UNIVERSITY OF HEALTH SCIENCES LAHORE

Khayaban-e-Jamia Punjab, Lahore - 54600, Pakistan Website: www.uhs.edu.pk
Ph: 9231304-9 Fax: 9230870 UAN: 111 33 33 66

NOTIFICATION

The Syndicate has, in exercise of its powers under section 27 (1) of UHS Ordinance 2002, approved the Revised Syllabi, Table of Specifications and OSPE format for First Professional MBBS Part-I and Part-II Examinations, in the subjects of Anatomy including Histology, Physiology and Biochemistry, to be implemented with effect from the academic session 2013-2014 and onwards.

REGISTRAR

No. UHS/REG-13/3446 Dated: 13-12-2013

Copy forwarded for information to:

i. Principals/Heads of the Affiliated Medical Colleges for information of the Faculty and students
ii. Controller of Examinations
iii. Director (I.T.)
iv. PSO to Vice Chancellor
v. PS to Registrar

Encl. As above

REGISTRAR

SYLLABUS, ToS & OSPE

M.B.B.S.

FIRST PROFESSIONAL

PART-II

ANATOMY INCLUDING HISTOLOGY

"NEURO AND GROSS ANATOMY"

The study of gross anatomy must lay emphasis on applied anatomy as related to clinical medicine and surgery. For teaching, actual dissection of cadaver, dissected specimens, models, and computer aided programs shall be used. Normal images of different diagnosis techniques i.e. X-rays and CT scans, MRI and Ultra-sonography shall also be introduced.

The time for dissection of the cadaver for each region is as under:

1. **Neuroanatomy including Brain and Spinal cord 09 weeks**
2. **Head and Neck 13 weeks**
3. **Abdomen and Pelvis 13 weeks**

NEUROANATOMY COURSE OBJECTIVES

After the end of the course, the students are able to:

1. Define, enumerate and describe the structure and functions of receptors.
2. Define and describe motor end plates and their functions.
3. Understand and describe the meninges of brain and spinal cord.
4. Describe subdural and subarachnoid spaces including subarachnoid cisterns.
5. Understand and describe internal structure of spinal cord at different levels:
6. Understand and describe ascending and descending tracts of spinal cord, their functions and effects of their lesions.
7. Understand and describe internal structure of medulla oblongata.
8. Comprehend and describe the internal structure of pons.
9. Understand and describe internal structure of mid brain.
10. Comprehend and describe the surfaces of cerebral hemisphere, its lobes, their sulci and gyri.
11. Locate, identify and describe functions of different functional areas of the brain.
12. Locate, identify and describe different types of projection and association fibres of brain and their functions.
13. Identify, locate and describe hypothalamus, its nuclei and their connection and functions.
14. Identify, locate and describe thalamus, its nuclei and their connection and functions.
15. Identify, locate and describe metathalamus and its connections and functions.
16. Understand and describe the ventricular system of the brain.
17. Comprehend and describe production and circulation of CSF and clinical conditions associated with it.
18. Comprehend, describe and discuss blood supply of the brain and spinal cord and the effect of hemorrhagic and thrombotic lesions.
19. Describe intra cranial course of cranial nerves and their applied aspects.

20. Identify, locate and describe cranial nerves nuclei and their connection and functions.
21. Understand and describe different lobes of cerebellum, its white and grey substances including the deep cerebellar nuclei.
22. Understand afferent and efferent connections of cerebellum and correlated these to its functions.
23. Understand and describe the signs and symptoms of cerebellum disease with logical explanation.
24. **Understand and describe clinical conditions related to nervous system.**
25. Comprehend and understand neuroanatomical basis of the following:
    a) Hemiplegia / hemiperesis.
    b) Upper motor and lower motor neuron lesions.
    c) Parkinsonism
    d) Syringomyelia.
    e) Hemi-section / complete section of spinal cord.
    f) Cerebellar ataxia
    g) Other clinical conditions

"HEAD AND NECK COURSE OBJECTIVES"

On completion of the course of Head and Neck, the students are able to:

1. Describe mandible and different normae of the articulated skull.
2. Identify individual bones of the skull, their parts with important features.
3. Give post-natal growth changes in skull and face.
4. Comprehend cranial fossae, identify the foramina of the skull base and the structures passing through them.
5. Understand the vertebral column as a whole including sacrum and coccyx; describe regional features of the vertebrae, intervertebral joints, the movements thereof, and **comprehend clinical problems of the region**.
6. Identify, comprehend and describe cervical vertebrae, and the joints of the region i.e. temporo-mandibular, intervertebral, and cranio-vertebral. (cricothyroid and crico-arytenoid joints).
7. Identify and describe important muscles of the region i.e. muscles of: Facial expression, Mastication, prevertebral, postvertebral, infra and suprahyoid, suboccipital, tongue and palate; (pharynx, and larynx) **comprehend their actions nerve supply, effect of injury to them and clinical tests applied for diagnosis.**
8. Name and identify muscles of the floor of the mouth, sternocleidomastoid, trapezius, levator scapulae, and describe their origin, insertion, nerve supply, actions, important relations and effects of injury to their nerves and clinical tests to diagnose the nature of injury.
9. Identify and describe important arteries of the region, their branches and distribution i.e. subclavian, common, internal and external carotid arteries.
10. Comprehend clinical importance related to the arteries of head and neck and their branches

11. Identify subclavian, internal, external, and anterior Jugular veins, give their course, relationship, tributaries and clinical importance.
12. Identify and describe cranial venous sinuses and give their clinical significance.
13. Locate, identify and enlist the regional lymph nodes and describe the scheme of lymphatic drainage of the region.
14. Understand and describe the course and distribution of the cervical spinal and cranial nerves; comprehend formation of Cervical and Brachial plexuses, describe their branches and distribution.
15. **Understand and describe clinical conditions related to the nerve plexuses and their clinical manifestations**.
16. **Comprehend, understand and clearly describe the effects of injuries to different nerves and their clinical tests.**
17. **Identify sympathetic trunk and describe the scheme of sympathetic and parasympathetic innervations of the region, including the four parasympathetic ganglia, their roots, branches and distribution along with the clinical and applied anatomy..**
18. .Identify and describe the boundaries, contents and subdivisions of the anterior and posterior triangles of the neck.
19. **Understand and describe the superficial and deep fasciae of the region and correlate different fascial planes to their clinical importance.**
20. Identify and describe the viscera of the region i.e. salivary, thyroid, parathyroid glands, trachea and esophagus, and describe their anatomy and its applied aspects correctly
21. **Identify the anatomical features of the oral cavity, tongue, cheek, lips, gums and teeth, and describe these in detail with particular emphasis on their clinical applications.**
22. **Understand and describe the anatomy of the scalp, orbital and cranial cavities, their contents including meninges with highlights on important clinical aspects.**
23. **Understand and describe the anatomy of the nasal cavity, Para nasal sinuses, eye ball and external, middle and internal ear along with the clinical aspects.**
24. **Understand and describe the anatomy of pharynx, its muscles, their nerve supply and actions; clinical and applied aspects of pharynx.**
25. **Comprehend and describe the anatomy of larynx, its joints, muscles, their nerve supply and actions; clinical conditions related to the organ.**
26. **Correlate the anatomical information of the region to their clinical applications.**
27. **Interpret normal radiographs, CT Scans, MRI, and Ultrasound images.**

Additional Clinical Correlates

Cranial nerves distributions and lesions, dislocation of temporomandibular and intervertebral joints, scalp wounds, danger area of face, Little's area, Horner's syndrome, cavernous sinus thrombosis, intracranial hemorrhages, tracheostomy, mumps, sinusitis and retropharyngeal abscess, lymph nodes and lymphatic drainage of head and neck and, different conditions associated with lymphatics. Important muscles of head and neck their functions and effect of their nerve lesions.

"COURSE OBJECTIVES OF ABDOMEN AND PELVIS"

On completion of the Gross Anatomy of Abdomen and Pelvis, the students are able to:

1. Develop a sound understanding of the topographic anatomy of the regions.
2. Mark the regions of the abdomen on the surface of the body.
3. Mark the important abdominal and pelvic viscera on the surface of the body
4. Understand the importance of percussion notes in eliciting the extent of resonant and non-resonant viscera and their clinical importance.
5. Give a description of the Anatomy of the anterolateral and posterior abdominal walls.
6. **Understand and give clear description of inguinal canal, different varieties of external hernias and their complications.**
7. **Understand the peritoneum, peritoneal cavity and possible sites of internal hernias along with their clinical features.**
8. **Comprehend, understand and describe the abdomino-pelvic fasciae and their clinical importance.**
9. **Give a precise account of the Anatomy of abdominal and pelvic viscera, muscles, nerves and blood vessels of the regions and correlate anatomical information to common clinical conditions.**
10. **Understand the clinical effects and apply clinical tests to verify injuries to different nerves of the region.**
11. Develop clear concepts of anatomy of normal male and female pelvises, and differences between them.
12. **Understand the dimensions of the normal and contracted adult female pelvis and their clinical importance in the mechanism of delivery.**
13. **Understand the anatomy of the perineal region in both male and female and comprehend the anatomical basis of clinical conditions of the area.**
14. **Understand anatomical basis of possible birth injuries to the mother in difficult labor and the clinical conditions produced thereafter.**
15. Understand the scheme of the regional lymphatic drainage and lymph nodes.
16. **Comprehend normal radiological anatomy of the region, CT Scans, MRI, Ultrasound and, other diagnostic techniques.**

Additional Clinical Correlates

Portosystemic anastomosis, spread of carcinoma stomach, duodenal and peptic ulcer, appendicitis, hemorrhoids, anal fistula, anterior abdominal wall hernias, abdominal incisions, varicocele, hydrocoele, benign prostatic hyperplasia and carcinoma of prostate and uterus prolapse

“SYSTEMIC HISTOLOGY”

At the end of the course, the students are able to:

Digestive System:

1. Name and describe the epithelium lining the oral cavity, tongue, gums, hard and soft palate, pharynx and lips and, explain the histology of tongue.
2. Understand and describe the histological structure of oesophagus, stomach, small intestine, large intestine, appendix and anal canal; explain the change in structure of their epithelium in relations to the function.
3. Comprehend and describe the histological structure and functions of salivary glands.
4. Understand and describe the histological structure and functions of Liver, Pancreas and Gall Bladder.

Urinary System:

Comprehend and describe the histological structure of kidney, ureter and urinary bladder, and their functions.

Male Reproductive System:

Comprehend and describe histological structure of testis, epididymis, vas deferens, seminal vesicle and prostate, and relate it to their functions.

Female Reproductive System:

Understand and describe histological structure of ovaries, fallopian tube, uterus and vagina, and explained their functions related to their structure.

Endocrine System:

Understand and describe the histological structure and functions of the following glands:

1. Pituitary
2. Thyroid
3. Parathyroid
4. Adrenal
5. Islets of Langerhans.

Eye and Ear:

1. Understand and describe the histological structure of eyeball with emphasis on cornea and retina, and give their functions related to their structure.
2. Comprehend and describe the Membranous Labyrinth and give the histological structure of different parts; correlate their functions to the structure.

Nervous System:

Understand and describe the histological structure of spinal cord, cerebellum and cerebrum and correlate it to the functions.

Identify, draw and label light microscopic structures of above mentioned tissues.

"EMBRYOLOGY"

At the end of the course, the students are able to:

Head and Neck:

1. Understand and describe the development and derivatives of pharyngeal apparatus (arch, cleft, pouch and membrane).
2. Comprehend and describe the development of tongue.
3. Describe the development of thyroid gland.
4. Understand and describe the development of pituitary gland.
5. Comprehend and describe the development of face and palate.
6. **Understand different congenital malformations of the region.**

Digestive System, Body Cavities and Diaphragm:

1. Understand and discuss the development of the body cavities, mesenteries and diaphragm.
2. Comprehend and describe the development of gastrointestinal tract (fore-gut, mid-gut and hind- gut).
3. Understand and describe the development of liver, pancreas and gall bladder.
4. Understand and describe the development of spleen.
5. **Understand different congenital malformations of the region.**

Respiratory System:

Comprehend and describe the development of upper and lower respiratory passages, and give their congenital anomalies.

Cardiovascular System:

1. Describe the development of heart, aortic arches, aorta, superior and inferior vena cavae and portal vein.
2. Describe the foetal circulation and changes at birth.
3. Understand and describe the congenital anomalies of cardiovascular system.

Urinary System:

1. Comprehend and describe the development of kidneys, ureters, urinary bladder and urethra, and their congenital malformations.

Reproductive System:

1. Understand and describe the development of testes, epididymis, vas deferens, seminal vesicles and prostate.
2. Comprehend and describe the development of the ovaries, uterus and vagina.
3. Describe the development of external genital organs.
4. **Comprehend and describe congenital abnormalities of the regions.**

Nervous System:

1. Name different brain vesicles, comprehend and describe their derivatives.

2. Understand and describe the development of spinal cord.
3. Comprehend and describe the derivatives of neural crest.
4. Understand and describe congenital abnormalities of the nervous system.

Ear:

1. Understand and describe the development of external, middle and internal ear.
2. Describe congenital abnormalities of the region.

Eye:

1. Comprehend and describe the development of lacrimal apparatus, eyeball and their congenital abnormalities.

RECOMMENDED BOOKS

1. **Clinically Oriented Anatomy** by Keith L Moore.
2. **Cunningham's Manual of Practical Anatomy** by G.J. Romanes, 15th Ed., Vol. II and III.
3. **The Developing Human. Clinically Oriented Embryology** by Keith L. Moore, 6th Ed.
4. **Medical Histology** by Prof. Laiq Hussain Siddiqui.
5. **Neuroanatomy** by Richard S.Snell.

REFERENCE BOOKS

1. **Gray's Anatomy** by Prof. Susan Standring 39th Ed., Elsevier.
2. **Clinical Anatomy for Medical Students** by Richard S.Snell.
3. **Clinical Anatomy** by R.J. Last, Latest Ed.
4. **Wheater's Functional Histology** by Young and Heath, Latest Ed.
5. **Langman's embryology**

MBBS 1st Professional Part (II) OSPE

Gross Anatomy, Radiological Anatomy & Embryology:

Gross Anatomy

1. Total No. of stations 12, each station will have 02 marks and 04 spots of identification.
2. Each station shall be given 1.5 min.
3. Total marks shall be 24.

Time per station: 1.5 minutes (18 minutes)

Sr.No	Region/ Area	Station No.	No. of Spots	Marks Each spot
1	Head & Neck	01	04	2
	Head & Neck	02	04	2
	Head & Neck	03	04	2
2	Abdomen	04	04	2
	Abdomen	05	04	2
	Abdomen	06	04	2
3	Pelvis	07	04	2
4	Brain	08	04	2
	Brain	09	04	2
5	Radiological Anatomy	10	04	2
6	Special Embryology	11	04	2
	Special Embryology	12	04	2
	Grand Total	**12**	**48**	**24**

Arrangement of OSPE in Histology:.

1. Histology Practical Examination shall also be used to cover nearly all areas of the subjects.
2. Histology long slide and Viva shall be arranged simultaneously on the same day.

Histology OSPE and VIVA (Total Marks 20)

There shall be 10 slides fixed on 10 microscopes.

1. They will move from one to the next slide in a predetermined direction.
2. For each station one minute shall be given, students will give point/points of identifications for each slide **(Annexure B).**
3. Total number of identifications spots 10
   a. Each spot will be given 01 mark (0.5 marks for identification and 2 points of identification, 0.25 marks each)
   b. Total marks allocated shall be: 10
4. Time consumed shall be 10 min.

Long Slide (Total Marks 10):

5. Time: 15 minutes will be given for

Identification	1 mark
Drawing	1 mark
Labeling	1 mark

Interactive Examination Long Slide: 7 marks

ANATOMY STRUCTURED VIVA

The following areas shall be examined; the questions are framed with emphasis on those areas which are not easily evaluated in theory examinations. Course segments, the marks allocation and number of questions for each are given as under:

Sr. #	Course Area	Marks allocated	Minimum Number of Questions
1.	Surface marking	04	01
2.	Head & Neck	10	02
3.	Brain & Spinal cord	08	02
4.	Abdomen	10	02
5.	Pelvis	04	01
6.	Special Embryology	10	02
Total		**46**	**10**

Note: Materials for the examination shall be the responsibility of the Department/ College which should be put in place well before the time of the examination. Examination space and facilities shall be evaluated by the external examiner who will make sure that the movements of the candidate are well organized to maintain the transparency of the procedure.

Annexure A

Identification Points for Histology Slides for 2nd Year MBBS Class

DISGESTIVE SYSTEM

1. **Tongue:**
   a) Lingual papillae of various types
   b) Skeletal muscle fibres
2. **Esophagus:**
   a) Stratified squamous non-keratinized epithelium
   b) Submucosal glands
3. **Stomach Fundus & Body:**
   a) Shallow gastric pits
   b) Gastric glands containing chief cells and parietal cells
4. **Stomach-Pylorus:**
   a) Deep gastric pits
   b) Pyloric glands lined mostly by mucous cells
5. **Duodenum:**
   a) Leaf shaped villi
   b) Brunner's glands (submucosal glands)
6. **Jejunum:**
   a) Tall rounded villi / finger like villi
   b) Crypts of Leiberkuhn in lamina propria] Any One of b, c
   c) Muscularis externa / inner circular outer longitudinal]
7. **Ileum:**
   a) Club-shaped villi
   b) Peyer's patches
8. **Colon:**
   a) Simple columnar epithelium with abundant goblet cells
   b) Villi are absent

9. Appendix:

a) Star-shaped lumen

b) Prominent lymph nodules in lamina propria

10. Rectum:

a) Rectal folds lined by simple columnar epithelium with abundant goblet cells

b) Muscularis mucosa & submucosa extending into the rectal folds

11. Parotid Gland:

a) All serous acini

b) Striated / intercalated / interlobular ducts

12. Sublingual Gland:

a) Predominant mucous acini and few serous acini

b) Few serous demilunes] Any One of b, c

c) Very few intercalated ducts]

13. Submandibular Gland:

a) Predominant serous acini

b) Many serous demilunes

14. Pancreas:

a) Serous acini

b) Islets of Langerhans

15. Liver:

a) Cords of hepatocytes radiating from the central vein

b) Hepatic sinusoids] Any One of b, c

c) Portal triad]

16. Gall Bladder:

a) Mucosal folds lined by simple tall columnar epithelium

b) Fibromuscular layer outer to mucosa

URINARY SYSTEM

17. Kidney:

a) Renal corpuscles

b) Sections of proximal and distal convoluted tubules

18. Ureter:

a) Transitional epithelium

b) Star shaped small lumen] any one of b, c

c) Inner longitudinal & outer circular smooth muscle layers]

19. Urinary Bladder:

a) Transitional epithelium

b) A thick smooth muscle coat

20. Testis:

a) Seminiferous tubules lined by spermatogenous cells and sertoli cells

b) Groups of Leydig cells in the intertubular connective tissue

21. Dustus Epididymis:

a) Pseudostratified columnar epithelium with stereocilia

b) Numerous cut sections of the duct

22. Ductus Deferens:

a) Pseudostratified columnar epithelium with stereocilia

b) Thick muscularis externa with 3 layers of smooth muscle fibres

23. Seminal Vesicles:

a) Pseudostratified columnar epithelium

b) Highly convoluted lumen with crypts and cavities

24. Prostate:

a) Glandular acini containing corpora amylacea

b) Fibromuscular stroma in between the acini

25. Ovary:

a) Outer surface covered by simple cuboidal epithelium

b) Ovarian follicles in various stages of development in cortex

26. Fallopian Tubes:

a) Simple columnar ciliated epithelium

b) Very prominent mucosal folds

27. Uterus: (in proliferative phase)

a) Endometrium with simple columnar epithelium

b) Simple tubular glands in lamina propria

28. Vagina:

a) Stratified squamous non-keratinized epithelium

b) No glands] any one of b, c

c) Thick muscular layer]

29. Mammary glands-inactive state:

a) Lobules and abundant inter lobular connective tissue

b) Cord like tubules lined by simple cuboidal epithelium

30. Mammary gland (lactation state):

a) Alveoli of various sizes and shapes containing secretions

b) Scanty connective tissue stroma

31. Thyroid gland:

a) Follicles lined by simple cuboidal epithelium

b) Colloid in follicles] any one of b, c

c) Parafollicular cells]

32. Parathyroid gland:

a) Anastomosing cords of chief cells

b) Oxyphil cells

33. Pituitary gland:

a) Chromophiles and chromoprobes

b) Acidophils and basophils

34. Adrenal gland:

a) Three zones of cortex (Zona glomerulosa, fasciculata and reticularis)

b) Medulla with irregular cords of chromaffin cells and sinusoids

SPECIAL SENSES

35. Eye Lid:

a) Thin skin with hair follicles

b) Tarsal plate containing tarsal glands

36. Cornea:

a) Stratified squamous non keratinized epithelium

b) Bowman's membrane, substantia propria and Descemet's membrane

37. Retina:

a) Ten layers

b) Rods & Cones present

38. Pinna:

a) Thin skin

b) Elastic cartilage