





**BAQAI MEDICAL COLLEGE** 

#### SECOND YEAR M.B.B.S.

**STUDY GUIDE - 2024** 

#### **HEAD & NECK MODULE**

8 weeks





51-Deh Tor, Gadap Road, Super Highway. P.O Box: 2407, Karachi-75340, Pakistan. Phone (092-21)34410-293 to 298, 34410-427 to 430. Fax: (092-21)34410-317, 34410-43. Email: <u>info@baqai.edu.pk</u>, Web: <u>www.baqai.edu.pk/</u>

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# **BAQAI MEDICAL UNIVERSITY VISION STATEMENT**

To evolve as a nucleus for higher learning with a resolution to be socially accountable, focused on producing accomplished health care professionals for services in all spheres of life at the national and global level.







## **BAQAI MEDICAL UNIVERSITY MISSION STATEMENT**

University is dedicated to the growth of competencies in its potential graduates through dissemination of knowledge for patient care, innovation in scholarship, origination of leadership skills, and use of technological advancements and providing.



# **BAQAI MEDICAL COLLEGE MISSION STATEMENT**

The mission of the Baqai medical college is to produce medical graduates, who are accomplished and responsible individuals and have skills for problem solving, clinical judgment, research & leadership for medical practice at the international level and are also aware of the health problems of the less privileged rural and urban population of Pakistan.











#### CIC SPIRAL-1 2<sup>nd</sup> Year MBBS MODULAR TIME TABLE, STUDY GUIDE and CBL TEAM

| NAME OF FACULTY           | DEPARTMENT               | <b>DESIGNATION IN TEAM</b>           | EMAIL ADDRESS                 |
|---------------------------|--------------------------|--------------------------------------|-------------------------------|
| Prof. Dr. Syed Inayat Ali | Anatomy                  | Head of CIC Spiral-1                 | drinayatali@baqai.edu.pk      |
| Prof. Dr. Uzma            | Anatomy                  | Class In-charge 2 <sup>nd</sup> Year |                               |
|                           |                          | MBBS                                 |                               |
| Dr. Benish Zafar          | Biochemistry             | Coordinator of 2 <sup>nd</sup> Year  | benishzafar@baqai.edu.pk      |
|                           |                          | MBBS Study Guide & Time              |                               |
|                           |                          | Table Team                           |                               |
| Dr. Mubashara Tahseen     | Anatomy                  | Member                               | mubasharatahseen@baqai.edu.pk |
| Dr. Sobia                 | Physiology               | Member                               | sobianabeel@baqai.edu.pk      |
| Dr. Hina Masood           | Pharmacology             | Member                               | hinamasood@baqai.edu.pk       |
| Dr. Rozeena               | Pathology                | Member                               |                               |
| Dr. Rafey Siddiqui        | Forensic Medicine        | Member                               | rafaya@baqai.edu.pk           |
| Dr. Ammara                | Community Medicine       | Member                               | ammarasaeed@baqai.edu.pk      |
| Dr. Aneeta / Dr. Saima    | Medicine                 | Members                              | haroonharoon@baqai.edu.pk /   |
| Askari                    |                          |                                      | saimaaskari@baqai.edu.pk      |
| Dr. Danish / Dr.Abdullah  | Surgery                  | Member                               | drdanishmuneeb@baqai.edu.pk/  |
|                           |                          |                                      | dr.abdullah@baqai.edu.pk      |
| Dr. Nikhat Ashraf         | Gynaecology & Obstetrics | Member                               | dr.nikhatahsan@baqai.edu      |
| Dr. Maria Rahim           | Research                 | Member                               | maria.rahim@baqai.edu.pk      |
| Dr. Mariam Ibrahim        | Department of Medical    | Member                               | mariamibrahim@baqai.edu.pk    |
|                           | Education                |                                      |                               |
| Dr. Azra Shaheen          | Behavioural Sciences     | Member                               | azra@baqai.edu.pk             |
| Dr. Danish/ Dr. Abdullah  | Orthopeadics             | Members                              | drdanishmuneeb@baqai.edu.pk / |
|                           |                          |                                      | drabdullah@baqai.edu.pk       |





| Dr. Mehwish           | Radiology    | Member                   |                           |
|-----------------------|--------------|--------------------------|---------------------------|
| Dr. Kahkashan Perveen | Biochemistry | Spiral-1 CBL Coordinator | dr.kahkashan@baqai.edu.pk |
| Dr. Shahid Pervez     | Anatomy      | CBL team member          | sshaikh@baqai.edu.pk      |
| Dr. Salimullah        | Physiology   | CBL team member          | drsaleemullah@baqai.edu   |

#### **INTRODUCTION TO HEAD & NECK MODULE GUIDE:**

Year to be taught: Second Professional M.B.B.S. -2024

**Placement of Head & Neck Module:** FOURTH

**Duration:** 8 Weeks (8+1 day)

Tentative Date: 30-07-2024 to 23-09-2024

**Module Assessment Date:** End of Module







The Head and Neck Module is the fourth module for 2<sup>nd</sup> Year MBBS Integrated Modular Curriculum for MBBS program. It will give an introduction and awareness about the curriculum of head and neck in general along with the teaching and learning environment. This module includes basic anatomical, physiological and biochemical concepts in relation to the head and neck and its link with clinical aspects related to the diseases of head and neck region. It also includes the basis of research and orientation about the clinical sciences. The curriculum will be delivered in the form of interactive large and small group formats including lectures, practical, CBL and SDL.











#### HEAD & NECK MODULE OUTCOME

#### At the completion of the head & neck module, 2<sup>nd</sup> year MBBS students will be able to:

- 1. Identify the skull bones, different views and features along their applied.
- 2. Describe the development of pharyngeal apparatus their derivatives and microscopic structure of head & neck and special sense organ with abnormalities.
- 3. Describe gross anatomy of structures and physiological mechanism of special sense organs present in head and neck with clinical significance.
- 4. Recall cranial nerves distribution, functions and clinical response to injury.





#### **INTEGRATED TEACHING**

#### At the end of this module, Second Professional M.B.B.S. student will be able to;

| TOPICS WITH OBJECTIVES  | DEPARTMENT | DURATION   | FACILITATOR | TEACHING<br>STRATEGY | VENUE  |
|---|------------|------------|-------------|----------------------|--|
| <ul> <li>BONES AND JOINTS OF SKULL</li> <li>Identify the bones of skull.</li> <li>Name the different norma of skull.</li> <li>Identify the important landmarks of each bone.</li> <li>Describe the joints of skull and their attachments.</li> <li>Describe the important clinical significance of specific landmarks.</li> </ul> | ANATOMY    | 60 minutes | Dr. Shahid  | Lecture              | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| DEVELOPMENT OF SKULL                                | ANATOMY      | 60 minutes | Dr. Inayat | Lecture | Lecture     |
|---|--------------|------------|------------|---------|-------------|
| • Describe the development of skull.                |              |            |            |         | hall $-2$ , |
| • Describe the various anomalies of skull           |              |            |            |         | Ground      |
| development.  |              |            |            |         | floor,      |
|   |              |            |            |         | Block-A.    |
| STRUCTURE OF DNA                                    | BIOCHEMISTRY | 60 minutes | Dr. Benish | Lecture | Lecture     |
| • Recall what are nucleotides.                      |              |            |            |         | hall $-2$ , |
| • Describe in detail the structural characteristics |              |            |            |         | Ground      |
| of DNA- "Watson and Crick Model of                  |              |            |            |         | floor,      |
| Double Helix".                                      |              |            |            |         | Block-A.    |
| • Recognize that DNA is a genetic material.         |              |            |            |         |             |
| Genes of eukaryotes are present in                  |              |            |            |         |             |
| 'chromatin' which is made up of protein and         |              |            |            |         |             |
| DNA.  |              |            |            |         |             |
| NORMA VERTICALIS                                    | ANATOMY      | 60 minutes | Dr. Saba   | Lecture | Lecture     |
| • Identify the norma verticalis on the skull.       |              |            |            |         | hall $-2$ , |
| • Name the bones of each norma.                     |              |            |            |         | Ground      |
| • Identify the important landmarks of each          |              |            |            |         | floor,      |
| bone.   |              |            |            |         | Block-A.    |
| • Identify the foramina with their contents.        |              |            |            |         |             |
| • Describe the muscle attachments of norma          |              |            |            |         |             |
| verticalis.   |              |            |            |         |             |
|   |              |            |            |         |             |
| NORMA OCCIPITALIS                                   | ANATOMY      | 60 minutes | Dr. Sarosh | Lecture | Lecture     |
| • Identify the norma occipitalis on the skull.      |              |            |            |         | hall $-2$ , |
| • Identify the foramina with their contents.        |              |            |            |         |             |





| • Describe the muscle attachments of norma occipitalis.  |              |            |               |         | Ground<br>floor,<br>Block-A.                         |
|--|--------------|------------|---------------|---------|--|
| <ul> <li>DNA REPLICATION - 1</li> <li>Define central dogma of life and DNA replication.</li> <li>Recall cell cycle and indicate the phase in which DNA replication takes place.</li> <li>List the requirements of DNA replication.</li> <li>Identify that DNA replication takes place in 3 phases.</li> <li>Describe the process of DNA replication in first phase.</li> </ul> | BIOCHEMISTRY | 60 minutes | Dr. Kahkashan | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>NORMA FRONTALIS</li> <li>Identify the norma frontalis.</li> <li>Name the bones of norma frontalis.</li> <li>Identify the important landmarks of norma frontalis.</li> <li>Identify their foramina with their contents.</li> <li>Describe the muscle attachments of norma frontalis.</li> </ul>  | ANATOMY      | 60 minutes | Dr. Saba      | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>NORMA LATERALIS</li> <li>Identify the norma lateralis.</li> <li>Name the bones of norma lateralis.</li> <li>Identify the important landmarks of norma lateralis.</li> <li>Identify their foramina</li> <li>Describe the attachments of norma lateralis.</li> </ul> | ANATOMY      | 45 minutes | Dr. Sarosh    | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|---|--------------|------------|---------------|---------|--|
| <ul> <li>NORMA BASALIS-1</li> <li>Identify the norma basalis.</li> <li>List the bones forming the norma. Basalis.</li> <li>Identify the important landmarks of norma basalis.</li> <li>Identify their foramina with their contents.</li> </ul>                              | ANATOMY      | 60 minutes | Dr. Shahid    | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>DNA REPLICATION - 2</li> <li>Describe the process of elongation and termination in DNA replication</li> <li>Describe the differences between prokaryotic and eukaryotic DNA replication.</li> </ul>  | BIOCHEMISTRY | 60 minutes | Dr. Kahkashan | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>NORMA BASALIS-2</li> <li>Describe the attachments of norma basalis.</li> <li>Describe the important clinical significance of specific landmarks.</li> </ul>  | ANATOMY      | 45 minutes | Dr. Shahid    | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li><b>DEVELOPMENT OF PHARYNGEAL</b></li> <li><b>APPARATUS</b></li> <li>Describe the development of Pharyngeal apparatus.</li> </ul>   | ANATOMY               | 45 minutes  | Dr. Inayat    | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|---|-----------------------|-------------|---------------|-----------|--|
| <ul> <li>SCALP</li> <li>Describe the structure of the scalp.</li> <li>Describe the muscles innervation, vascular supply &amp; lymphatic drainage of the scalp.</li> <li>Describe the applied anatomy of the scalp.</li> </ul> | ANATOMY               | 60 minutes  | Dr. Mubashara | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>HISTOLOGY OF SCALP</li> <li>Describe the histological features of scalp.</li> <li>Describe the various cells of scalp.</li> </ul>  | ANATOMY               | 60 minutes  | Dr. Inayat    | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>SCALP</li> <li>Describe the histological features of scalp.</li> <li>Detail of the microanatomy of cells of layers of scalp.</li> <li>Differentiate between scalp layers.</li> </ul>                                 | HISTOLOGY             | 120 minutes | Dr. Sarosh    | Practical | Histology<br>laboratory,<br>First floor,<br>Block-A  |
| <ul> <li>INJURIES AND THEIR CONTROL</li> <li>Define injury.</li> <li>Explain types of injuries and their risk factors.</li> </ul>   | COMMUNITY<br>MEDICINE | 45 minutes  | Dr. Ammarah   | Lecture   | Lecture<br>hall – 2,                                 |





|   |                      |            | $\mathbf{JUIDE} = 2024$ |         |  |
|---|----------------------|------------|-------------------------|---------|--|
| • Discuss accident and injury prevention and control measures.  |                      |            |                         |         | Ground<br>floor,<br>Block-A.                         |
| <ul> <li>TRAUMA TO THE HEAD AND NECK</li> <li>Define Head Injury as per National Advisory<br/>Neurological Diseases &amp; Stroke Council.</li> <li>Classify Cranio-Cerebral Injury (Scalp , Skull<br/>&amp; Brain).</li> <li>Classify Brain Injury with mention of<br/>Mechanism of its production.</li> <li>Explain Cerebral Concussion, Contusions &amp;<br/>Lacerations.</li> <li>Describe Coup &amp; Contre-Coup Injury.</li> </ul> | FORENSIC<br>MEDICINE | 60 minutes | Dr. Jan e Alam          | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>MANDIBLE</li> <li>Identify the parts of mandible.</li> <li>List the attachment on the various parts of mandible.</li> <li>Identify their foramina with their contents.</li> <li>Discuss the applied anatomy of mandible</li> </ul>   | ANATOMY              | 60 minutes | Dr. Shahid              | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li><b>DNA REPAIR-1</b></li> <li>List the environmental factors involved in DNA damage.</li> </ul>   | BIOCHEMISTRY         | 60 minutes | Dr. Benish              | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>Identify the various types of DNA damage that occur during replication along with the types of DNA repair systems required to correct them.</li> <li>Describe the mechanism of DNA repair systems.</li> </ul>   |           |            |             |         |  |
|--|-----------|------------|-------------|---------|--|
| <ul> <li>TEMPORAL FOSSA</li> <li>Identify the temporal fossa.</li> <li>Describe the boundaries of temporal fossa.</li> <li>List the content of temporal fossa.</li> <li>Describe the Temporalis muscles its attachment, Innervation and action.</li> </ul>         | ANATOMY   | 60 minutes | Dr. Sarosh  | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>RADIOLOGICAL ANATOMY OF HEAD</li> <li>Identify the radiological anatomy of head.</li> <li>Know about view of head.</li> <li>Defend the need for next appropriate radiological investigation like other views of x-ray, ultrasound, CT and MRI.</li> </ul> | RADIOLOGY | 60 minutes | Dr. Touqeer | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li><b>RESEARCH TOPIC SELECTION</b></li> <li>Define the criteria for topic selection.</li> <li>Explain the rationale of selecting a new topic.</li> </ul>   | RESEARCH  | 45 minutes | Miss. Maria | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>EMBRYOLOGICAL PHARYNGEAL</li> <li>APPARATUS-2</li> <li>Describe the various anomalies of Pharyngeal apparatus development.</li> </ul>   | ANATOMY | 45 minutes | Dr. Inayat | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|--|---------|------------|------------|---------|--|
| <ul> <li>TEMPORO MANDIBULAR JOINT</li> <li>Describe the temporo-mandibular joint its type and its articular surfaces.</li> <li>Describe the ligaments attached at and movements of it with the muscles involved.</li> <li>Describe the neuro vascular supply of it.</li> </ul> | ANATOMY | 60 minutes | Dr. Sarosh | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>INFRATEMPORAL FOSSA</li> <li>Describe the boundaries of infra temporal fossa.</li> <li>List the contents of infratemporal fossa</li> <li>Describe the boundaries of pterygopalatine fossa.</li> <li>Discuss the contents of pterygopalatine fossa.</li> </ul>         | ANATOMY | 60 minutes | Dr. Sarosh | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li><b>DEVELOPMENT OF FACE</b></li> <li>Describe the development of face.</li> <li>Describe the various stages of face development.</li> <li>Describe the various anomalies of face development.</li> </ul>   | ANATOMY | 60 minutes | Dr. Inayat | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>DNA REPAIR-II</li> <li>Describe the mechanism of different DNA repair systems.</li> <li>Discuss briefly about xeroderma pigmentosa.</li> <li>Explain the role of telomeres in aging of a cell.</li> </ul> | BIOCHEMISTRY | 60 minutes | Dr. Benish | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|--|--------------|------------|------------|---------|--|
| <ul> <li>NERVES AND BLOOD VESSELS OF FACE</li> <li>Discuss the arterial supply, venous and lymphatic drainage of face.</li> <li>Identify the cutaneous nerve supply of the face.</li> </ul>                        | ANATOMY      | 45 minutes | Dr. Shahid | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>MUSCLES OF FACE</li> <li>Identify the muscles of facial expression with attachments, nerve supply &amp; actions.</li> <li>Describe the applied anatomy of the face muscles.</li> </ul>                    | ANATOMY      | 45 minutes | Dr. Shahid | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>EYELID AND LACRIMAL GLAND</li> <li>Discuss the eye lid and their parts.</li> <li>Describe lacrimal apparatus.</li> <li>Define the diseases related to lacrimal apparatus.</li> </ul> | ANATOMY  | 45 minutes | Dr. Sarosh  | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|---|----------|------------|-------------|---------|--|
| <ul> <li>HEAD &amp; NECK SURGERY-1</li> <li>Discuss about the common developmental pathologies of head &amp; neck.</li> </ul>   | SURGERY  | 60 minutes | Dr. Danish  | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>RESEARCH PROJECT AND ITS<br/>COMPONENTS-1</li> <li>Define research synopsis.</li> <li>List the components of a research project.</li> </ul>  | RESEARCH | 45 minutes | Miss. Maria | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>ORBIT AND ITS CONTENTS</li> <li>Describe the boundaries and contents of orbital cavity.</li> <li>Describe the Ciliary ganglion and its location and connection.</li> </ul>           | ANATOMY  | 45 minutes | Dr. Shahid  | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>Describe the structures &amp; contents of the eye ball.</li> </ul>   |          | ou minutes | Dr. Snania  | Lecture | hall $-2$ ,  |





| <ul> <li>Enumerate the extrinsic &amp; intrinsic muscles<br/>of the eye ball.</li> <li>Describe the neuro vascular supply of these<br/>muscles.</li> </ul>   |            |            |                     |         | Ground<br>floor,<br>Block-A.                         |
|--|------------|------------|---------------------|---------|--|
| <ul> <li>EYEBALL</li> <li>Name the Layers / Coats of Eyeball.</li> <li>Explain the structure and importance of sclera.</li> <li>Describe the corneal layers.</li> <li>Summarize the choroid layer.</li> <li>Describe the uveal tract.</li> <li>Define Iris and Pupil.</li> </ul> | PHYSIOLOGY | 60 minutes | Dr. Saba            | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>EMBRYOLOGY DEVELOPMENT OF EYE</li> <li>Describe the developmental stages of eye.</li> <li>Discuss the common congenital anomalies of eye.</li> </ul>  | ANATOMY    | 60 minutes | Dr. Inayat          | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li><b>RETINA-1</b></li> <li>Name the layers of retina.</li> <li>Summarize the functions of rods and cones.</li> <li>Define macula and fovea.</li> <li>Define and elaborate the optic nerve emerging from the optic disc.</li> </ul>  | PHYSIOLOGY | 45 minutes | Dr. Muhammad<br>Ali | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>RETINA-2</li> <li>Define visual field and its parts.</li> <li>Recognizes the representation of visual field on retina.</li> <li>Memorize the Visual pathway.</li> <li>Recognize the visual field defects.</li> <li>Explain diagrammatically the visual field errors (Hemiopia).</li> <li>Define binocular, monocular vision and diplopia.</li> </ul> | PHYSIOLOGY | 60 minutes  | Dr. Saba   | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|---|------------|-------------|------------|-----------|--|
| <ul> <li>HISTOLOGY EYE</li> <li>Describe the gross and microscopic structure of eye.</li> <li>Describe the histological features of the layers of eye.</li> <li>Describe the various cells of eye.</li> </ul>   | ANATOMY    | 60 minutes  | Dr. Inayat | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>FUNDOSCOPY</li> <li>Explain the parts of Fundoscope.</li> <li>Detail the protocols of Fundoscopy.</li> <li>Perform Fundoscopy (Ophthalmoscopy) of given subject.</li> </ul>  | PHYSIOLOGY | 120 minutes | Dr. Sobia  | Practical | Physiology<br>laboratory,<br>First floor,<br>Block-A |





| OPTICS OF VISION   | PHYSIOLOGY   | 60 minutes | Dr. Saba      | Lecture | Lecture     |
|--|--------------|------------|---------------|---------|-------------|
| • Define refraction of light.                              |              |            |               |         | hall $-2$ , |
| • Discuss refractive index.                                |              |            |               |         | Ground      |
| • Discuss image formation on retina.                       |              |            |               |         | floor,      |
| • Discuss biconvex and biconcave lenses.                   |              |            |               |         | Block-A.    |
| • Define focal length.                                     |              |            |               |         |             |
| • Define dioptric power of a lens.                         |              |            |               |         |             |
| • Calculate the refractive power of a reduced              |              |            |               |         |             |
| eye.   |              |            |               |         |             |
|  |              |            |               |         |             |
| ERRORS OF REFRACTION                                       | PHYSIOLOGY   | 60 minutes | Dr. Ruqayya   | Lecture | Lecture     |
| • Name the errors of refraction.                           |              |            |               |         | hall $-2$ , |
| • Explain Myopia (near sightedness) and its                |              |            |               |         | Ground      |
| correction.  |              |            |               |         | floor,      |
| • Explain Hyperopia (Long sightedness) and its correction. |              |            |               |         | Block-A.    |
| • Explain Presbyopia and its correction.                   |              |            |               |         |             |
| • Explain stigmatism and its correction.                   |              |            |               |         |             |
|  |              |            |               |         |             |
| STRUCTURE OF RNA   | BIOCHEMISTRY | 60 minutes | Dr. Kahkashan | Lecture | Lecture     |
| • Define RNA and enlist the types of RNA                   |              |            |               |         | hall $-2$ , |
| which exists in organisms.                                 |              |            |               |         | Ground      |
| • Differentiate between RNA and DNA.                       |              |            |               |         | floor,      |
| • Describe the structure and functions of                  |              |            |               |         | Block-A.    |
| mRNA and tRNA.   |              |            |               |         |             |





| • Describe the structure of prokaryotic and eukaryotic ribosomes in relation with rRNA.  |            |            |                |         |  |
|--|------------|------------|----------------|---------|--|
| <ul> <li>ACCOMODATION-1</li> <li>Define accommodation and explain the changes in the eyeball during accommodation.</li> <li>Name the autonomic control on accommodation.</li> <li>Explain the changes in the lens during accommodation.</li> </ul>   | PHYSIOLOGY | 45 minutes | Dr. Qamar Aziz | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>ACCOMODATION-2</li> <li>Explain the pupillary changes during accommodation.</li> <li>Explain the role of pupils during accommodation.</li> </ul>  | PHYSIOLOGY | 45 minutes | Dr. Fizzah     | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>ACCOMODATION-3</li> <li>Explain the advantages of pupillary constriction (chromatic &amp; spherical aberration, image distortion and depth of focus).</li> <li>Explain the accommodation reflex.</li> <li>Define Argyll Robertson Pupil.</li> <li>Differentiate the pathway A.R and ARP.</li> </ul> | PHYSIOLOGY | 60 minutes | Dr. Saba Abrar | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| • Explain the importance of medial convergence during accommodation.   |                   |            |                     |         |  |
|--|-------------------|------------|---------------------|---------|--|
| <ul> <li>LIGHT REFLEX</li> <li>Define light reflex</li> <li>Describe the pathway of light reflex.</li> <li>Compare the accommodation reflex with the light reflex pathway.</li> <li>Identify the lesion in Argyle Robertson pupil.</li> </ul>  | PHYSIOLOGY        | 60 minutes | Dr. Muhammad<br>Ali | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>EYE DISORDERS</li> <li>Describe the pathological features of Stye ,<br/>Chlazion, Conjuctivitis, Cataract and<br/>Glaucoma.</li> </ul>  | PATHOLOGY         | 45 minutes | Dr. Nasima Iqbal    | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>PAPILLARY REFLEX ABNORMALITIES</li> <li>Nerve supply to the pupillary muscles.</li> <li>Normal response of the pupil to light and accommodation.</li> <li>Effects of interruption in the different levels of innervations on pupillary reflexes.</li> <li>Common abnormalities in pupillary responses.</li> </ul> | OPHTHALMOLO<br>GY | 60 minutes | Dr. Mir Amjad       | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul><li><b>REFRACTIVE SURGERY</b></li><li>• Recall normal optics of a healthy eye.</li></ul>   | OPHTHALMOLO<br>GY | 60 minutes | Dr. Mir Amjad       | Lecture | Lecture<br>hall – 2,                                 |





| <ul> <li>Explain the occurrence of eye conditions like myopia, hypermetropia, astigmatism and presbyopia</li> <li>Recognize the general principles of refractive surgery.</li> </ul>  |              |            |                |         | Ground<br>floor,<br>Block-A.                         |
|---|--------------|------------|----------------|---------|--|
| <ul> <li>TRANSCRIPTION-1</li> <li>Define transcription</li> <li>Explain briefly about RNA polymerase and its role in the process of transcription in prokaryotes.</li> </ul>  | BIOCHEMISTRY | 45 minutes | Dr. Kahkashan  | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>PHOTOCHEMISTRY OF VISION</li> <li>Define Rhodopsin.</li> <li>Summarize Rhodopsin cycle.</li> <li>Explain the excitation of Rods and the conduction of action potential through the ganglion cells the visual center.</li> <li>Explain the role of Vit – A in the formation of Rhodopsin.</li> <li>Define night blindness.</li> </ul> | PHYSIOLOGY   | 60 minutes | Dr. Saba Leeza | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>COLOUR VISION</li> <li>Define color vision.</li> <li>State the theory of duplicity of color vision.</li> </ul>   | PHYSIOLOGY   | 60 minutes | Dr. Saba       | Lecture | Lecture hall – 2,                                    |





| <ul> <li>Distinguish between scotopic and photopic vision.</li> <li>Identify the photoreceptor involved in color vision.</li> <li>Name the pigment present in cone cells.</li> <li>List the functions of cone cells.</li> <li>Explain the photochemistry of color vision.</li> <li>Identify the theories of color vision.</li> <li>Explain the importance of sensitivity of photoreceptors to different wavelengths of light.</li> </ul> |              |             |               |           | Ground<br>floor,<br>Block-A.                         |
|--|--------------|-------------|---------------|-----------|--|
| <ul> <li>VISUAL ACUITY</li> <li>Define visual acuity.</li> <li>Recognize visual acuity by using the Snellen's chart.</li> <li>Explain the principles of Snellen's chart and Explain visual angle.</li> </ul>   | PHYSIOLOGY   | 120 minutes | Dr. Sobia     | Practical | Physiology<br>laboratory,<br>First floor,<br>Block-A |
| <ul> <li>TRANSCRIPTION-2</li> <li>Describe the stages of transcription.</li> <li>Summarize the methods employed by prokaryotes to terminate transcription.</li> </ul>  | BIOCHEMISTRY | 45 minutes  | Dr. Kahkashan | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>LIGHT AND DARK ADAPTATION</li> <li>Define dark and light adaptation.</li> <li>Explain the dark adaptation.</li> <li>Discuss dark adaptation curve.</li> <li>Explain the importance of dart and light adaptation in vision.</li> </ul>   | PHYSIOLOGY   | 60 minutes | Dr. Muhammad<br>Ali | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|--|--------------|------------|---------------------|---------|--|
| <ul> <li>POST-TRANSCRIPTIONAL<br/>MODIFICATION</li> <li>Discuss about post-transcriptional<br/>modifications of m-RNA, t-RNA and r-RNA.</li> </ul>   | BIOCHEMISTRY | 60 minutes | Dr. Benish          | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>MOVEMENTS OF EYEBALL</li> <li>List the muscles controlling eyeball<br/>movements with their nerve supply.</li> <li>Explain fixation movements of the eyes.</li> <li>Explain saccadic movement of the eyeball.</li> <li>Recognize strabismus and its types.</li> <li>Define Horner's Syndrome.</li> <li>Explain about the lesions which occur in<br/>Horner's Syndrome.</li> </ul> | PHYSIOLOGY   | 60 minutes | Dr. Saba            | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>VISUAL CORTEX-1</li> <li>Memorize primary and secondary visual centers in the Visual Cortex.</li> <li>Explain the Magnocellular and Parvocellular Pathways terminating in the visual cortex (VC).</li> <li>Enumerate the six layers of lateral geniculate body and their functions.</li> </ul> | PHYSIOLOGY   | 45 minutes | Dr. Muhammad<br>Ali | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|---|--------------|------------|---------------------|---------|--|
| VISUAL CORTEX-1   | PHYSIOLOGY   | 45 minutes | Dr. Muhammad        | Lecture | Lecture  |
| • Define the function of visual association area.   |              |            | Ali                 |         | hall $-2$ ,  |
| • Enumerate the layers of VC.   |              |            |                     |         | Ground   |
| • Explain the pathways for analysis of visual   |              |            |                     |         | floor,   |
| information.  |              |            |                     |         | DIOCK-A.   |
| • Define stereopsis.  |              |            |                     |         |  |
| VITAMIN A   | BIOCHEMISTRY | 60 minutes | Dr. Benish          | Lecture | Lecture  |
| • Identify the different forms of vitamin A.  |              |            |                     |         | hall – 2,  |
| • Recognize the dietary sources and daily   |              |            |                     |         | Ground<br>floor                                      |
| <ul> <li>List the functions of vitamin A and its</li> </ul>   |              |            |                     |         | Block-A.   |
| derivatives.  |              |            |                     |         |  |
| • Describe the role of vitamin A in visual cvcle.   |              |            |                     |         |  |
|   |              |            |                     |         |  |
| VISUAL CORTEX-3   | PHYSIOLOGY   | 60 minutes | Dr. Muhammad        | Lecture | Lecture  |
|   |              |            | Ali                 |         | hall $-2$ ,  |





| <ul> <li>Define functions of horizontal cells.</li> <li>Define functions of bipolar cells.</li> <li>Define functions of "X" &amp; "Y" Ganglion Cells.</li> <li>Discuss transmission of action potential in ganglion cells.</li> <li>Name the neurotransmitters released by the photo – receptors.</li> <li>Explain the electrotonic conduction of impulse in retinal cells.</li> <li>Define lateral inhibition.</li> </ul> |                   |             |               |           | Ground<br>floor,<br>Block-A.                         |
|--|-------------------|-------------|---------------|-----------|--|
| <ul> <li>OPTIC NERVE</li> <li>Describe the origin and course of optic nerve.</li> <li>List its branches.</li> <li>Discuss the area of supply of optic nerve.</li> </ul>  | ANATOMY           | 60 minutes  | Dr. Sarosh    | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>AMBLYOSCOPY</li> <li>Explain the parts of Amblyoscope.</li> <li>Detail the protocols of Amblyoscopy.</li> <li>Perform Amblyoscopy on a given subject.</li> </ul>  | PHYSIOLOGY        | 120 minutes | Dr. Sobia     | Practical | Physiology<br>laboratory,<br>First floor,<br>Block-A |
| <ul> <li>SQUINT</li> <li>Recall the functions of extra-ocular muscles.</li> <li>Classify squint.</li> </ul>  | OPHTHALMOLO<br>GY | 60 minutes  | Dr. Mir Amjad | Lecture   | Lecture hall – 2,                                    |





| •                 | Identify the principles of management of<br>concomitant squint.<br>Define amblyopia<br>Discuss the causes and principle of<br>management of amblyopia.   |              |            |            |         | Ground<br>floor,<br>Block-A.                         |
|-------------------|--|--------------|------------|------------|---------|--|
| G]<br>•<br>•<br>• | <b>ENETIC CODE &amp; MUTATION</b><br>Define the terms genetic code and mutation<br>Discuss the characteristics of genetic code.<br>Discuss about point mutation and its effects<br>with examples.<br>Define frame shift mutations.<br>Identify the types frameshift mutations.<br>Describe the features of deletion and insertion<br>mutation with examples. | BIOCHEMISTRY | 60 minutes | Dr. Iffat  | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| N(<br>•<br>•      | DSE<br>Describe the external nose.<br>Identify the structures forming medial &<br>lateral wall of the nose.<br>Describe the features of the lateral wall of the<br>nose.<br>Describe the blood and nerve supply of the<br>nose.  | ANATOMY      | 60 minutes | Dr. Shahid | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>NOSE</li> <li>Describe the histological features of the epithelium of nasal by observing under the microscope.</li> </ul>  | HISTOLOGY | 120 minutes | Dr. Aneela           | Practical | Histology<br>laboratory,<br>First floor,<br>Block-A  |
|---|-----------|-------------|----------------------|-----------|--|
| <ul> <li>NASAL POLYP</li> <li>Recall the opening of various sinuses with their ostia in lateral wall of nose.</li> <li>Define the nasal polyps</li> <li>Discuss the types and pathological features of nasal polyps.</li> </ul>   | PATHOLOGY | 45 minutes  | Dr. Nasima Iqbal     | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>DEVIATED NASAL SEPTUM</li> <li>Define deviated Nasal septum.</li> <li>Discuss about the causes, clinical features and complications of deviated nasal septum.</li> <li>Associate the steps of surgical correction of deviated nasal septum with the complications which arise due to the procedure.</li> </ul> | ENT       | 60 minutes  | Dr. Maria<br>Mahmood | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li><b>RESEARCH PROJECT AND ITS</b></li> <li><b>COMPONENTS-2</b></li> <li>Describe the sections of a research project.</li> </ul>  | RESEARCH  | 45 minutes  | Miss Maria           | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>OLFACTORY NERVE</li> <li>Describe the origin and course of olfactory nerve.</li> <li>List its branches.</li> <li>Discuss the area of supply of olfactory nerve</li> </ul>   | ANATOMY    | 45 minutes  | Dr. Sarosh | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|--|------------|-------------|------------|-----------|--|
| <ul> <li>OLFACTION-1</li> <li>Discuss the olfactory membrane.</li> <li>Explain the mechanism of excitation of an olfactory cell.</li> <li>Describe the concept of adaptation to smell.</li> <li>Describe the olfactory pathway.</li> </ul> | PHYSIOLOGY | 60 minutes  | Dr. Qamar  | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>OLFACTION-2</li> <li>Name the primary sensation of smell.</li> <li>Define odorants and odor blindness.</li> <li>Identify the threshold of smell.</li> <li>Explain the centrifugal control of smell.</li> </ul>                    | PHYSIOLOGY | 45 minutes  | Dr. Saba   | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>SENSE OF SMELL</li> <li>Explain the mechanism smell perception.</li> <li>Test sense of smell of a given subject by using different odorants.</li> <li>Mark the result as "Normal" or "Abnormal".</li> </ul>                       | PHYSIOLOGY | 120 minutes | Dr. Sobia  | Practical | Physiology<br>laboratory,<br>First floor,<br>Block-A |





| <ul> <li>TRANSLATION-1</li> <li>List the materials required for protein synthesis in eukaryotes.</li> <li>Explain the formation of aminoacyl tRNA.</li> <li>Describe the initiation of translation with reference to initiation factors.</li> </ul>  | BIOCHEMISTRY | 60 minutes | Dr. Iffat     | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|--|--------------|------------|---------------|---------|--|
| <ul> <li>PARANASAL SINUSES</li> <li>List the para nasal sinuses.</li> <li>Describe the openings of the para nasal sinuses.</li> <li>Describe the neuro vascular supply of the para nasal sinuses.</li> </ul>   | ANATOMY      | 60 minutes | Dr. Shahid    | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>SINUSITIS</li> <li>Recall the anatomy of paranasal sinuses, their classification, their location with reference to lateral wall of nose and their drainage and functions of these sinuses.</li> <li>Discuss the causes, clinical features and management of acute sinus Infection.</li> </ul> | ENT          | 45 minutes | Dr. Rehana    | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>EQUALITY, JUSTICE &amp; EQUITY</li> <li>Define the principle of justice in bioethics.</li> <li>Discuss about the importance of justice in health care profession.</li> </ul>  | BIOETHICS    | 60 minutes | Dr. Mubashara | Lecture | Lecture<br>hall – 2,                                 |





| • Distinguish between equality and equity.   |              |            |                |         | Ground<br>floor,<br>Block-A.                         |
|--|--------------|------------|----------------|---------|--|
| <ul> <li>EXTERNAL EAR</li> <li>Identify the parts and structures of the external ear.</li> <li>Describe the neuro vascular supply of its different parts.</li> <li>Discuss the important clinical significance of the external ear.</li> </ul>   | ANATOMY      | 60 minutes | Dr. Mubashara  | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>MIDDLE EAR</li> <li>Identify the parts and structures of the middle ear.</li> <li>Name the neuro vascular supply of its different parts.</li> <li>Describe the boundaries and content of middle ear cavity.</li> <li>Describe the important clinical significance of the middle ear.</li> </ul> | ANATOMY      | 60 minutes | Dr. Saba Akram | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>TRANSLATION-2</li> <li>Describe the process of elongation with reference to role of elongation factors</li> <li>Describe the termination of protein synthesis.</li> </ul>   | BIOCHEMISTRY | 60 minutes | Dr. Iffat      | Lecture | Lecture<br>hall – 2,                                 |





| <ul> <li>POST-TRANSLATIONAL</li> <li>MODIFICATIONS</li> <li>Discuss about post-translational modifications of proteins</li> </ul>   | BIOCHEMISTRY | 45 minutes  | Dr. Iffat  | Lecture   | Ground<br>floor,<br>Block-A.<br>Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|---|--------------|-------------|------------|-----------|--|
| <ul> <li>INTERNAL EAR</li> <li>Identify the parts of the internal ear.</li> <li>Describe the structure of the internal ear.</li> <li>Identify the neuro vascular supply of its different parts.</li> <li>Describe the clinical condition associated with the internal ear.</li> </ul> | ANATOMY      | 60 minutes  | Dr. Saba   | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A.                                 |
| <ul> <li>EAR</li> <li>Describe the histological features of middle ear and cochlear apparatus by observing under the microscope.</li> </ul>   | HISTOLOGY    | 120 minutes | Dr. Aneela | Practical | Histology<br>laboratory,<br>First floor,<br>Block-A                                  |
| <ul> <li><b>RECOMBINANT DNA TECHNOLOGY-1</b></li> <li>Define the terms biotechnology, recombinant DNA and recombinant DNA technology.</li> </ul>  | BIOCHEMISTRY | 60 minutes  | Dr. Benish | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A.                                 |





| •            | Identify the applications of recombinant DNA<br>technology<br>List the tools used in recombinant DNA<br>technology.<br>Describe the role of every tool in recombinant<br>DNA technology                                      |            |            |              |         |  |
|--------------|--|------------|------------|--------------|---------|--|
| IN<br>•<br>• | <b>TERNAL EAR</b><br>Describe the functions of organ of Corti.<br>Explain endo-cochlear potential.<br>Define place principle theory of hearing.<br>Define decibel.<br>Explain threshold of hearing at different frequencies. | PHYSIOLOGY | 60 minutes | Dr. M. Ali   | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| VI<br>•<br>• | <b>ESTIBULOCOCHLEAR NERVE</b><br>Describe the Vestibulocochlear nerve and its<br>branches.<br>Identify its pathway and relations.<br>Discuss the applied anatomy of<br>Vestibulocochlear nerve.                              | ANATOMY    | 60 minutes | Dr. Mubashra | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| PI<br>•      | <b>IYSIOLOGY OF HEARING</b><br>Explain the physiological role of outer,<br>middle and inner Ears in conduction of sound.   | PHYSIOLOGY | 60 minutes | Dr. Saba     | Lecture | Lecture<br>hall – 2,                                 |





| <ul> <li>List the contents of middle ear cavity.</li> <li>Explain the mechanism of sound conduction in middle ear.</li> </ul>   |              |             |                |           | Ground<br>floor,<br>Block-A.                         |
|---|--------------|-------------|----------------|-----------|--|
| <b>IMPEDANCE MATCHING</b><br>Discuss about attenuation reflex and Impedance<br>matching.  | PHYSIOLOGY   | 45 minutes  | Dr. Saba Abrar | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>RECOMBINANT DNA TECHNOLOGY-2</li> <li>Describe the process of DNA cloning.</li> <li>Recognize the importance of Human genome project in creating DNA libraries.</li> </ul>                               | BIOCHEMISTRY | 60 minutes  | Dr. Benish     | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>AUDITORY PATHWAY</li> <li>Identify the auditory centers in the cerebral cortex.</li> <li>Types of deafness.</li> <li>Explain audiograms in deafness.</li> </ul>  | PHYSIOLOGY   | 60 minutes  | Dr. Saba Abrar | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>HEARING TEST</li> <li>List the Instrument Used in Hearing Test.</li> <li>Perform hearing test by using tunning forks.</li> <li>Differentiate between Nerve deafness &amp; conductive deafness</li> </ul> | PHYSIOLOGY   | 120 minutes | Dr. Sobia      | Practical | Physiology<br>laboratory,<br>First floor,<br>Block-A |





| <ul> <li>EXTERNAL EAR AND MIDDLE EAR<br/>CLEFT AND ITS COMMON<br/>PATHOLOGIES</li> <li>Discuss about external ear pathologies related<br/>excess wax secretion, foreign bodies<br/>dislodgement, otitis externa and fungal<br/>infections.</li> <li>Define otitis media</li> <li>Classify types of otitis media</li> <li>Identify pathological features of acute<br/>suppurative otitis media.</li> </ul> | ENT          | 60 minutes | Dr. Maria<br>Mehmood | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|---|--------------|------------|----------------------|---------|--|
| <ul> <li>RECOMBINANT DNA TECHNOLOGY-3</li> <li>Describe the process of polymerase chain reaction (PCR)</li> <li>Identify the advantages of PCR</li> <li>List the applications of PCR.</li> </ul>  | BIOCHEMISTRY | 60 minutes | Dr. Kahkashan        | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>ORAL CAVITY</li> <li>Describe the boundaries and contents of oral cavity.</li> <li>Describe the permanent and deciduous teeth.</li> <li>Name the nerve supply of upper and lower teeth.</li> </ul>   | ANATOMY      | 45 minutes | Dr. Sarosh           | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>TONGUE &amp; HYPOGLOSSAL NERVE</li> <li>Describe the extrinsic &amp; intrinsic muscles of the tongue.</li> <li>Describe the nerve supply &amp; lymphatic drainage of tongue</li> </ul>  | ANATOMY    | 45 minutes  | Dr. Shahid     | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|--|------------|-------------|----------------|-----------|--|
| <ul> <li>HISTOLOGY OF TONGUE</li> <li>Describe the microscopic features of tongue.</li> <li>Describe the various tongue papillae.</li> </ul>   | ANATOMY    | 45 minutes  | Dr. Inayat     | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li><b>TONGUE</b></li> <li>Describe the microscopic features of tongue.</li> <li>Describe the various tongue papillae.</li> </ul>   | HISTOLOGY  | 120 minutes | Dr. Aneela     | Practical | Histology<br>laboratory,<br>First floor,<br>Block-A  |
| <ul> <li><b>DEVELOPMENT OF TONGUE</b></li> <li>Describe the development of tongue.</li> <li>Describe the various anomalies of tongue development.</li> </ul>   | ANATOMY    | 45 minutes  | Dr. Inayat     | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>TASTE-1</li> <li>Define types of primary tastes with examples.</li> <li>Enumerate the taste buds and their locations.</li> <li>Summarize a taste cells.</li> <li>Name the different types of papillae and their locations.</li> </ul> | PHYSIOLOGY | 45 minutes  | Dr. Saba Abrar | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| • Enumerate the pathway of taste.   |            |             |                      |           |  |
|---|------------|-------------|----------------------|-----------|--|
| <ul> <li>TASTE-2</li> <li>Discuss the mechanism of stimulation of taste buds.</li> <li>Discuss the role of saliva in taste.</li> <li>Define taste blindness.</li> <li>Define adaptation of taste.</li> <li>Define taste preferences and taste aversion.</li> </ul>  | PHYSIOLOGY | 60 minutes  | Dr. Muhammad<br>Ali  | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>SENSE OF TASTE</li> <li>Explain the mechanism smell perception.</li> <li>Test sense of smell of a given subject by using different odorants.</li> <li>Mark the result as "Normal" or "Abnormal".</li> </ul>  | PHYSIOLOGY | 120 minutes | Dr. Sobia            | Practical | Physiology<br>laboratory,<br>First floor,<br>Block-A |
| <ul> <li>ORAL CAVITY DISEASES</li> <li>Classify the types of oral ulcers</li> <li>List the pre-malignant conditions of oral cavity.</li> <li>Describe the morphology of squamous cell carcinoma &amp; basil cell carcinoma.</li> <li>Enumerate the risk factors of squamous cell carcinoma &amp; basil cell carcinoma.</li> </ul> | PATHOLOGY  | 60 minutes  | Dr. Naseema<br>Iqbal | Lecture   | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>PAROTID REGION</li> <li>Describe major &amp; minor salivary glands.</li> <li>Describe the structure of Parotid and its location.</li> <li>Describe the location and openings of the parotid duct.</li> </ul>   | ANATOMY              | 45 minutes                | Dr. Shahid               | Lecture              | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A.  |
|---|----------------------|---------------------------|--------------------------|----------------------|---|
| <ul> <li>SUBMANDIBULAR REGION         <ul> <li>Describe the submandibular gland.</li> <li>Describe the location and openings of the duct of sub-mandibular gland.</li> </ul> </li> <li>SALIVARY GLANDS         <ul> <li>Describe the microscopic features of submandibular and sublingual salivary glands.</li> <li>Describe the histological differences between serous and mucous acini of submandibular and sublingual salivary glands.</li> </ul> </li> </ul> | ANATOMY<br>HISTOLOGY | 45 minutes<br>120 minutes | Dr. Shahid<br>Dr. Aneela | Lecture<br>Practical | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A.<br>Histology<br>laboratory,<br>First floor,<br>Block-A |
| <ul> <li>DISORDERS OF SALIVARY GLANDS</li> <li>Define Sialadenitis.</li> <li>List the causes of sialadenitis.</li> <li>List Benign and Malignant tumors of Salivary Glands.</li> </ul>  | PATHOLOGY            | 45 minutes                | Dr. Rozina               | Lecture              | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A.  |





|  | ECK MODUL |            |                   |         |  |
|--|-----------|------------|-------------------|---------|--|
| • Describe the morphological feature of Pleomorphic Adenoma.   |           |            |                   |         |  |
| <ul> <li>SURGICAL ANATOMY AND<br/>PATHOPHYSIOLOGY OF SALIVARY<br/>GLANDS DISEASE</li> <li>Explain the surgical anatomy of salivary<br/>glands</li> <li>Describe pathology and clinical features of<br/>salivary gland disease.</li> </ul>  | SURGERY   | 45 minutes | Dr. Shafkat ullah | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>APPLIED ANATOMY OF HEAD &amp; NECK</li> <li>Identify the indications for the management<br/>of epilepsy and pain syndromes and the<br/>approaches required to treat the patient</li> <li>Discuss the etiology and natural history of<br/>squamous cell carcinoma of upper<br/>aerodigestive tract.</li> </ul> | SURGERY   | 60 minutes | Dr. Sidra Abbas   | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>GLOSSOPHARYNGEAL AND VAGUS<br/>NERVE</li> <li>Describe the origin and course of<br/>glossopharyngeal and vagus nerve.</li> <li>List their branches.</li> <li>Discuss the area of supply of of<br/>glossopharyngeal and vagus nerve.</li> </ul>  | ANATOMY   | 45 minutes | Dr. Sarosh        | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>PAROTITIS, PLEOMORPHIC ADENOMA<br/>AND SIALOLITHIASIS</li> <li>Recall the classification of salivary glands.</li> <li>Discuss about salivary gland pathologies and their management.</li> </ul>  | ENT     | 45 minutes | Dr. Rehana Babar | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|---|---------|------------|------------------|---------|--|
| <ul> <li>MUSCLE OF MASTICATION</li> <li>Identify the muscles of mastication.</li> <li>Describe the movements of TMJ with the muscles involved.</li> <li>Describe the neuro vascular supply of it.</li> </ul>                                    | ANATOMY | 45 minutes | Dr. Shahid       | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>HYOID BONE</li> <li>Describe the structure of hyoid bone.</li> <li>State the anatomical importance of hyoid bone in relation to structures and muscles located around it.</li> </ul>   | ANATOMY | 45 minutes | Dr. Sarosh       | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>PARASYMPATHETIC GANGLION</li> <li>Describe the structure of parasympathetic ganglion in relation to preganglionic and postganglionic fibres arising from it.</li> <li>Identify the structures it offers its innervation to.</li> </ul> | ANATOMY | 45 minutes | Dr. Mubashara    | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>DEEP CERVICAL FASCIA AND<br/>PLATYSMA MUSCLE</li> <li>Describe the deep cervical fascia and its<br/>location.</li> <li>Describe platysma muscle.</li> </ul>  | ANATOMY | 60 minutes | Dr. Mubashara  | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|---|---------|------------|----------------|---------|--|
| <ul> <li>CERVICAL PLEXUS</li> <li>Name the nerve root of cervical plexus.</li> <li>Describe the formation and branches of cervical plexus.</li> </ul>   | ANATOMY | 60 minutes | Dr. Shahid     | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>CERVICAL VERTEBRAE</li> <li>Identify the cervical vertebra.</li> <li>Describe the features and joints formed by cervical vertebrae.</li> <li>Differentiate between typical and atypical vertebrae</li> <li>Describe the important clinical significance of cervical vertebra.</li> </ul> | ANATOMY | 60 minutes | Dr. Saba Akram | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>PRETRACHEAL FASCIA, CAROTID<br/>SHEATH AND TISSUE SPACES OF NECK-1</li> <li>Describe the pretracheal fascia and its<br/>location.</li> <li>Describe the carotid sheath and their</li> </ul>  | ANATOMY | 45 minutes | Dr. Mubashara  | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| contents.   |              |            |                |         |  |
|---|--------------|------------|----------------|---------|--|
| <ul> <li>PRETRACHEAL FASCIA, CAROTID</li> <li>SHEATH AND TISSUE SPACES OF NECK-2</li> <li>Describe the relations of carotid sheath and pretracheal fascia.</li> <li>Describe the various tissue spaces of neck, their contents and their relations.</li> </ul>  | ANATOMY      | 45 minutes | Dr. Saba Akram | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>PREVERTEBRAL FASCIA</li> <li>Describe the pre-vertebral fascia and its location.</li> <li>Describe the relations of carotid sheath and pre-vertebral fascia.</li> </ul>  | ANATOMY      | 45 minutes | Dr. Sarosh     | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>RECOMBINANT DNA TECHNOLOGY-4</li> <li>Define blotting.</li> <li>Identify that DNA, RNA and proteins are analyzed by Southern Blot, Northern Blot and Western Blot tests respectively.</li> <li>Describe the technique of southern blotting.</li> </ul> | BIOCHEMISTRY | 60 minutes | Dr. Benish     | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>STERNOCLEIDOMASTOID &amp; TRAPEZIUS</li> <li>MUSCLES ACCESSORY NERVE</li> <li>Identify sternocleidomastoid muscle and</li> </ul>   | ANATOMY      | 60 minutes | Dr. Saba Akram | Lecture | Lecture<br>hall – 2,                                 |





| <ul> <li>trapezius muscle</li> <li>Describe the attachment of,nerve supply and action of sternocleidomastoid.</li> <li>Describe the attachment ,nerve supply and action of trapezius muscle.</li> </ul>   |           |            |               |         | Ground<br>floor,<br>Block-A.                         |
|---|-----------|------------|---------------|---------|--|
| <ul> <li>INFORMED CONSENT AND REFUSAL OF<br/>TREATMENT</li> <li>Describe four principles of health care ethics.</li> <li>Define informed consent.</li> <li>Discuss the elements of informed consent.</li> <li>Enumerate the types of informed consent.</li> </ul> | BIOETHICS | 60 minutes | Dr. Mubashara | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>ANTERIOR TRIANGLE OF NECK</li> <li>Describe the anterior triangle of the neck.</li> <li>Name the subdivision of anterior triangle</li> <li>Describe the boundaries and content of subdivision of anterior triangle.</li> </ul>                           | ANATOMY   | 60 minutes | Dr. Sarosh    | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li><b>POSTERIOR TRIANGLE OF NECK</b></li> <li>Describe the posterior triangle of the neck.</li> <li>Name the subdivision of anterior triangle</li> <li>Describe the boundaries and content of subdivision of the posterior triangle of neck.</li> </ul>     | ANATOMY   | 60 minutes | Dr. Sarosh    | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>NECK RADIOLOGY</li> <li>Identify the radiological anatomy of neck.</li> <li>Know about view of neck.</li> <li>Defend the need for next appropriate radiological investigation like other views of x-ray, ultrasound, CT and MRI.</li> </ul> | RADIOLOGY | 60 minutes | Dr. Touqeer    | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|--|-----------|------------|----------------|---------|--|
| <ul> <li>SUPRAHYOID MUSCLES</li> <li>Describe the location of suprahyoid muscles.</li> <li>Describe the attachment of suprahyoid muscles.</li> <li>Mention the nerve supply and actions of suprahyoid muscles.</li> </ul>                            | ANATOMY   | 60 minutes | Dr. Saba Akram | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>INFRAHYOID MUSCLES</li> <li>Describe the location of infrahyoid muscles.</li> <li>Describe the attachment of infrahyoid muscles.</li> <li>Mention the nerve supply and actions of infrahyoid muscles.</li> </ul>                            | ANATOMY   | 60 minutes | Dr. Mubashara  | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>LYMPHATICS OF NECK</li> <li>Describe the lymphatic drainage of the neck.</li> <li>Describe the applied anatomy of the lymphatic drainage of the neck.</li> </ul>  | ANATOMY   | 45 minutes | Dr. Saba Akram | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| <ul> <li>RECOMBINANT DNA TECHNOLOGY-5</li> <li>Define ELISA.</li> <li>Identify the purpose of performing ELISA on a body fluid sample.</li> <li>Describe the principle of ELISA.</li> <li>Classify the types of ELISA tests.</li> <li>List the applications of ELISA tests in medicine.</li> </ul>                | BIOCHEMISTRY | 60 minutes | Dr. Iffat     | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
|---|--------------|------------|---------------|---------|--|
| <ul> <li><b>ROOT OF NECK</b></li> <li>Describe the landmarks and fascia of the root of neck.</li> <li>Describe the structures passing through the root of neck.</li> </ul>  | ANATOMY      | 45 minutes | Dr. Mubashara | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>VEINS OF NECK</li> <li>Identify the arteries of the neck.</li> <li>Describe arteries of head and neck.</li> </ul>  | ANATOMY      | 45 minutes | Dr. Sarosh    | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>CRANIAL NERVES-1</li> <li>Describe the olfactory nerve, and its pathway.</li> <li>Identify optic, oculomotor, trochlear, abducent nerves their pathway and branches.</li> <li>Describe the trigeminal nerve, branches, and its pathway.</li> <li>Describe the facial nerve, branches, and its</li> </ul> | ANATOMY      | 60 minutes | Dr. Shahid    | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |





| pathway.  |          |            |                |          |                     |
|---|----------|------------|----------------|----------|---------------------|
| • Discuss the applied anatomy.  |          |            |                |          |                     |
|   |          |            |                |          |                     |
| CRANIAL NERVES-2  | ANATOMY  | 60 minutes | Dr. Shahid     | Lecture  | Lecture             |
| • Describe the vestibulocochlear nerve, branches, and its pathway.    |          |            |                |          | hall – 2,<br>Ground |
| • Describe glassophalangeal, vagus, accessory and hypoglossal nerves. |          |            |                |          | floor,<br>Block-A.  |
| • Discuss the applied anatomy of cranial nerves.                      |          |            |                |          |                     |
| LESIONS OF CRANIAL NERVE  | MEDICINE | 45 minutes | Dr. Adil Khan  | Lecture  | Lecture             |
| • Discuss the common cranial nerve lesions                            |          |            |                |          | hall $-2$ ,         |
| with their presentation.  |          |            |                |          | Ground              |
|   |          |            |                |          | floor,              |
|   |          |            |                |          | Block-A.            |
| ARTERIES OF NECK  | ANATOMY  | 45 minutes | Dr. Saba Akram | Lecture  | Lecture             |
| • Identify the arteries of the neck.                                  |          |            |                |          | hall $-2$ ,         |
| • Describe arteries of head and neck.                                 |          |            |                |          | Ground              |
|   |          |            |                |          | floor,              |
|   |          | 45         |                | <b>T</b> | Block-A.            |
| CERVICAL SYMPATHETIC TRUNK-I  | ANATOMY  | 45 minutes | Dr. Mubashara  | Lecture  | Lecture             |
| • Discuss the organization of the autonomic                           |          |            |                |          | hall - 2,           |
| nervous system.   |          |            |                |          | Ground              |
| • Describe the sympathetic and  |          |            |                |          | TIOOR,              |
| parasympathetic nervous system.                                       |          |            |                |          | Block-A.            |





| • Describe cervical sympathetic trunk.   |                     |            |                |         |  |
|--|---------------------|------------|----------------|---------|--|
| <ul> <li>CERVICAL SYMPATHETIC TRUNK-2</li> <li>Describe the sympathetic autonomic ganglia.</li> <li>Describe some important autonomic innervations.</li> <li>Discuss some important reflexes involving the nervous system.</li> </ul>                    | ANATOMY             | 45 minutes | Dr. Saba Akram | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <ul> <li>INFORMED CONSENT AND REFUSAL OF<br/>TREATMENT -2</li> <li>Define concept of informed consent.</li> <li>Discuss when informed consent needed and<br/>not needed.</li> <li>Describe the conditions needed for consent to<br/>be valid.</li> </ul> | BIOETHICS           | 60 minutes | Dr. Mubashara  | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <b>CONSTITUTION OF 1956</b><br>Describe and explain the Constitution of 1956   | PAKISTAN<br>STUDIES | 45 minutes | Miss Uzma      | Lecture | Lecture<br>hall – 2,<br>Ground<br>floor,<br>Block-A. |
| <b>CONSTITUTION OF 1962</b><br>Describe and explain the Constitution of 1962   | PAKISTAN<br>STUDIES | 45 minutes | Miss Uzma      | Lecture | Lecture<br>hall – 2,                                 |





|   |          |            |           |         | Ground<br>floor, |
|---|----------|------------|-----------|---------|------------------|
|   |          |            |           | -       | Block-A.         |
| CONSTITUTION OF 1973                          | PAKISTAN | 45 minutes | Miss Uzma | Lecture | Lecture          |
| Describe and explain the Constitution of 1973 | STUDIES  |            |           |         | hall $-2$ ,      |
|   |          |            |           |         | Ground           |
|   |          |            |           |         | floor,           |
|   |          |            |           |         | Block-A.         |
|   | PAKISTAN | 45 minutes | Miss Uzma | Lecture | Lecture          |
|   | STUDIES  |            |           |         | hall $-2$ ,      |
|   |          |            |           |         | Ground           |
|   |          |            |           |         | floor,           |
|   |          |            |           |         | Block-A.         |





#### **REFERENCE BOOKS AND OTHER READING RESOURCES:**

| Gross Anatomy | BD Chaurasia's Handbook of GENERAL ANATOMY |
|---------------|--|
|               | Netter Atlas of HumanAnatomy               |
|               | Snell's Clinical Anatomy by Regions        |
|               | Gray's Anatomy for Students.               |
| Embryology    | Langman's Medical Embryology               |
|               | The Developing Human by Keith L.Moore      |





| Histology        | Histology by Laiq Hussain Siddiqui  |
|------------------|---|
| Physiology       | Guyton and Hall. Textbook of Medical Physiology, 13 <sup>th</sup> Edition.                      |
|                  | Ganong's Review of Medical Physiology, 24 <sup>th</sup> Edition.                                |
|                  | Essentials of Medical Physiology by K.Sembulingam   |
| Biochemistry     | Textbook of Medical Biochemistry M.N.Chatterjee and Rana Shinde                                 |
|                  | Textbook of Biochemistry for Medical Students Damodaran M Vasudevan and S. Sreekumari           |
|                  | Harper's Illustrated Biochemistry   |
| Pathology        | Robin`s BasicPathology-10 <sup>th</sup> Edition   |
| Pharmacology     | Essential   |
|                  | - Bertram G. Katzung. Basic and Clinical Pharmacology, 14 <sup>th</sup> Edition. 2017.          |
|                  | - Katzung and Trevor's pharmacology Examination and Board Review 11 <sup>th</sup> Edition 2015. |
|                  | Recommended   |
|                  | - Lippincott's illustrated review of Pharmacology. 6 <sup>th</sup> Edition. 2015.               |
| Pakistan Studies | 1. Burki, Shahid Javed. State & amp; Society in Pakistan, The Macmillan Press Ltd 1980.         |
|                  | 2. Akbar, S. Zaidi. Issue in Pakistan's Economy. Karachi: Oxford University Press, 2000.        |
|                  | 3 SM. Burke and Lawrence Ziring. Pakistan's Foreign policy: An Historical analysis.             |
|                  | Karachi: Oxford University Press, 1993.   |
|                  | 4. Mehmood, Safdar. Pakistan Political Roots & amp; Development. Lahore, 1994.                  |
|                  | 5. Wilcox, Wayne. The Emergence of Bangladesh., Washington: American Enterprise, Institute      |
|                  | of Public Policy Research, 1972.  |
|                  | 6. Mehmood, Safdar. Pakistan KayyunToota, Lahore: Idara-e-Saqafat- e-Islamia, Club Road,        |
|                  | nd.   |
|                  | 7. Amin, Tahir. Ethno - National Movement in Pakistan, Islamabad: Institute of Policy Studies,  |
|                  | Islamabad.  |
|                  | 8. Ziring, Lawrence. Enigma of Political Development. Kent England: WmDawson& sons Ltd,         |
|                  | 1980.   |





|                      | 9. Zahid, Ansar. History & amp; Culture of Sindh. Karachi: Royal Book Company, 1980.                                 |
|----------------------|--|
|                      | 10. Afzal, M Rafique. Political Parties in Pakistan, Vol. I, II & amp; III. Islamabad: National Institute            |
|                      | of Historical and cultural Research, 1998.   |
| Community Medicine   | Ilyas M, Public Health and Community Medicine, 7 <sup>th</sup> Edition, Karachi, Pakistan, Time Publisher, 2007.     |
|                      | Maxcy-Rosenau-Last, public Health and Preventive Medicine, 13th Edition, USA, Prentice-Hall International            |
|                      | Inc, 1992.   |
|                      | K.Park, Preventive and Social Medicine, 20 <sup>th</sup> Edition, Jabalpur (India), M/s BanarsidasBhanot, Publisher, |
|                      | 2009.  |
| General Medicine     | Davidson's Principles and Practice of Medicine-22 <sup>nd</sup> Edition  |
| Clinical Examination | Talley and O'Connor's Clinical Examination-6 <sup>th</sup> Edition   |
| General Surgery      | Bailey And Love Short Practice Of Surgery, 27 <sup>th</sup> Edition  |
|                      | Last's anatomy 12 <sup>th</sup> edition  |
|                      | Snell's anatomy by regions 10 <sup>th</sup> edition  |
| Research             | Introduction to Research in Health Sciences- Stephen Polgar, Shane A. Thomas.  |
|                      | Biomedical Research Proposal Writing- Syed Sharaf Ali Shah, ZarfshanTahir, Rozina Karmaliani.                        |
|                      | Epidemiology - Leon Gordis; Fifth Edition.   |
| PEARLs               | https://www.mededportal.org/publication/10610/   |
| Paediatrics          | Nelson Textbook of Pediatric 21 <sup>st</sup> edition.   |
|                      | Textbook of Paediatrics (PPA) Fifth edition.   |
|                      | Basis of Pediatrics (Pervez Akbar Khan) 10 <sup>th</sup> edition   |

#### **ASSESSMENT METHODS:**





#### **THEORY:**

- **Essay Questions- Short Essay Questions (SEQs)** are used to assess objectives covered in each module.
  - 6 SEQs are given (no choice).
  - Time duration 90 minutes.
  - Students write the answer in the provided answer sheet.
- **Australia Choice Questions (MCQs)** are used to assess objectives covered in each module.
  - An MCQ has a statement or clinical scenario followed by four options (likely answer).
  - Students after reading the statement/scenario select ONE, the most appropriate response from the given list of options.
  - Correct answer carries one mark, and incorrect 'zero mark'. There is no negative marking.
  - Students mark their responses on specified computer-based/OMR sheet designed for BMC, BMU.

#### **OSPE/OSCE:** Objective Structured Practical/Clinical Examination:

- Each student will be assessed on the same content and have same time to complete the task.
- Comprise of 05 stations.
- Each station may assess a variety of clinical tasks; these tasks may include history taking, physical examination, skills and application of skills and knowledge.
- Stations are observed, unobserved, interactive and rest stations.
- Observed and interactive stations will be assessed by internal or external examiners.
- Unobserved will be static stations in which there may be an X-ray, Labs reports, pictures, Biochemical estimation tests graph construction tasks or clinical scenarios with related questions for students to answer.
- Rest station is a station where there is no task given and in this time student can organize his/her thoughts.

#### **INTERNAL EVALUATION:**

• Students will be assessed to determine achievement of module objectives through the following:





- **Module Examination:** will be scheduled on completion of each module. The method of examination comprises theory exam which includes MCQs and OSPE (Objective Structured Practical Examination).
- Formative Assessment of students combined: Quiz, viva, practical, assignment, small group activities such as CBL, online assessment, and Practical journal work.
- Marks and attendance of modular examination and formative assessment respectively will constitute 20% weightage which will be added to the marksheet of Second Professional Annual Examination.

#### FORMATIVE ASSESSMENT:

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





More than 75% attendance is needed to sit for the modular and final examinations





| DAYS                | 8:30-9:30 am                             | 9:30-10:30 am                      | 10:30-<br>11:00<br>am | 11:00 am-12:00<br>pm                                 | 12:00-1:00 pm               | 1:00-<br>1:30 pm | 1:30-2:30 pm   | 2:30-4:30 pm   |
|---------------------|--|------------------------------------|-----------------------|--|-----------------------------|------------------|--|--|
| 29-07-2024<br>DAY 1 |  |                                    |                       | ENDOCRIN   | E MODUL                     | E EXA            | M  |  |
| 30-07-2024<br>DAY 2 | Anatomy<br>Bones And<br>Joints Of Skull  | Anatomy<br>Development Of<br>Skull |                       | Biochemistry<br>Structure Of DNA                     | Pakista<br>n<br>Studie<br>s |                  | Anatomy<br>Norma Verticalis                          | Anatomy<br>Norma Occipitalis                           |
| 31-07-2024<br>DAY 3 | Biochemistry<br>DNA<br>Replication-<br>1 | Anatomy<br>Norma Frontalis         |                       | Surgery<br>Head & Neck<br>Surgery-1                  | SDL                         | oreak            | Research   | Anatomy<br>Norma Lateralis                             |
| 01-08-2024<br>DAY 4 | Anatomy<br>Norma Basalis-<br>I           | Biochemistry<br>DNA Replication-II | Tea Break             | SDL  | PEARLS                      | Lunch & Prayer t | Anatomy<br>Norma Basalis-II                          | Anatomy<br>Development Of<br>Pharyngeal<br>Apparatus I |
| 02-08-2024<br>DAY 5 | Anatomy<br>Scalp                         | Anatomy<br>Histology Of Scalp      |                       | Behavioural<br>Sciences<br>Bio Psychosocial<br>Model | SDL                         |                  | Community<br>Medicine<br>Injuries & Their<br>Control | Anatomy<br>Mandible                                    |









| DAYS                 | 8:30-9:30 am                      | 9:30-10:30 am                                  | 10:30-<br>11:00<br>am | 11:00 am-12:00 pm  | 12:00-1:00 pm               | 1:00-<br>1:30 pm | 1:30-2:30 pm                                     | 2:30-4:30 pm   |
|----------------------|-----------------------------------|--|-----------------------|--|-----------------------------|------------------|--|--|
| 05-08-2024<br>DAY 1  | Biochemistry<br>DNA repair I      | Anatomy<br>Temporal fossa                      |                       | Radiology<br>Radiological<br>anatomy of head                         | PEARLS                      |                  | Anatomy<br>Embryology<br>Pharyngeal<br>apparatus | Anatomy<br>TMJ   |
| 06-08 -2024<br>DAY 2 | Anatomy<br>Infratemporal<br>fossa | Anatomy<br>Development<br>Of face              | c.                    | SDL  | Pakista<br>n<br>Studie<br>s |                  | Biochemistry<br>DNA repair II                    | Anatomy<br>Nerves and blood vessels of<br>face   |
| 07-08-2024<br>DAY 3  | Anatomy<br>Muscles of face        | Anatomy<br>Eyelid and<br>lacrimal gland        | Tea B                 | Research   | SDL                         | Lunch & Pra      | Anatomy<br>Orbit and its<br>content              | Anatomy<br>Eye ball and its content  |
| 8-08-2024<br>DAY 4   | Physiology<br>Eye ball            | Anatomy<br>Embryology<br>Development of<br>eye | reak                  | PRACTIC<br>Histology- Scalp- G<br>Physiology-Fundoso<br>G#C SDL- G#B | AL A, B & C<br>#A<br>copy-  | ayer break       | Pathology<br>Eye disorders                       | Physiology<br>Retina-I   |
| 9-08-2024<br>DAY 5   | Physiology<br>Retina-II           | Anatomy<br>Histology<br>eye                    | k                     | PRACTIC<br>Histology- Scalp- G<br>Physiology- Fundos<br>G#B SDL-G#A  | AL A, B & C<br>#C<br>scopy- |                  | 1:30-2:00<br>Physiology<br>Optics of vision      | 2:30-4:00<br>PRACTICAL A, B & C<br>Histology-Scalp- G#B<br>Physiology-<br>Fundoscopy- G#A<br>SDL-G#C |













| DAYS                 | 8:30-9:30 am                                 | 9:30-10:30 am                          | 10:30-<br>11:00<br>am | 11:00 am-12:00 pm   | 12:00-1:00 pm                                | 1:00-<br>1:30 pm | 1:30-2:30 pm                                  | 2:30-4:30 pm   |
|----------------------|--|--|-----------------------|---|--|------------------|---|--|
| 11-08-2024<br>DAY 1  | Physiology<br>Errors<br>of<br>refractio<br>n | Ophthalmology<br>refractive<br>surgery |                       | Pearls  | Pakista<br>n<br>Studie<br>s                  |                  | Biochemistry<br>Structure of RNA              | Physiology<br>Accommodation I  |
| 12-08 -2024<br>DAY 2 | Physiology<br>Accommodatio<br>n II           | Physiology<br>Light reflex             |                       | Ophthalmology<br>Papillary reflex<br>abnormalities                    | SDL  |                  | Biochemistry<br>Transcription-I               | Physiology<br>Photochemistry of vision   |
| 13-08-2024<br>DAY 3  | Physiology<br>Color vision                   | Biochemistry<br>Transcription-II       |                       | PRACTIC<br>Histology- EYE-G<br>Visual acuity - G                      | AL A, B & C<br>#A Physiology-<br>#C SDL- G#B | break            | Physiology<br>Light and<br>dark<br>adaptation | Biochemistry<br>Post transcription<br>modification   |
| 14-08-2024<br>DAY 4  | INDEPEND<br>HOLIDAY                          | ENCE DAY                               | Tea Break             | INDEPENDENCE<br>DAY HOLIDAY   |  | Lunch & Prayer   | INDEPE<br>H                                   | NDENCE DAY<br>OLIDAY   |
| 15-08-2024<br>DAY 5  | Physiology<br>Movements of<br>the eyeball    | Ophthalmolog<br>y<br>Squint            |                       | PRACTIC/<br>Histology- EYE- G#<br>Physiology- Visual a<br>G#B SDL-G#A | AL A, B & C<br>C<br>acuity -                 |                  | 1:30-2:30<br>Physiology<br>Visual cortex-1    | 2:30-4:00<br>PRACTICAL A, B & C<br>Histology-EYE- G#B<br>Physiology- Visual<br>acuity - G#A<br>SDL-G#C |





| DAYS                 | 8:30-9:30 am                           | 9:30-10:30 am                      | 10:30-<br>11:00<br>am | 11:00 am-12:00 pm   | 12:00-1:00 pm                 | 1:00-<br>1:30<br>pm | 1:30-2:30 pm                                       | 2:30-4:30 pm   |
|----------------------|--|------------------------------------|-----------------------|---|-------------------------------|---------------------|--|--|
| 19-08-2024<br>DAY 1  | Biochemist<br>ry Vitamin<br>A          | Physiology<br>Visual cortex-<br>II |                       | B.Sciences<br>Emotions<br>and<br>Motivation                       | SDL                           |                     | Anatomy<br>Optic Nerve                             | Biochemistry<br>Genetic Code And Mutation  |
| 20-08 -2024<br>DAY 2 | Anatomy<br>Nose                        | ENT<br>Deviated Nasal<br>Septum    |                       | SDL   | Pakistan<br>Studies           | -                   | RESEARCH   | Anatomy<br>Olfactory<br>Nerve  |
| 21–08-2024<br>DAY 3  | Bioethics<br>Medical<br>Negligenc<br>e | Pearls                             | Tea B                 | Formative<br>Assessme<br>nt                                       | SDL                           | Lunch & Pr          | Physiolog<br>y Olfaction                           | Biochemist<br>ry<br>Translation<br>I   |
| 22-08-2024<br>DAY 4  | Anatomy<br>Para nasal<br>Sinuses       | ENT<br>Sinusitis                   | reak                  | PRACTICA<br>Histology- NOSE G#<br>Physiology-Amblyose<br>SDL- G#B | L A, B & C<br>A<br>copy- G#C  | yer break           | 1:30-2:30<br>Pathology<br>Nasal Polyp              | 2:30-4:30<br>APPLIED<br>ANATOMY  |
| 23-08-2024<br>DAY 5  | Anatomy<br>External Ear                | Anatom<br>y Middle<br>Ear          |                       | PRACTICA<br>Histology- NOSE- G#<br>Physiology- Amblyos<br>SDL-G#A | L A, B & C<br>fC<br>scopy G#B | ¢_                  | 1:30-2:30<br>Biochemist<br>ry<br>Translation<br>II | 2:30-4:30<br>PRACTICAL A, B & C<br>Histology-NOSE-<br>G#BPhysiology<br>Amblyoscopy- G#A<br>SDL-G#C |





| DAYS                 | 8:30-9:30 am  | 9:30-10:30 am  | 10:30-<br>11:00<br>am | 11:00 am-12:00 pm  | 12:00-1:00 pm                         | 1:00-<br>1:30<br>pm  | 1:30-2:30 pm  | 2:30-4:30 pm   |
|----------------------|---|--|-----------------------|--|---------------------------------------|----------------------|---|--|
| 26-08-2024<br>DAY 1  | Biochemistry<br>Post-<br>Translational<br>Modification                            | SDL  |                       | CBL  |                                       |                      | Biochemistry<br>Recombinant<br>DNA<br>Technology-1                  | Physiology<br>Internal Ear   |
| 27-08 -2024<br>DAY 2 | Anatomy<br>Vestibulocochle<br>ar Nerve  | Physiology<br>Physiology<br>Of Hearing   | -                     | SDL  | Pakistan<br>Studies<br>(MISS<br>UZMA) | -                    | Physiolo<br>gy<br>Impedan<br>ce<br>Matching(<br>DR SABA<br>ABRAR)   | Biochemistry<br>Recombinant DNA Technology-II<br>(DR BENISH)   |
| 28-08-2024<br>DAY 3  | Physiology<br>Auditory<br>Pathway (DR<br>SABA ABRAR)                              | ENT<br>External Ear<br>And Middle<br>Ear Cleft And<br>Its Common<br>Pathologies<br>(DR MARIA<br>MAHMOOD) | Tea Break             | Biochemistry<br>Recombinant<br>DNA<br>Technology-III   | SDL                                   | .unch & Prayer break | Surgery<br>Applied anatomy of<br>head & neck<br>(DR SIDRA<br>ABBAS) | Anatomy<br>Oral Cavity<br>(DR<br>SAROSH)   |
| 20-08-2024<br>DAY 4  | PRACTIC<br>Histology- Ear G#,<br>ANEELA) Physiol<br>hearing test- G#C<br>SDL- G#B | AL A, B & C<br>A(DR<br>ogy-<br>DR SOBIA)   |                       | PRACTICA<br>Histology- Ear G#A(I<br>ANEELA) Physiolog<br>hearing test- G#C D<br>SOBIA)<br>SDL- G#B | L A, B & C<br>DR<br>y-<br>R           |                      | Anatomy<br>Tongue Hypoglossal<br>nerve<br>(DR SHAHID)               | PRACTICAL A, B & C<br>Histology- Ear G#A(DR<br>ANEELA) Physiology-<br>hearing test- G#C DR<br>SOBIA)<br>SDL- G#B |
| 30-09-2024<br>DAY 5  | Physiolo<br>gy Taste<br>(DR SABA ABRAR)   | Pearls<br>(DR SAIMA<br>OAMAR)  | 1                     | Anatomy<br>Histology Of<br>Tongue  | Pathology<br>Oral Cavity<br>Disease   |                      |   | Anatomy Parotid<br>Region (DR SHAHID)  |





| DAYS                 | 8:30-9:15 am   | 9:15-10:00 am  | 10:00-11:00 am<br>11:00 am-12:00 pm | 12:00-1:00 pm | 1:00-<br>1:30<br>pm | 1:30-2:30 pm    | 2:30-4:30 pm |  |
|----------------------|--|--|-------------------------------------|---------------|---------------------|-----------------|--------------|--|
| 02-09-2024<br>DAY 1  | Anatomy<br>Submandibular<br>Region<br>(DR SHAHID)                        | Pathology Disorders<br>Of Salivary Glands<br>DR ROZINA/DR<br>SIDRA               | ANNUAL SPORTS WEEK 2024             |               |                     |                 |              |  |
| 035-09-2024<br>DAY 2 | Anatomy Glossopharyngeal<br>and vagus nerve<br>(DR SAROSH)               | ENT<br>Parotitis, Pleomorphic<br>Adema And<br>Sialolithiasis(DR<br>REHANA BABAR) |                                     | А             | NNUAL SF            | ORTS WEEK 2024  |              |  |
| 0409-2024<br>DAY 3   | 8:30-9:15am<br>Anatomy<br>Muscle Of Mastication<br>(DR SHAHID)           | 9:1510:00 am<br>Pearls<br>(DR SAIMA QAMAR)                                       | ANNUAL SPORTS WEEK 2024             |               |                     |                 |              |  |
| 05-09-2024<br>DAY 4  | Anatomy<br>Hyoid Bone<br>(DR SAROSH)                                     | Anatomy<br>ParasymoathetiGangl ion<br>(DR MUBASHARA)                             |                                     |               | ANNUAL SI           | PORTS WEEK 2024 |              |  |
| 06-09-2024<br>DAY 5  | Anatomy<br>Deep Cervical Fascia<br>And Platysma Muscle<br>(DR MUBASHARA) | F.MEDICINE<br>Trauma To The Head &<br>Neck I(DR JANE<br>ALAM)                    |                                     | 1             | ANNUAL SI           | PORTS WEEK 2024 |              |  |





#### HEAD & NECK MODULE 2024 WEEK 7

| DAYS                | 8:30-9:30 am  | 9:30-10:30 am   | 10:30-<br>11:00<br>am | 11:00 am-12:00 pm   | 12:00-1:00 pm   | 1:00-1:30<br>pm            | 1:30-2:30 pm   | 2:30-4:00 pm  |
|---------------------|---|---|-----------------------|---|---|----------------------------|--|---|
| 9-09-2024<br>DAY 1  | Anatomy Cervical<br>Plexus (DR SHAHID)  | SDL   | Tea Break             | Anatomy<br>Cervical Vertebrae<br>(DR SABA<br>AKRAM)   | Anatomy<br>Pretracheal Fascia,<br>Carotid Sheath And<br>Tissue Spaces Of<br>Neck<br>(DR<br>MUBAS<br>HARA) | Lunch &<br>Prayer<br>break | Anatomy<br>Pre-Vertebral Fascia<br>(DR SAROSH)         | B.Sciences<br>Doctor patient relationship (MISS<br>AZRA)  |
| 10-09-2024<br>DAY 2 | Surgery<br>Developmental<br>abnormalities of<br>face and<br>jaw/emergency<br>treatment of airway<br>obstruction<br>(DR ABID<br>OWAIS) | Biochemistry<br>Recombinant DNA<br>Technology-lv<br>(DR BENISH)   | Tea Break             | Anatomy<br>Stemocleidomastoid &<br>Trapezius Muscles<br>ACCESSORY NERVE<br>(DR SABA AKRAM)        | SDL   | Lunch &<br>Prayer<br>break | Anatomy<br>Anterior Triangle<br>Of Neck<br>(DR SAROSH) | Anatomy<br>Posterior Triangle Of Neck<br>(DR SAROSH   |
| 11—09-2024<br>DAY 3 | Radiology<br>Neck Radiology   | Pearls<br>(DR SAIMA<br>QAMAR  |                       | SDL   | Anatomy<br>Suprahyoid Muscles<br>(DR SABA<br>AKRAM)   |                            | Anatomy<br>Infrahyoid<br>Muscles DR<br>MUBASHARA)      | Lymphatics of neck<br>(DR SABA AKRAM  |
| 12-09-2024<br>DAY 4 | Biochemistry<br>Recombinant DNA<br>Technology-v   | Surgery<br>Surgical<br>anatomy and<br>pathophysiology<br>of salivary<br>glands disease<br>(DR<br>SHAFAATUKLL<br>AH) | Tea Break             | PRACTICA<br>Histology- tongue- G#A(<br>Physiology G#C sense of<br>(DR SOBIA)<br>SDL- G#B          | L A, B & C<br>DR ANEELA)<br>of taste-   | Lunch & Prayer break       | SDL  | F.MEDICINE<br>Trauma To The Head & Neck II  |
| 13-09-2024<br>DAY 5 | Anatomy Veins of<br>neck (DR<br>SAROSH)   | Anatomy Cranial<br>nerves I (DR<br>SHAHID)  |                       | PRACTICA<br>Histology- tongue- G#C(D<br>ANEELA) Physiology- si<br>taste G#B (DR SOBIA)<br>SDL-G#A | L A, B & C<br>R<br>ense of  |                            | 1:30-2:30<br>SDL                                       | 2:30-4:30<br>PRACTICAL A, B & C<br>HistologG#B tongue- (DR<br>ANEELA) Physiology- sense of<br>taste G#A (DR SOBIA)<br>SDL-G#C |





| DAYS                 | 8:30-9:30 am  | 9:30-10:30 am  | 10:3-<br>11:00<br>am | 11:00 am-12:00 pm  | 12:00-1:00 pm  | 1:00-<br>1:30 pm    | 1:30-2:30 pm   | 2:30-4:00 pm  |
|----------------------|---|--|----------------------|--|--|---------------------|--|---|
| 16-09-2024<br>DAY 1  | Anatomy<br>Cranial nerves II (<br>DR SHAHID)                                      | Medicine<br>Lesions Of<br>Cranial Nerve<br>(DR ADIL<br>KHAN) |                      | Anatomy<br>Arteries of neck<br>(DR SABA AKRAM)   | Anatomy<br>Cervical<br>Sympathetic Trunk<br>(DR MUBASHARA) |                     | SDL  | Anatomy<br>HEAD<br>LRC (MODELS)<br>(DR SAROSH)  |
| 17-09 -2024<br>DAY 2 | Bioethics<br>Informed consent and<br>refusal of treatment II<br>(DR MUBASHARA)    | Anatomy<br>Internal Ear                                      |                      | Surgery<br>Head And Neck<br>Surgery<br>Pathophysiology of<br>head trauma<br>(DR DANISH)                        | Pakistan<br>Studies<br>(MISS UZMA)                         |                     | SDL  | Anatomy Development<br>Of Tongue<br>(DR INAYAT)   |
| 1809-2024<br>DAY 3   | Formative<br>Assessment<br>(DR SABA<br>ABRAR) (DR<br>BENISH)<br>(DR<br>MUBASHARA) | SDL  | Tea Break            | CBL  |  | Lunch & Prayer brea | Bioethics Informed<br>consent and<br>refusal of treatment<br>(DR<br>MUBASHA<br>RA) | Anatomy<br>ROOT OF<br>NECK  |
| 19-09-2024<br>DAY 4  | BIOCHEM<br>Review Class   | ISTRY  |                      | PRACTICAL A, B & C<br>Histology- Glands G#A(DR ANEELA)<br>Physiology G#C sense of smell-(DR<br>SOBIA) SDL- G#B |  | ž                   | SDL  | ANATOMY<br>Review Class   |
| 20-09-2024<br>DAY 5  | PHYSIOL<br>Review C   | OGY<br>Class   |                      | PRACTICA<br>HistologyGlands - G# C(<br>Physiology- sense of sm<br>SOBIA) SDL-G#A                               | L A, B & C<br>DR ANEELA)<br>ell G#B(DR                     | 1                   | 1:30-2:30<br>SDL   | 2:30-4:30<br>PRACTICAL A, B & C<br>Histology G#B Glands (DR ANEELA)<br>Physiology sense of smell-(DR<br>SOBIA)<br>SDL-G#C |





| DAYS                 | 8:30-9:30 am  | 9:30-10:30 am  | 10:3-<br>11:00<br>am | 11:00 am-12:00 pm  | 12:00-1:00 pm  | 1:00-<br>1:30 pm    | 1:30-2:30 pm   | 2:30-4:00 pm  |
|----------------------|---|--|----------------------|--|--|---------------------|--|---|
| 16-09-2024<br>DAY 1  | Anatomy<br>Cranial nerves II (<br>DR SHAHID)                                      | Medicine<br>Lesions Of<br>Cranial Nerve<br>(DR ADIL<br>KHAN) |                      | Anatomy<br>Arteries of neck<br>(DR SABA AKRAM)   | Anatomy<br>Cervical<br>Sympathetic Trunk<br>(DR MUBASHARA) |                     | SDL  | Anatomy<br>HEAD<br>LRC (MODELS)<br>(DR SAROSH)  |
| 17-09 -2024<br>DAY 2 | Bioethics<br>Informed consent and<br>refusal of treatment II<br>(DR MUBASHARA)    | Anatomy<br>Internal Ear                                      |                      | Surgery<br>Head And Neck<br>Surgery<br>Pathophysiology of<br>head trauma<br>(DR DANISH)                        | Pakistan<br>Studies<br>(MISS UZMA)                         |                     | SDL  | Anatomy Development<br>Of Tongue<br>(DR INAYAT)   |
| 1809-2024<br>DAY 3   | Formative<br>Assessment<br>(DR SABA<br>ABRAR) (DR<br>BENISH)<br>(DR<br>MUBASHARA) | SDL  | Tea Break            | CBL  |  | Lunch & Prayer brea | Bioethics Informed<br>consent and<br>refusal of treatment<br>(DR<br>MUBASHA<br>RA) | Anatomy<br>ROOT OF<br>NECK  |
| 19-09-2024<br>DAY 4  | BIOCHEM<br>Review Class   | ISTRY  |                      | PRACTICAL A, B & C<br>Histology- Glands G#A(DR ANEELA)<br>Physiology G#C sense of smell-(DR<br>SOBIA) SDL- G#B |  | ž                   | SDL  | ANATOMY<br>Review Class   |
| 20-09-2024<br>DAY 5  | PHYSIOL<br>Review C   | OGY<br>Class   |                      | PRACTICA<br>HistologyGlands - G# C(<br>Physiology- sense of sm<br>SOBIA) SDL-G#A                               | L A, B & C<br>DR ANEELA)<br>ell G#B(DR                     | 1                   | 1:30-2:30<br>SDL   | 2:30-4:30<br>PRACTICAL A, B & C<br>Histology G#B Glands (DR ANEELA)<br>Physiology sense of smell-(DR<br>SOBIA)<br>SDL-G#C |