**  Dr M Tariq K  PERLs-2-22 | **Pathology**  Dr Naqeeb  IN-Pa-004 (c) | Group A (**Test anatomy**)  Group B (**Test patho&pharma**)  Group C (**histology lab-2**) | | **Group C** Anatomy (Demo)  **Group A & B (SDL)** |
| **Thursday** | **TBL/PBL/SGD**  Group A (**Anatomy TBL**)  Group B (**pharmacology SGD**)  Group C (**pathology PBL**) | | **TBL/PBL/SGD**  Group A (**pharmacology SGD**)  Group B (**pathology PBL**)  Group C (**Anatomy TBL**) | | **Self directed learning** | Group A (**pathology PBL**)  Group B (**Anatomy TBL**)  Group C (**pharmacology SGD**) |
| **Friday** | **End of module exam** | | **End of module exam** | | | **End of module exam** |

**DISTRIBUTION AND DURATION OF TEACHING ACTIVITIES**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Block 6 , Module 11: Inflammation (01 week & 4 days), (Min recommended hours =31)** | | | | |
| **Subject** | **Hours (Theory)** | **Hours**  **(Practical)** | **No of SGD/TBL**  **PBL/CBL/Demo** | **Total hours** |
| **Anatomy** | 03 E&PND + 02 Histo = 05 | 4 | 4hours (1-TBL &  1 Demo) | **11** |
| **Physiology** | 00 | ----- | ----- | **00** |
| **Biochemistry** | 01 | ----- | ----- | **01** |
| **Pharmacology** | 06 | ----- | 2 hours (1-SGD) | **08** |
| **Pathology** | 12 | ----- | 2 hours (1-PBL) | **14** |
| **Community Medicine** | 03 | ----- | ----- | **03** |
| **Aging** | 01 | ----- | ----- | **01** |
| **Behavioral Sciences** | 01 | ----- | ----- | **01** |
| **PERLs** | 02 | ----- | ----- | **02** |
| **Clinical skill Foundation (CSF)** | ----- | 01=02hrs | ----- | **02** |
| **Skill lab** | ----- | 01=02hrs | ----- | **02** |
| **Holy Quran** | 02 | ----- | ----- | **02** |
| **Islamiat** | 01 | ----- | ----- | **01** |
| **Pakistan studies** | 01 | ----- | ----- | **01** |
| **Civics** | 02 | ----- | ----- | **02** |
| **English 1** | 01 | ----- | ----- | **01** |
| **Self directed learning** | 05 | ----- | ----- | **05** |
| **Class test (1 Anatomy, 1pathology+pharmacology)** | 04  (2hours each) | ----- | ----- | **04** |
| **Total** | **49** | **08** | **08** | **63** |
| **7 hours/day × 9 days = 63 hours** | | | | |

**MODULE RATIONALE**

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

**Aims:**

The aims of the module are to :

* The key concepts of inflammation.
* Skills in application of theories & rules to solve the problems related to inflammatory diseases.
* Develop skills using multiple sources.
* Understand the Mechanism of inflammatory process.
* Gain knowledge about the inflammatory mediators and cells involved in inflammation.

**IMPLEMENTATION TORs**

1. 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 1260.
2. 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.
3. 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.
4. 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.

**MODULE OUTCOMES**

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

**COURSE CONTENTS, CODES & SPECIFIC LEARNING OBJECTIVE**

|  |  |  |  |
| --- | --- | --- | --- |
| **Normal structure (Theory)** | | | |
| **Embryology and post-natal development** | | | |
| **Code** | **Specific learning objectives** | **Discipline** | **Topic** |
| IN-A-001 | Identify role of inflammation in implantation Development of cells involved in acute & chronic inflammation, Development of integumentary system | Embryology | Role of  inflammation in Implantation &  Development of Integumentary  System |
| **Microscopic structure** | | | |
| **Code** | **Specific learning objectives** | **Discipline** | **Topic** |
| IN-A-002 | Discuss the microscopic structure of components involved in inflammation (cells, capillaries). Discuss the histology of integumentary system | Histology | Integumentary  system &  Inflammatory  Response at  Cellular Level |
| **Practical (Histology)** | | | |
| **Code** | **Specific learning objectives** | **Discipline** | **Topic** |
| IN-A-003 | Draw and identify microscopic structure of integumentary system. | Histology | Integumentary  System |
| **Biochemistry (Theory)** | | | |
| **Code** | **Specific learning objectives** | **Discipline** | **Topic** |
| N-B-001 | Explain the biochemical and therapeutic roles of eicosanoids (prostaglandins, leukotrienes, thromboxane  and prostacyclin | Medical  Biochemistry | Eicosanoids |
| **Pathophysiology and pharmacotherapeutics** | | | |
| **Code** | **Specific learning objectives** | **Discipline** | **Topic** |
| IN-Ph-001 | Enumerate prostaglandin analogues, Discuss the clinical use and adverse effect of prostaglandin analogues. | Pharmacology | Prostaglandin  analogues |
| IN-Ph-002 | Enlist anti-inflammatory drugs, Differentiate between steroidal and non-steroidal anti-inflammatory drugs. | Pharmacology | Anti-Inflamma  drugs |
| IN-Ph-003 | Discuss mechanism of action, clinical usage, and adverse effects of steroidal anti-inflammatory drugs. | Pharmacology | Steroidal anti-  Inflamm drugs |
| IN-Ph-004 | Discuss mechanism of action, pharmacological effects, clinical usage, and adverse effects of non-steroidal anti-inflammatory drugs. | Pharmacology | Non-steroidal  anti- Inflamma  drugs (NSAIDs) |
| IN- Ph-005 | Differentiate between selective and non-selective  cyclooxygenase (COX) inhibitors, Differentiate between Aspirin and paracetamol, Classify antihistamines, Discuss the role of histamines and antihistamines in inflammation and allergies, adverse effects and drug interactions. | Pharmacology | COX inhibitors |
| IN-Pa-001 | Define acute inflammation, Enlist stimuli for Acute Inflammation, Recognize microbes, necrotic cells, and foreignsubstances causing acute inflammation.  Identify different components of inflammation, Define necrosis and explain its type with example | Pathology | Acute  inflammation |
| IN-Pa-002 | Discuss the role of vascular and cellular events in acute, Inflammation, Differentiate between transudate and exudates, Classify chemical mediators, Describe the different pathways of synthesis of chemical mediators and their role in clinical practice, Discuss the role of different chemical mediators in acute, inflammation, Describe the different morphological patterns and  outcomes of acute inflammation | Pathology | Process of  acute  inflammation |
| IN-Pa-003 | Define chronic inflammation, Discuss the role of chronic inflammatory cells and mediators in chronic inflammation, Discuss the causes, pathophysiology and morphology of,granulomatous inflammation.  Classify mycobacteria, Explain the pathogenesis, clinical manifestations and lab diagnosis of typical mycobacteria, Explain the pathogenesis, clinical manifestations and lab diagnosis of atypical mycobacteria | Pathology | Chronic  Inflammation |
| IN-Pa-004 | Discuss the concept of Cell Proliferation, the Cell Cycle and Stem Cells in tissue repair, Discuss the role of Growth Factors, receptors, signal transduction and extracellular matrix Involved in Regeneration and Repair, Explain the types of healing along with the steps in scar Formation, Identify the factors that influence the tissue repair, Discuss the complication of wound healing-keloid, Hypertrophy, Scarring | Pathology | Cell Repair |
| **Disease prevention and impact** | | | |
| **Code** | **Specific learning objectives** | **Discipline** | **Topic** |
| IN-CM-  001 | Discuss the mode of transmission of communicable  Diseases, Explain the general concept of prevention of communicable diseases, Discuss the primary, secondary and tertiary prevention of acute and chronic diseases, Discuss the role of immune prophylaxis and chemoprophylaxis in prevention of communicable diseases | Community  Medicine and  Public Health | Communicable  Diseases |
| IN-BhS-001 | Understand the correlation between psychological stress and inflammation | Behavioral  Sciences | Role of stress inInflammation |
| **Aging** | | | |
| **Code** | **Specific learning objectives** | **Discipline** | **Topic** |
| IN-Ag-001 | Explain inflammatory changes and role of leukotriene and cytokines in old age | Biochemistry | Inflammatory  Change,signaling in Aging |
| **Holy Quran (Nikah-o-talaq)** | | | |
| **Code** | **Specific learning objectives** | **Discipline** | **Topic** |
| HQ-9 | i. Basic rulings regarding marriage and divorce  ii. Importance of Nikah and its constituents  iii. Conditions of Nikah and various forms of prohibited/impermissible nikah  iv. Misconception of dowry  v. Talaq and its various forms  vi. Meaning of Khula and its conditions | Islamiat | Nikah & Talaq |
| **Islamiat** | | | |
| **Code** | **Specific learning objectives** | **Discipline** | **Topic** |
| Is-11 | Explain the concept of Hukook-ul-Ibad. | Islamiat | Hukook-ul-ibad |
| **Pakistan studies** | | | |
| **Code** | **Specific learning objectives** | **Discipline** | **Topic** |
| Ps-7 | Describe the social, economic and health problems of the rural population of Pakistan. | Pak studies | Health problems |
| **Civics** | | | |
| **Code** | **Specific learning objectives** | **Discipline** | **Topic** |
| Civics-12 | Define the concept of sovereignty in west, Discuss different kinds of sovereignty, Explain Austin’s concept of sovereignty, Analyze critically Austin’s concept of sovereignty | Civics | Sovereignty |
| **Professionalism, Ethics, Research & Leadership** | | | |
| **Code** | **Specific learning objectives** | **Discipline** | **Topic** |
| PERLs-2-21 | Write a literature review | PERLs | Literature |
| PERLs-2-22 | Make a poster of the literature review | PERLs | Poster |
|  |  |  |  |

**OPERATIONAL DEFINITIONS**

|  |
| --- |
| **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 brain storming buzz group, simulation, role play, and clinical cases can be used.  **Significance of its usage**  Relaxed environment, diverse opinions, Increase attention & motivation. Independence & group skills. Cost effective. Suitable for taking advantage of available |
| **Team Based learning** |
| 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 |
| **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  Students acquire insightful information. Stay abreast with novel advancements in healthcare. |
| **Tutorial** |
| 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 point of view and guide towards 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. |
| **Skill lab** |
| 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. |
| **Lab 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. |
| **Demonstration** |
| 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 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 |
| **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 modeling |
| **Simulation** |
| Person, device or set of conditions, which attempts to present education and evaluation of problems authentically. The student or trainee is required to respond to the problems as she/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 |
| **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. |
| **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 |
| **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**

A student must get pass marks in every discipline (i.e. obtain minimum 50%) in the aggregate theory marks. He/ She must also get minimum of 50% in the aggregate of the practical exams in order to pass. A student must get an aggregate of 50% marks in both theory and practical in order to be declared as pass or fail in that discipline.

**Attendance**

As per RYK Medical College, University of health sciences and Pakistan Medical & Dental Council guide lines, students are instructed to attend all the lectures, small group discussions, labs, clinical ward attachments and all other instructional activities.

**80% attendance is mandatory to sit in End of module examination and Annual examination. No student will be allowed to appear in examination, if the attendance is short.**

**Table of specifications (TOS)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Block 6 – Table of Specifications** | | | | | | | | |
| **Theme** | **Subject** | **Written Exam** | | | **Oral/Practical/Clinical Exam** | | | |
| **MCQ**  **(1 Mark each)** | **SEQ**  **(5 Mark each)** | **Total**  **Marks** | **OSPE**  **(8 marks each observed)** | **OSCE**  **(8 marks each observed** | **OSVE**  **(16 marks each observed)** | **Marks** |
| **Normal structure** | Anatomy applied/clinical | 24 | 03 | 39 | 03 | - | 01 | 40 |
| **Normal function** | Physiology applied/clinical | 26 | 03 | 41 | 03 | - | 01 | 40 |
| Biochemistry applied/clinical | 09 | 01 | 14 | 01 | - | 01 | 24 |
| **Disease burden & prevention** | Community medicine & public health | 04 | - | 04 | - | - | - | - |
| Behavioral sciences | 03 | - | 03 | - | - | - | - |
| **Pathophysiology & pharmacotherapeutics** | Pathology | 12 | - | 12 | - | - | - | - |
| Pharmacology | 07 | - | 07 | - | - | - | - |
| **CFRC** | CF-2-3 | - | - | - | - | 01 | - | 08 |
| **PERLs** | PERL-2-3 | - | - | - | - | 01 | - | 08 |
| **Total** |  | **85** | **7×5=35** | **120** | **07 stations ×08=56** | **02 stations×8=16** | **03 stations ×16=48** | **120** |

**Internal Evaluation**

* Students will be assessed comprehensively through multiple methods.
* 20% marks of internal evaluation will be added to UHS final exam. That 20% may include class tests, assignment, practicals and the internal exam which will all have specific marks allocation.

**Formative Assessment**

Individual department may hold quiz or short answer questions to help students assess their own learning. The marks obtained are not included in the internal evaluation

**For UHS Examination Policy, please consult UHS website!**

**RYKMC EXAMINATION RULES & REGULATIONS**

* Student must report to examination hall/venue, 30 minutes before the exam.
* Exam will begin sharp at the given time.
* No student will be allowed to enter the examination hall after 15 minutes of scheduled examination time.
* Students must sit according to their roll numbers mentioned on the seats.
* Cell phones are strictly not allowed in examination hall.
* If any student is found with cell phone in any mode (silent, switched off or on) he/she will be not be allowed to continue their exam.
* No students will be allowed to sit in exam without University Admit Card, RYKMC College ID Card and Lab Coat
* Student must bring the following stationary items for the exam: Pen, Pencil, Eraser, and Sharpener.
* Indiscipline in the exam hall/venue is not acceptable. Students must not possess any written material or communicate with their fellow students.

**ASSESSMENT SCHEDULE, OSPE/OSCE/OSVE & PRACTICAL SCHEME**

|  |  |  |  |
| --- | --- | --- | --- |
| **DATE** | **EXAMINATION** | **TIME** | **VENUE** |
| ---/---/2026 | Theory | --:-- to --:-- | Roll no 1 - 50 (multipurpose hall) |
| Roll no 51 – 100 (skill lab) |
| ---/---/2026 | OSPE/OSCE/OSVE | --:-- to --:-- | Roll no 1 – 50 (multipurpose hall) |
| ---/---/2026 | OSPE/OSCE/OSVE | --:-- to --:-- | Roll no 51 – 1000 (multipurpose hall) |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Block 6 - OSPE/OSVE/OSCE/Practical Scheme** | | | | | | |
| **Station # 5**  **OSPE**  **Observed**  **Anatomy** | **→** | **Station # 6**  **Rest Station** | **→** | **Station # 7**  **OSCE**  **Observed**  **PERLs** | **→** | **Station # 8**  **Structured**  **OSVE**  **Biochemistry** |
| **↑** | |  |  |  | | --- | --- | --- | | **Subject** | **Total Stations** | **Station #** | | **Anatomy OSPE Stations** | 3 | 1-5-10 | | **Anatomy OSVE Station** | 1 | 4 | | **Physiology OSPE stations** | 3 | 2-9-11 | | **Physiology OSVE station** | 1 | 13 | | **Biochemistry OSPE stations** | 1 | 3 | | **Biochemistry OSVE station** | 1 | 8 | | **C-FRC OSCE station** | 1 | 12 | | **PERLS OSCE station** | 1 | 7 | | **Rest stations** | 2 | 6-14 | | **Total stations** | **14** |  | | | | | | **↓** |
| **Station # 4**  **Structured**  **OSVE**  **Anatomy** | **Station # 9**  **OSPE**  **Observed**  **Physiology** |
| **↑** | **↓** |
| **Station # 3**  **OSPE**  **Observed**  **Biochemistry** | **Station # 10**  **OSPE**  **Observed**  **Anatomy** |
| **↑** | **↓** |
| **Station # 2**  **OSPE**  **Observed**  **Physiology** | **Station # 11**  **OSPE**  **Observed**  **Physiology** |
| **↑** | **↓** |
| **Station # 1 OSPE**  **Observed**  **Anatomy** | **START**  **&**  **END** | **Station # 14**  **Rest Station** | **←** | **Station # 13**  **Structured**  **OSVE**  **Physiology** | **←** | **Station # 12**  **OSCE**  **Observed**  **C-FRC** |

**ASSESSMENT TOOLS & SAMPLE QUESTIONS**

**ASSESSMENT TOOLS:**

**Single best type** also known as MCQs (Multiple Choice Questions)

**MCQ:**

A BCQ has a statement or clinical scenario of five options (likely answers).

**Correct answer carries one mark, and incorrect ‘zero mark’. There is NO negative marking.**

Students mark their responses on specified computer-based sheet designed for RYKMC.

**Sample BCQs:**

A 25 year old male patient presented with complains of productive cough, breathlessness and wheezing. He has been diagnosed with chronic obstructive pulmonary disease.

The most common risk factor for the disease is:

a) Air pollution

b) Coal mining

c) Glass industries

d) Pharmaceutical industries

e) Tobacco smoke

**OSPE, OSVE, OSCE & Practical:** Please consult the proposed plan

* It may comprise between 12- 25 stations.
* The content may assess application of knowledge, or practical skills.
* Student will complete task in defined time at one given station.
* All the students are assessed on the same content by the same examiner in the same allocated time.
* A structured examination will have observed, unobserved, interactive and rest stations.

**Observed and interactive stations:**

They will be assessed by internal or external examiners through the task or viva.

**Unobserved station (Static):**

It will be static station in which students will have to answer the questions related to the given pictures, models or specimens on the provided response sheet.

**Rest station**: It is a station where no task is given, and during this time student can organize his/her thoughts.

**BOOKS AND RECOMMENDED READINGS**

**Anatomy**

* Gray’s anatomy.
* Langman’s medical embryology.
* Snell’s clinical anatomy.
* Snell’s clinical neuroanatomy. Walter kluwer.
* Laiq H.S Medical histology. Paramount books.
* Laiq H.S general anatomy. Paramount books.
* Wheater’s functional histology.

**Physiology**

* Guyton AC and Hall text book of medical physiology, W,B sunders & co.
* Essentials of medical physiology by Mushtaq Ahmad.

Ganong Physiology.

**Biochemistry**

* Harper’s biochemistry by Robert k murray, daryl k, granner McGraw-hill.
* Lippincott’s illustrated reviews biochemistry Champe, P.C & Harvey.
* ABC of clinical genetics by H.M Kingston.

**Pathology**

* Pathologic basis of disease by Vinary kumar, abul K, Abbas WB saunders.
* Pocket companion to pathologic basis of diseases,Richard Mitchall, vinary.
* General pathology by walter. Churchil livingstone.

**Pharmacology**

* Basic and clinical pharmacology by katzung, MCGraw-hill
* Pharmacology by champe and Harvey, Lippincott Williams & wilkins.

**Behavioral sciences**

* Hand book of behavioral sciences by prof Mowadat H Rana 3rd edition
* Medical and psychosocial aspects of chronic illness and disability Donna R.

**Community medicine**

* Parks textbook of preventive and social medicine, K park
* Public health and community medicine Ilyas, Ansari

**Surgery**

* Bailey & love short practice of surgery

**Medicine**

* Davidson’s principles and practice of medicine

**Islamiyat/Pakistan studies**

* Standard islamiyat (compulsory) for B.A, B.sc, M.A, M.sc by professor M. sharif islahi
* Pakistan studies (compulsory) for B.A, B.sc,B.com, Medical/Engineering by prof Shah Jahan

**End of Module/ Block examination will be conducted on ---/---/ 2025/26**