ISLAM MEDICAL COLLEGE, SIALKOT

STUDY GUIDE

BLOCK 5

(Module-8 & Module-9)

Block-5 Lead

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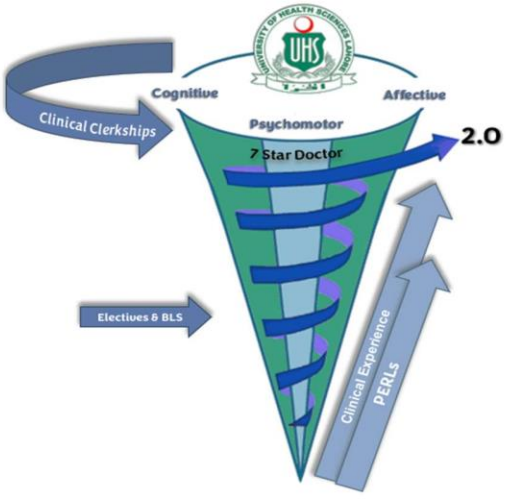
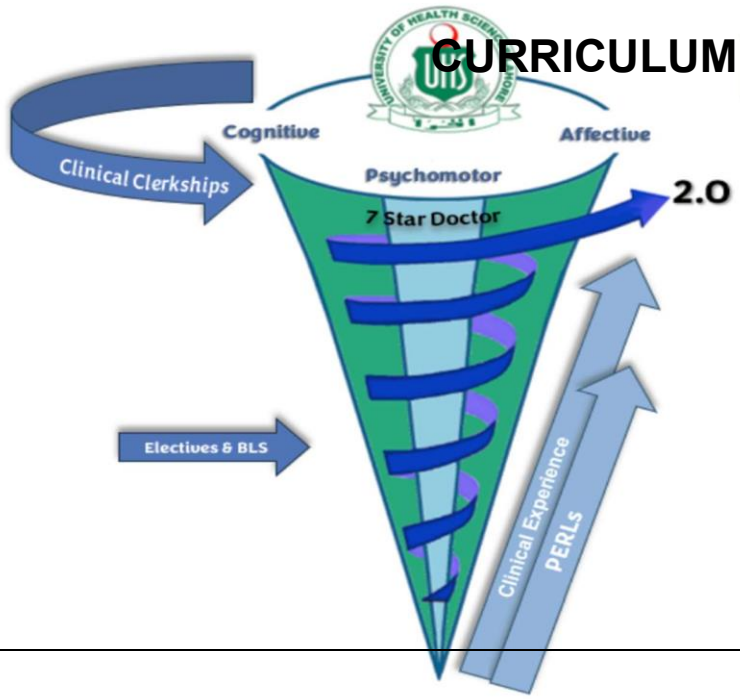
BLOCK-5


Cognitive
Affective
Psychomotor
7 Star Doctor
2.0
Clinical Clerkships
Electives & BLS
Clinical Experience
PERLs

MODULE NO. 08:

ENDOCRINOLOGY & REPRODUCTION-I

MODULAR INTEGTARTED CURRICULUM 2K23 version 2.0



MODULE RATIONALE

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

Changes in hormonal levels can affect human fertility.

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

MODULE OUTCOMES

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

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

CLINICAL RELEVANCE

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

SYLLABUS OF ENDOCRINOLOGY & REPRODUCTION-I MODULE

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

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

EnR-A-014	Describes injury to pelvic floor during child birth and its complications	Anatomy (Obs & Gynae)	Pelvic Girdle
EnR-A-015	Describe the peritoneal reflections in the male and female pelvis	Anatomy	Peritoneum peritoneal cavity of pelvis
EnR-A-016	Describe the gross anatomical features of Sacrum	Anatomy	Sacrum
EnR-A-017	Describe the gross anatomical features of pelvic fascia	Anatomy	Pelvic Fascia
EnR-A-018	Describe the boundaries of pelvic outlet and inlet	Anatomy	Pelvic Outlet and inlet
	Enumerate the structures passing through the pelvic inlet and pelvic outlet	Anatomy	
EnR-A-019	Tabulate the differences in peritoneal reflections in male and female pelvis	Anatomy	Peritoneal Reflection in Pelvis
EnR-A-020	Describe the origin, course, branches and distribution of common iliac artery	Anatomy	Pelvic Vessels
	Describe the origin, course, branches and distribution of external and internal iliac arteries	Anatomy	
	Describe the origin, course, tributaries and area of drainage of pelvic veins	Anatomy	
EnR-A-021	Describe the location, afferents and efferent of pelvic lymph nodes	Anatomy	Pelvic Lymph Nodes
EnR-A-022	Tabulate the origin, course, distribution and anastomosis of arteries of the pelvis	Anatomy	Pelvic Vessels & Pelvic nerves
	Describe the origin, root value, course, relations, branches and distribution of Pelvic nerves	Anatomy	
	Describe the anatomical basis and clinical picture for ligation of internal iliac artery and collateral circulation in pelvis	Anatomy	
	Describe the clinical picture and anatomical basis for the injury to pelvic nerves	Anatomy	
	Give anatomical justification for pelvic nerve blocks	Anatomy	
EnR-A-023	Describe the morphological features of urethra (male and female)	Anatomy	Pelvis

	Tabulate the parts of the male urethra with their location and salient features	Anatomy	
	Describe the clinical picture and anatomical justification for Ureteric Caliculi, Cystocele, Suprapubic Cystotomy, Rupture of Bladder	Anatomy	
	Describe the clinical picture and anatomical justification for Hypertrophy of Prostate	Anatomy	
	Describe the gross anatomical features of Ovaries and Fallopian Tubes with their relations, blood supply, nerve supply and lymphatic drainage Describe related clinical conditions: 1) Positions of ovaries 2) Cysts of ovaries 3) Ectopic pregnancy 4) Tubal ligation 5) Salpingitis	Anatomy	
	Describe the gross anatomical features, parts, peritoneal ligaments, blood supply, nerve supply & lymphatic & clinical aspects of Uterus and Vagina Describe related clinical conditions 1. Prolapse of uterus 2. Vaginal trauma 3. culdocentesis	Anatomy	
	Describe, identify, justify and demonstrate the supports of uterus	Anatomy	
EnR-A-024	Describe the gross anatomical features of Boundaries & divisions of perineum	Anatomy	Perineum
	Draw and label the boundaries of perineum	Anatomy	
	List the contents of perineum	Anatomy	
	Tabulate the differences between the Male and female	Anatomy	

	perineum		
	Describe the attachments of the perineal membrane and list its relations	Anatomy	
	Discuss the formation of Superficial and Deep Perineal Pouches	Anatomy	
	List the contents of Superficial and Deep Perineal Spaces	Anatomy	
	Tabulate the attachments, actions and nerve supply of muscles of perineum	Anatomy	
	Describe the topographical anatomy and neuro-vasculature of Penis	Anatomy	
	Tabulate the muscles forming the perineal body with their attachments and nerve supply	Anatomy	
EnR-A-025	Describe the clinical presentation and anatomical justification for: 1) Hypospadias 2) Phimosis 3) Circumcision 4) Erectile Dysfunction 5) Internal Hernias 6) Suprapubic Cystotomy 7) Rupture Of Bladder 8) Rectal Examination 9) Disposition Of Uterus	Anatomy	Pelvis
CODE	**EMBRYOLOGY & POST-NATAL DEVELOPMENT**	**TOTAL HOURS = 14**	
	SPECIFIC LEARNING OUTCOMES	**DISCIPLINE**	**TOPIC**
EnR-A-026	Describe the contributing factors, histogenesis and sequence of events of the development of Thyroid gland	Anatomy	Development of Thyroid gland
	Explain the embryological basis of the Thyroglossal Cyst	Anatomy	
	Draw a concept map highlighting the development of thyroid gland	Anatomy	

EnR-A-027	Describe the development of para-thyroid glands	Anatomy	Development Of Parathyroid glands
	Draw a concept map highlighting the development of para-thyroid gland	Anatomy	
EnR-A-028	Anatomically justify the clinical presentation of: 1. Ectopic Parathyroid 2. Aberrant Thyroid	Anatomy	Development of Thyroid, Parathyroid
EnR-A-029	Describe the development of pituitary gland Describe the embryological basis for the congenital anomalies of pituitary development	Anatomy	Development of Pituitary Gland
EnR-A-030	Describe the contributing factors, histogenesis and the development of adrenal gland	Anatomy	Development Of Adrenal Gland
	Draw a concept map for the development of adrenal gland	Anatomy	
	Describe the embryological basis for the congenital anomalies of adrenal development	Anatomy	
EnR-A-031	Identify the stages in the development of the adrenal gland	Anatomy	Adrenal Gland
EnR-A-032	Describe the indifferent gonads	Anatomy	Development of Reproductive system
	List and describe the Factors influencing the differentiation of gonads		
	Evaluate the role of the factors influencing Sex determination and differentiation		
	Describe the Development and descent of testis	Anatomy	
EnR-A-033	Describe the embryological basis and locations of undescended testes	Anatomy	Testis
EnR-A-034	Draw a concept map highlighting the development of testis	Anatomy	Development of Reproductive system
	Explain the Development and descent of ovaries	Anatomy	
	Draw a concept map highlighting the development of ovaries	Anatomy	
	Describe the anatomical basis for indifferent gonads, Klinefelter, turner syndromes & androgen insufficiency	Anatomy	

	Describe the Formation of Genital Ducts In different stage (paramesonephric and mesonephric ducts)	Anatomy	
	Describe the development of female genital ducts and glands, Development of uterus & Vagina. Describe related clinical anomalies: 1) Uterus Arcuatus 2) Uterus septus 3) Uterus Bicornis Bicollis 4) Uterus Bicornis Unicollis 5) Uterus Unicornis 6) Atresia of vagina 7) Double vagina 8) Imperforate hymen	Anatomy	
	Describe the development of male genital ducts and glands	Anatomy	
	Discuss the Development of male external genitalia	Anatomy	
	Describe the Development of female external genitalia	Anatomy	
	Explain the anatomical basis for the Associated congenital anomalies of male and female external genitalia (Hyposidiasis, Epispidiasis)	Anatomy	
	Describe the development of inguinal canal and descent of testis and embryological basis for Cryptorchidism, Ectopic Testis, Congenital Inguinal Hernia, Hydrocele	Anatomy	
	Klinefelter, turner syndromes & androgen insufficiency Describe the embryological basis for the coverings of testis	Anatomy	
CODE	**MICROSCOPIC STRUCTURE (HISTOLOGY & PATHOLOGY)**	**TOTAL HOURS = 14**	
	SPECIFIC LEARNING OUTCOMES	**DISCIPLINE**	**TOPIC**
EnR-A-035	Describe the histological basis and manifestation of Gastric Carcinoid Tumors	Anatomy/ Pathology	Stomach
	Classify the principal Enteroendocrine Cells on the basis of type, location, hormone produced and Actions	Anatomy	

EnR-A-036	Describe microscopic structure of Pituitary gland.	Anatomy	Pituitary Gland
	Classify pituitary gland on the basis of cell type, hormone produced and functions	Anatomy	
	Explain the histological basis and manifestation of Pituitary Adenomas	Anatomy	
EnR-A-037	Describe the light microscopic structure of Adrenal Gland	Anatomy	Adrenal Gland
	Explain the histological basis and manifestation of Addison disease	Anatomy	
EnR-A-038	Describe the light microscopic structure of endocrine pancreas	Anatomy	Pancreas
	Classify the pancreatic islets on the basis of cell type, hormone produced and functions	Anatomy	
	Explain the histological basis and manifestation of Diabetes Mellitus	Anatomy	
	Explain the components and functions of neuroendocrine system	Anatomy	
EnR-A-039	Describe the light microscopic structure of Thyroid Gland	Anatomy	Thyroid Gland
	Describe the light microscopic structure of Parathyroid Gland	Anatomy	
	Describe the light microscopic structure of Pineal gland	Anatomy	
EnR-A-040	Describe the light and ultramicroscopic structure of Testes, structure & function of Sertoli cells. Describe Blood testes Barrier	Anatomy	Testes
	Describe the histological basis and manifestation of Orchitis, Cryptorchidism	Anatomy Pathology	
EnR-A-041	Describe the light microscopic structure of Epididymis	Anatomy	Epididymis
EnR-A-042	Describe the light microscopic structure of vas deferens	Anatomy	Vas deferens
EnR-A-043	Describe the light microscopic structure of seminal vesicle	Anatomy	Seminal Vesicle

EnR-A-044	Describe the light microscopic structure of Prostate Gland	Anatomy	Prostate gland
	Describe the lobes of prostate and correlate with the pathologies of prostate	Anatomy pathology	
EnR-A-045	Describe the light microscopic structure of ovaries	Anatomy	Ovaries
	Describe the light microscopic structure of ovarian follicles in different stages of menstrual cycle.	Anatomy	
	Describe the histological basis and manifestation of Polycystic Ovary Syndrome	Anatomy Pathology	
EnR-A-046	Discuss the light microscopic structure of uterus	Anatomy	Uterus
	Describe the light microscopic structure of different stages of Menstrual cycle	Anatomy	
	Describe the histological basis and manifestation of Endometriosis	Anatomy Gynae & Obs.	
EnR-A-047	Describe the light microscopic structure of Fallopian Tube.	Anatomy	Fallopian Tube
EnR-A-048	Describe the light microscopic structure of Cervix	Anatomy	Cervix
	Describe the histological basis and manifestation of Cervical Carcinoma	Anatomy Pathology	
EnR-A-049	Describe the light microscopic structure of Vagina	Anatomy	Vagina
EnR-A-050	Describe light microscopic structure of mammary gland (inactive, during pregnancy, after lactation) Discuss histological basis of Breast cancer	Anatomy pathology	Mammary Gland
PRACTICAL			
CODE	**HISTOLOGY**	**TOTAL HOURS = 11**	
	SPECIFIC LEARNING OBJECTIVES	**DISCIPLINE**	**TOPIC**
EnR-A-051	Identify draw & Label the Pituitary gland under light microscope	Anatomy	Pituitary gland

EnR-A-052	Identify draw & label the Thyroid & Parathyroid glands under light microscope	Anatomy	Thyroid & Parathyroid
EnR-A-053	Identify draw & Label the Adrenal gland under light microscope	Anatomy	Adrenal Gland
EnR-A-054	Identify draw & Label Testes, Epididymis & Vas deferens under the light Microscope	Anatomy	Testes Epididymis Vas Deferens
EnR-A-055	Identify draw & label the seminal vesicle & prostate gland under light Microscope	Anatomy	Seminal Vesicle Prostate Gland
EnR-A-056	Identify, draw and label the ovaries under light microscope	Anatomy	Ovaries
EnR-A-057	Identify, draw and label the slide of different phases of uterus under light microscope	Anatomy	Uterus
EnR-A-058	Identify, draw and label the fallopian tube under light microscope	Anatomy	Fallopian Tube
EnR-A-059	Identify, draw and label the cervix under light microscope	Anatomy	Cervix
EnR-A-060	Identify, draw and label the vagina under light microscope	Anatomy	Vagina
EnR-A-061	Identify, draw and label the mammary gland (different stages) under light microscope	Anatomy	Mammary gland
NORMAL FUNCTION			
THEORY			
CODE	**MEDICAL PHYSIOLOGY**	**TOTAL HOURS = 59**	
	SPECIFIC LEARNING OBJECTIVES	**DISCIPLINE**	**TOPIC**
EnR-P-001	Define different chemical messengers. Enlist endocrine organs and hormones of the body. Enlist the hormones on the basis of chemical nature. Discuss the feedback control of hormone secretion. Explain the up and down regulation of receptors. Enlist the location of hormone receptors.	Biochemistry	Introduction to Endocrinology

	Explain the mechanism of intracellular signaling after hormone receptor activation. Name the hormones that use enzyme-linked hormone receptors signaling. Explain the mechanism of enzyme linked receptors. Enlist second messenger mechanisms for mediating intracellular hormonal functions. Define second messenger system. Explain the adenylyl cyclase- cAMP Second Messenger System. Enumerate the hormones that use the adenylyl cyclase-cAMP Second Messenger System. Explain The cell membrane phospholipid second messenger System. Enumerate the hormones that use cell membrane phospholipid second messenger system. Explain the mechanism of calcium Calmodulin system.		
EnR-P-001	Name the hormones/ factors of hypothalamus. Name the hormones of anterior pituitary. Name the hormones of posterior pituitary. Describe the functional relationship between hypothalamus, anterior and posterior pituitary gland. Explain the significance of hypothalamic- hypophysial portal circulation. Explain the hypothalamic pituitary tract. Explain the mechanism of action of growth hormone. Explain the actions of Growth hormone on Carbohydrate. Discuss the actions of Growth hormone on protein metabolism. Describe the actions of Growth hormone on fat metabolism.	Physiology	Hypothalamus / Pituitary Gland

	Explain the effect of growth hormone on skeletal growth and age. Explain the significance of somatomedins in mediating the actions of growth hormone. Describe the regulation of Growth Hormone. Describe the causes and features and treatment of panhypopituitarism in adults and childhood. Define Sheehan's syndrome. Enlist the types of dwarfism according to cause. Explain the pathophysiology and features of gigantism and acromegaly. Explain the mechanism of action of antidiuretic hormone. Discuss the actions of antidiuretic hormone. Regulation of antidiuretic hormone production. Elaborate the mechanism of action of oxytocin. Discuss the actions of oxytocin.		
EnR-P-002	Discuss the transport of thyroid hormone Discuss the mechanism of action of thyroid hormone Explain the actions of thyroid hormone on carbohydrate metabolism Discuss the actions of thyroid hormone on protein metabolism Explain the actions of thyroid hormones on fat metabolism Explain the non-metabolic functions of thyroid hormone Explain the regulation of thyroid hormone Enumerate antithyroid substances and explain their mechanism of action Enumerate the causes of hyperthyroidism	Physiology	Thyroid gland
	Explain the features, pathophysiology and treatment of thyrotoxicosis/ grave's disease Explain the thyroid function test to investigate hypo and		

	hyperthyroidism Enlist the causes of hypothyroidism Explain the pathophysiology of Hashimoto hypothyroidism Discuss the features and pathophysiology and treatment of myxedema Explain the pathophysiology and features of endemic colloid goiter Discuss the pathophysiology and features of nontoxic colloid goiter Enlist the causes of cretinism Discuss the features and pathophysiology of cretinism		
EnR-P-003	Name the hormones of adrenal cortex. Explain the physiological anatomy of adrenal cortex. Explain the cellular mechanism of Aldosterone action. Explain the effects of mineralocorticoid hormone. Discuss the regulation of aldosterone secretion. Discuss the metabolic and non-metabolic functions of cortisol Explain the interconversion of active cortisol and inactive cortisone by the 2, 11 beta hydroxysteroid dehydrogenase isoform. Explain the mechanism for regulation of glucocorticoid secretion by hypothalamus and pituitary Name adrenal androgens and enlist the functions of adrenal androgens. Discuss the causes, features, pathophysiology and treatment of hypoadrenalism (Addison's disease). Enlist the causes of hyperadrenalism. Explain the features, pathophysiology and treatment of Cushing's syndrome. Differentiate between Cushing's syndrome and Cushing's disease	Physiology & Pathology	Adreno cortical hormones

	Explain the clinical importance of dexamethasone suppression test to diagnose Cushing's syndrome. Discuss the features, pathophysiology and treatment of Conn's syndrome. Enlist the cause, features and pathophysiology of congenital adrenal hyperplasia/ Androgenital syndrome.		
EnR-P-004	Enumerate the types of pancreatic cells with their hormones. Explain the mechanism of action of insulin. Discuss the synthesis and mechanism of release of insulin. Explain the effects of insulin on carbohydrate, protein and lipid metabolism. Enlist the actions of insulin on liver, adipose tissue and skeletal muscle. Enlist the factors and conditions that increase or decrease insulin secretion.	Physiology	Pancreatic hormones
	Explain the role of insulin (and other hormones) in "switching" between carbohydrate and lipid metabolism. Discuss the effects of glucagon on carbohydrate and lipid metabolism. Explain the factors that regulate the secretion of glucagon. Explain the 24-hour regulation of glucose. Discuss the importance of blood glucose regulation. Explain the actions of somatostatin.		
EnR-P-005	Enlist the types of diabetes mellitus Explain the causes of Type I and type II diabetes mellitus Discuss the features and pathophysiology of diabetes mellitus Explain the role of insulin resistance, obesity and metabolic syndrome in developing type II diabetes	Physiology	Abnormalities of Glucose regulation

	mellitus Explain how to diagnose the diabetes mellitus Explain the treatment of type I and type II diabetes mellitus Explain the features, cause of insulinoma		
EnR-P-006	Discuss the physiological anatomy of parathyroid gland Explain the rapid and slow mechanism of resorption of bone by parathyroid hormone Discuss the actions of parathyroid Explain the control of parathyroid secretion by calcium ion concentration	Physiology	Parathyroid hormones
EnR-P-007	Discuss the effects of Vitamin D Discuss the effects of calcitonin on calcium Discuss the regulation of calcium (the first & second line of defense) Explain the causes and features of hypoparathyroidism Explain the causes and the features of primary and secondary hyperparathyroidism Enumerate the causes and features of osteoporosis	Physiology	Regulation of calcium in body
EnR-P-008	Enlist the functions of adrenal medullary hormones and explain pheochromocytoma	Physiology	Adreno medullary hormones
EnR-P-009	Describe the hormonal factors that affect spermatogenesis Explain the maturation and storage of sperm in epididymis Discuss the structure and physiology of a mature sperm Describe the composition of semen Discuss the functions of prostate & seminal vesicles in the formation of semen Explain the phenomenon of capacitation and its significance Describe the acrosome Reaction and its significance Discuss the role of pineal gland in reproduction	Physiology	Spermatogene sis Capacitation & Acrosome reaction
EnR-P-010	Discuss the site of secretion of testosterone	Physiology	Testosterone

	Name the active form of testosterone Explain the production of estrogen in males Describe the basic intracellular mechanism of action of testosterone		
	Explain the functions of testosterone in intrauterine life and after birth Discuss the regulation of male sexual functions by hormones from the hypothalamus and anterior pituitary gland		
EnR-P-011	Enumerate and explain the phases of ovarian cycle along with the hormonal changes Explain the postulated mechanism of ovulation Explain the formation and involution of Corpus luteum Endometrial cycle Explain the structural and hormonal changes of endometrial cycle Explain the regulation of female monthly cycle Discuss the role of progesterone on female sexual organs	Physiology	Menstrual cycle
EnR-P-012	Enumerate the ovarian hormones Discuss the synthesis of estrogen and progesterone Describe the interaction of follicular theca and granulosa cells for production of estrogens with the help of a diagram Explain the functions of the estrogens on different organs Discuss the role of progesterone on female sexual organs	Physiology	Female sexual hormones
EnR-P-013	Explain the physiological basis of puberty, menarche Define menopause Explain the cause of menopause Discuss the physiological changes in the function of the body at the time of menopause	Physiology	Puberty, menarche & menopause
EnR-P-014	Explain the non-hormonal functions of placenta	Physiology	Normal Pregnancy

	Explain the hormonal factors in pregnancy/ hormones of placenta Explain the changes in non- placental hormones during pregnancy Response of the mother's body to pregnancy Explain the mechanical and hormonal factors that increase uterine contractility during parturition		
EnR-P-015	Explain the physiology of lactation Discuss the actions of prolactin Justify the suppression of ejection of milk during pregnancy Discuss the physiological basis of suppression of the female ovarian cycles in nursing mothers for many months after delivery	Physiology	Lactation
CODE	**MEDICAL BIOCHEMISTRY**	**TOTAL HOURS = 35**	
	SPECIFIC LEARNING OBJECTIVES	**DISCIPLINE**	**TOPIC**
EnR-B-001	Define different chemical messengers. Enlist endocrine organs and hormones of the body. Enlist the hormones on the basis of chemical nature. Discuss the feedback control of hormone secretion. Explain the up and down regulation of receptors. Enlist the location of hormone receptors. Explain the mechanism of intracellular signaling after hormone receptor activation. Name the hormones that use enzyme-linked hormone receptors signaling. Explain the mechanism of enzyme linked receptors. Explain the mechanism of hormones that receptors present in cytoplasm and nucleus (act on genetic machinery). Enlist second messenger mechanisms for mediating intracellular hormonal functions.	Biochemistry	Introduction to Endocrinology

	Define second messenger system. Explain the adenylyl cyclase- cAMP Second Messenger System. Enumerate the hormones that use the adenylyl cyclase-cAMP Second Messenger System. Explain The cell membrane phospholipid second messenger System. Enumerate the hormones that use cell membrane phospholipid second messenger system. Explain the mechanism of calcium Calmodulin system.		
EnR-B-002	Describe the features of Signal transduction Describe different types of receptors	Biochemistry	Signal Transduction
EnR-B-003	Discuss the classification of hormones	Biochemistry	Classification of hormones
EnR-B-004	Describe different types of second messengers Differentiate the G protein and non-G protein mediated pathways of signal transduction Discuss the hormones which act through: Cyclic AMP (Adenosine monophosphate) Discuss the hormones which act through: Cyclic GMP (guanosine monophosphate) Discuss the hormones which act through calcium phosphoinositol Describe the Receptor tyrosine kinase pathway of signal transduction Explain the Serine threonine kinase pathway of signal transduction Discuss the Nuclear Receptor mediated pathway of signal transduction Describe the Receptor coupled to Jak Stat pathway of signal transduction	Biochemistry	Second messengers
	Explain the control and negative feedback mechanism of hormone regulation	Biochemistry	

	Discuss the biosynthesis, secretion, mechanism of action and metabolic functions of Insulin, glucagon, epinephrine, cortisol, thyroid and growth hormone with special reference to carbohydrate, protein and lipid metabolism	Biochemistry	
	Interpret disorders of hormones on the basis of sign, symptoms and given data	Biochemistry	
EnR-B-005	Explain the synthesis, secretion, transport and clearance of steroid and protein hormones.	Biochemistry	Synthesis of Hormones
EnR-B-006	Enlist the steps in the synthesis of adrenocortical hormone. Explain the synthesis and secretion of ACTH (Adrenocorticotropic hormone) in association with melanocyte-stimulating hormone, lipotropin, and endorphin.	Biochemistry	Synthesis of ACTH & adrenocortical
EnR-B-007	Explain the structure, biosynthesis, secretion, transport, regulation, catabolism, mechanism of action and biochemical role of testosterone, progesterone and estrogen	Biochemistry	Synthesis of testosterone, progesterone and estrogen
EnR-B-008	Discuss the role of steroid hormones in oral contraception, Infertility	Biochemistry	Steroid in infertility
EnR-B-009	Define the following terms: chromosome, allele (dominant and recessive), gene, locus, heterozygote, homozygote, hemizygous, autosome, genotype, phenotype, haploid and diploid number of chromosomes, aneuploidy, proband, proposita, pedigree, propositus, penetrance, codominance and polygenic	Biochemistry	Nomenclature of genetics
EnR-B-010	Discuss the structures of genes, how they are organized and regulated.	Biochemistry	Genes
EnR-B-011	Describe Mendelian Law of Segregation and Law of Independent Assortment.	Biochemistry	Mendelian laws
EnR-B-012	Describe the patterns of inheritance characteristic of autosomal dominant, autosomal recessive, X- linked	Biochemistry	Patterns of inheritance

	dominant, X-linked recessive and mitochondrial traits.		
EnR-B-013	Interpret genetic symbols as they appear in pedigrees.	Biochemistry	Pedigrees
EnR-B-014	Analyze pedigree to determine the mode of inheritance of following traits: 1) X-linked recessive (Duchenne Muscular dystrophy) 2) X-linked dominant (Rickets) 3) Autosomal recessive (Xeroderma Pigmentosum) 4) Autosomal dominant (Huntington's Disease)) Mitochondrial disorder (Mitochondrial diabetes)	Biochemistry	Mode of inheritance
EnR-B-015	Discuss different structural and numerical chromosomal abnormalities.	Biochemistry	Chromosomal abnormalities
EnR-B-016	Interpret the normal human karyotype in terms of number and structure of chromosomes.	Biochemistry	Karyotypes
EnR-B-017	Describe the effect of the following chromosomal mutations on a segment of DNA: point mutation, frameshift mutation, deletion, insertion, inversion, Robertsonian Translocation and mosaicism.	Biochemistry	Mutations
EnR-B-018	Discuss the concept of central dogma from gene to protein (replication, transcription and translation)	Biochemistry	Central dogma (Overview)
EnR-B-019	Discuss the gene expression especially Lac operon and Tryptophan operon	Biochemistry	Gene Expression
EnR-B-020	Discuss the regulation of eukaryotic gene expression with special emphasis on iron metabolism and RNA interference	Biochemistry	Gene Expression
EnR-B-021	Discuss the following Recombinant DNA techniques with reference to their principles, procedures and application: 1) PCR (Polymerase Chain Reaction) 2) RFLP (Restriction Fragment Length Polymorphism) 3) Cloning 4) Human Genome Project 5) Blotting Techniques 6) DNA (Deoxyribose Nucleic Acid) sequencing	Biochemistry	Techniques

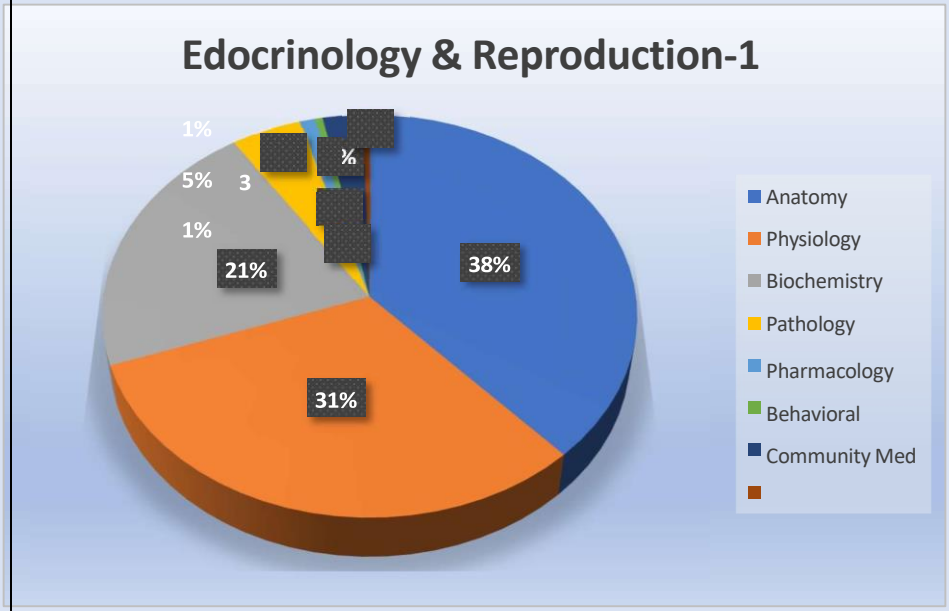
PRACTICAL

CODE	BIOCHEMISTRY	TOTAL HOURS = 06+02=08	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
EnR-B-022	Perform DNA extraction	Biochemistry	DNA
EnR-B-023	Perform Electrophoresis	Biochemistry	Electrophoresis
EnR-B-0234	Perform PCR	Biochemistry	PCR
EnR-B-025	Demonstrate ELISA (enzyme-linked immunoassay) to measure concentration of hormones	Biochemistry	ELISA
EnR-P-016	Perform Pregnancy test	Physiology	Pregnancy test
PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 02	
		DISCIPLINE	TOPIC
EnR-Ph-001	Explain the mechanism of action of thyroxine Explain Clinical uses and potential adverse effects with use of Thyroxine	Pharmacology	Anti thyroid substance & MOA, uses, effects
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 09	
		DISCIPLINE	TOPIC
EnR-Pa-001	Enumerate clinical manifestations along with hormone levels of anterior pituitary Classification of pituitary adenomas	Pathology	Pathology of Anterior Pituitary Gland
EnR-Pa-002	Enumerate and describe posterior pituitary syndromes (inappropriate ADH (Anti Diuretic Hormone) secretion, diabetes insipidus)	Pathology	Pathology of Posterior Pituitary Gland
EnR-Pa-003	Enumerate causes of hypo and hyperthyroidism along with levels of thyroid hormones	Pathology	Pathology of Thyroid Gland
EnR-Pa-004	Enumerate causes of hypercalcemia, hyper and hypoparathyroidism	Pathology	Pathology of Parathyroid Gland

EnR-Pa-005	Give etiological Classification of DM (Diabetes Mellitus) Differentiating features of DM-I and DM-II on the basis of pathogenesis, clinical features, diagnosis and complications	Pathology	Pathology of Endocrine Pancreas Gland
EnR-Pa-006	Enumerate causes of Cushing syndrome with lab investigations Causes and clinical features of adrenocortical insufficiency (Addison disease)	Pathology	Pathology of Adrenal Gland
EnR-Pa-007	Enumerate causes of lower genital tract infections and PIDs along with lab investigations Enumerate causes of infertility in females along with hormonal investigations Causes of dysfunctional uterine bleeding with histopathological features Pathophysiology and lab diagnosis of eclampsia and preeclampsia Causes of placental implantations (ectopic pregnancy)	Pathology	Female Reproductive Pathology
EnR-Pa-008	Enumerate causes of inflammation of male genital tract Causes of male infertility with semen analysis Describe pathological features of testicular torsion	Pathology	Male Reproductive Pathology
DISEASE PREVENTION AND IMPACT			
CODE	**SPECIFIC LEARNING OBJECTIVES**	**TOTAL HOURS = 05**	
		DISCIPLINE	**TOPIC**
EnR-CM-001	Define Diabetes Mellitus according to WHO (World Health Organization) criteria Classify types of Diabetes Mellitus	Community Medicine and Public Health	Diabetes

	Describe epidemiological risk factors for Diabetes Epidemiological distribution & statistics of DM Screening of community for Diabetes Apply levels of prevention for control of Diabetes.		
EnR-CM-002	Classify types of genetic disorders common in community. Describe health promotional measures to control genetic diseases. Describe screening programs for community to prevent genetic disorders. Apply levels of preventive and social measures for control of genetic abnormalities.	Community Medicine	Genetics
EnR-CM-003	Define women health and life cycle approach for health-related events. Highlight statistics related to human reproductive health issues. Enumerate health related problems across a woman's reproductive lifetime. Explain the components of reproductive health.	Community Medicine	Reproductive health

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



Module Weeks	Recommended Minimum Hours
07	194

Tentative timetables for the Endocrinology and Reproduction module (module-8)

ISLAM MEDICAL COLLEGE, SIALKOT
Endocrinology /Reproduction Module Week 1/7
2ndYear MBBS 2024-2025

Day/Date	9:00 – 10:00	10:00 – 10:50	10:50 - 11:40	11:40-01:10	01:10	01:40– 03:00
Monday 19/5/2025	**Anatomy SGD** Pituitary Gland Batch A Batch B Batch C **(DISSECTION HALL)**	**Embryology** Development of Thyroid & Parathyroid Gland	**LGIS Physiology** Hypothalamus/ Pituitary Gland	**Practical** Pituitary gland & Adrenal Gland Anatomy A Biochemirtry B C DNA DSL	Break	**SGD** Physiology Topic: Pituitary Gland Team X Biochemirtry Topic: Intro to ENDO/REPRO Module Team Y
Tuesday 20/5/2025	**Anatomy SGD** Thyroid & Parathyroid Gland Batch A Batch B Batch C **(DISSECTION HALL)**	**LGIS Physiology** Hypothalamus/ Pituitary Gland	**LGIS Biochemirtry** Introduction to Endocrinology	**Practical** Pituitary gland & Adrenal Gland Anatomy B Biochemirtry C A DNA DSL		**SGD** Physiology Topic: Pituitary Gland Team Z Biochemirtry Topic: Intro to ENDO/REPRO Module Team Y
Wednesday 21/5/2025	**Anatomy SGD** Adrenal Gland Batch A Batch B Batch C **(DISSECTION HALL)**	**LGIS Physiology** Hypothalamus/ Pituitary Gland	**LGIS Embryology** Development of Pituitary Gland & Adrenal Gland	**Practical** Pituitary gland & Adrenal Gland Anatomy C Biochemirtry A B DNA DSL		**SGD** Physiology Topic: Grouth harmone Team Z Biochemirtry Topic: Relate Previous Block's Knowledge With this Module Team Y
Thursday 22/5/2025	Tertir Batch A Batch B Batch C **(DISSECTION HALL)**	**LGIS Physiology** Hypothalamus/ Pituitary Gland	**LGIS Hirtology** Pituitary Gland	**11:40- 12:30**: **LGIS Biochemirtry** Introduction to Endocrinology **12:30-01:10**: **LGIS Physiology** Hypothalamus/ Pituitary Gland		**01:40– 2:20**: **LGIS Behavioral Sciences** Sexual difficulties and medical practice **2:20 - 3:00**: **LGIS Pathology** Anterior Pituitary Gland
Friday 23/5/2025	**Anatomy SGD** Accessory Male Organs Batch A Batch B Batch C **(DISSECTION HALL)**	**LGIS Physiology** Thyroid harmone	**LGIS Hirtology** Adrenal Gland	**LGIS Biochemirtry Signal** Transduction & Clarrification of Harmones **LGIS CFRC** Thyroid Examination	Break	**2:00 – 03:00** Physiology Topic: Grouth harmone Team Z Biochemirtry Topic: Relate Previous Block's Knowledge With this Module Team Y

ISLAM MEDICAL COLLEGE, SIALKOT
Endocrinology/Reproduction Module
Week: 2/7
2ndYear MBBS 2024-2025

Day/Date	8:00 – 10:00	10:00 – 10:50	10:50 - 11:40	11:40-1:10		1:10 -	1:40 – 3:00	
Monday 26/5/2025	**Anatomy SGD** Prostate Batch A Batch B Batch C **(DISSECTION HALL)**	**LGIS** **Physiology** Thyroid Gland	**LGIS** **Embryology** Development of Testes	**Practical** Anatomy A – Thyroid & Parathyroid gland Biochemistry B – Electrophoresis Physiology C – DSL		[illegible]	**SGD** Physiology Topic X Team – Thyroid Gland Biochemistry Topic Y Team – Introduction to Endocrinology	
Tuesday 27/5/2025	**Anatomy SGD** Pelvic Girdle-1 Batch A Batch B Batch C **(DISSECTION HALL)**	**LGIS** **Physiology** Thyroid Gland	**LGIS** **Biochemistry** Second Messengers	**Practical** Anatomy B – Thyroid & Parathyroid gland Biochemistry C – Electrophoresis Physiology A – DSL			**SGD** Physiology Topic Y Team – Thyroid Gland Biochemistry Topic X Team – Introduction to Endocrinology	
Wednesday 28/5/2025	**Anatomy SGD** Pelvic Girdle-2 Batch A Batch B Batch C **(DISSECTION HALL)**	**LGIS** **Physiology** Thyroid Gland	**LGIS** **Embryology** Development of Ovaries	**Practical** Anatomy C – Thyroid & Parathyroid gland Biochemistry A – Electrophoresis Physiology B – DSL			**SGD** Physiology Topic X Team – Thyroid Gland Biochemistry Topic Y Team – Signal Transduction & Classification of hormones	
				11:40-12:30	12:30-1:10		1:40 – 2:20	2:20 - 3:00
Thursday 29/5/2025	**Anatomy SGD** Pelvic Girdle-3 (Integrated with Obs & Gynae) Batch A Batch B Batch C **(DISSECTION HALL)**	**LGIS** **Physiology** Pituitary Hormones	**LGIS** **Histology** Thyroid Gland	**LGIS** **Biochemistry** Second Messengers	**LGIS** **Physiology** Thyroid Hormones		**LGIS** **Community Medicine** Diabetes	**LGIS** **Pharma** DRUG TREATMENT OF THYRIOD DISORDERS
						1:10 -	2:00 – 3:00	
Friday 30/5/2025	**Anatomy SGD** Viva Assessment Batch A Batch B Batch C **(DISSECTION HALL)**	**LGIS** **Physiology** Adrenocortical hormones	**LGIS** **Histology** Pancreas	**LGIS** **Biochemistry** Synthesis of Hormones/ Synthesis of ACTH & Adrenocortical	**LGIS** **Pathology**		**SGD** Physiology Topic Y Team – Thyroid Gland Biochemistry Topic X Team – Signal Transduction&Classification of hormones	

ISLAM MEDICAL COLLEGE, SIALKOT
Endocrinology/Reproduction Module
Week 3/6
2ndYear MBBS 2024-2025

Day/Da	8:00 – 10:00	10:00 – 10:50	10:50 – 11:40	11:40-1:10			1:40 – 3:00	
Monday *****	FORTNIGHTY EXAM	LGIS Physiology Adrena cortical harmones	LGIS Embryology Development of Male Genital Ductr & Glandr	Practical			SGD	
				Anatomy	A	Testes, Epididymis & Vas Deferens	Physiol Topic: Adrenocortical harmones	
				Biochemistry	B	PCR	Team X	
				Physiology	C	DSL	Biochemi Topic: Second Messengers	
							Team Y	
Tuesday *****	Anatomy SGD Sacrum and Peritoneal cavity of Pelvir Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Adrena cortical harmones	LGIS Biochemistry Synthesis of Testosterone, Progesterone and Estrogen & Steroid in infertility	Practical		Testes, Epididymis & Vas Deferens	SGD	
				Anatomy	B		Physiol Topic: Adrenocortical harmones	
				Biochemistry	C	PCR	Team Y	
				Physiology	A	DSL	Biochemi Topic: Second Messengers	
							Team X	
Wednesday *****	Anatomy SGD Pelvic Fascia, Pelvic Outlet and Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Adrena cortical harmones	LGIS Embryology Development of Female Genital Ductr & Glandr	Practical			Short Break	SGD
				Anatomy	C	Testes, Epididymis & Vas Deferens		Topic: Adrenocortical harmones
				Biochemistry	A	PCR		Team Z
					B	DSL		Biochemi Topic: Synthesis of Harmones/ Synthesis of ACTH & adrenocortical
								Team T
Thursday *****	Anatomy SGD Pelvic Vessels-1 Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Adrena cortical harmones	LGIS Histology Testes	11:40-12:30		12:30-1:10	1:40-2:20	2:20 – 3:00
				LGIS Biochemistry Nomenclature of Genetics		LGIS Physiology Adrena cortical harmones	LGIS Community Medicine Diabetes	LGIS Pharma DRUG TREATMENT OF THYRIOD DISORDERS
Friday *****	Anatomy SGD Pelvic Vessels-2 and Lymph Nodes Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Pancreatic harmones	LGIS Histology Epididymis, Vas deferens & Seminal Vesicle	LGIS Biochemistry Genes		LGIS Pathology	Short Break	2:00 – 3:00 SGD
								Physiol Topic: Adrenocortical harmones
								Team T
								Biochemi Topic: Synthesis of Harmones/ Synthesis of ACTH & adrenocortical
								Team Z

ISLAM MEDICAL COLLEGE, SIALKOT
Endocrinology/Reproduction Module
Week 4/6
2ndYear MBBS 2024-2025

Day/Da	8:00 – 10:00	10:00 – 10:50	10:50 – 11:40	11:40-1:10			1:10 –	1:40 – 3:00	
Monda y 55555	Anatomy SGD Pelvic Vessels & Lymph nodes Batch A Batch B Batch C [DISSECTION HALL]	LGIS Physiology Pancreatic harmones	LGIS Embryology Revision	Practical Anatomy A Seminal Vesicle & Prostrate Biochemistry B ELISA CFRC C Medical Ward			B r e a k	SGD Physiology Topic: Pancreatic Harmone X Team Biochemistry Topic: Dysfunction of Testosterone, progesterone and Estrogen & Steroid in infertility Y Team	
Tuesda y 55555	Anatomy SGD Assessment (Viva) Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Pancreatic harmones	LGIS Biochemistry Mendelian laws	Practical Anatomy B Seminal Vesicle & Prostrate Biochemistry C ELISA CFRC A Medical Ward				SGD Physiology Topic: Pancreatic Harmone Y Team Biochemistry Topic: Dysfunction of Testosterone, progesterone and Estrogen & Steroid in infertility Z Team	
Wednes day 55555	Anatomy SGD Pelvic Nerves Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Pancreatic harmones	LGIS Embryology Development of Uterus & and Vagina	Practical Anatomy C Seminal Vesicle & Prostrate Biochemistry A ELISA CFRC B Medical Ward				SGD Physiology Topic: Abnormalities of Glucose regulation Z Team Biochemistry Topic: Nomenclature of Genetics Gene Y Team	
Thursd ay 55555	Urethra Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Pancreatic harmones	LGIS Histology Epididymis, Vas Deferens & Seminal vesicle	11:40-12:30 LGIS Biochemistry Patterns of Inheritance	12:30-1:10 LGIS Physiology Abnormalities of Glucose regulation			1:40-2:20 LGIS Pathology Diseases of Thyroid Gland	2:20 – 3:00 LGIS Community Medicine Screening of Community For Diabetes
Friday 13/6/2025	Anatomy SGD Ovaries & Fallopian tubes Batch A Batch B Batch C] (DISSECTION HALL)	LGIS Physiology Diabetes mellitus	LGIS Histology Prostate	LGIS Biochemistry Pedigrees & Mode of inheritance	LGIS Pathology Diseases of parathyroid Gland		1:10 –	2:00 – 3:00 SGD Physiology Topic: Abnormalities of Glucose regulation Y Team Biochemistry Topic: Nomenclature of Genetics Gene Z Team	

ISLAM MEDICAL COLLEGE, SIALKOT
Endocrinology/Reproduction Module
Week 5/7
2ndYear MBBS 2024-2025

Day/Da	8:00 – 9:30	9:30 – 10:20	10:20 – 11:10	11:10-12:10	12:10-01:00	1:00 –	1:40 – 3:00
Monda y 14/7/2 025	DISECTION HALL	LGIS Physiology Parathyroid Hormones	LGIS Anatomy Key Discussion	Practical Anatomy A Ovaries & Fallopian Tub Biochem B ALL istry CFRC C Surgery Ward	LGIS Pharma Drugs in Myasthenia Gravis	B r e a k	SGD Physiol Topic Parathyroid hormones ogy s Team Biochemist Topic Mendelian Inheritance Patterns of ry Team
Tuesda y 15/7/2 025	Anatomy SGD Uterus and Vagina Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Parathyroid Hormones	LGIS Biochemistry Chromosomal Abnormalities & Karyotype	Practical Anatomy B Ovaries & Fallopian Tube Biochemist C ALL ry CFRC A Surgery Ward	LGIS PERLS Informed consent		SGD Physiol Topic Parathyroid hormones ogy s Team Biochemist Topic Mendelian Inheritance Patterns of ry Team
Wednes day 16/7/2 025	Anatomy SGD Perineum-1 Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Regulation of Calcium in body	LGIS Anatomy Development of External Genitalia	Practical Anatomy C Ovaries & Fallopian Tube Biochemist A ALL ry CFRC B Surgery Ward	LGIS PERLS Research Design		SGD Physiol Topic Calcium Regulation ogy s Team Biochemi Topic Pedigree & Mode of inheritance stry Team
Thursd ay 17/7/2 025	Anatomy SGD Perineum-2 Batch A Batch B Batch C (DISSECTION HALL)	LGIS Biochemistry Mutations	LGIS Histology Ovaries & Fallopian Tube	11:10-12:50 LGIS Physiology Regulation of Calcium in the body		12:50-	1:20-2:10 / 2:10 – 3:00 LGIS Community Medicine Classify Types of Genetic Disorder Common in Community LGIS Pathology Diseases of Endocrine Pancreas
Friday 18/7/2 025	Anatomy SGD Perineum-3 Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology	LGIS Histology Uterus & Cervix	LGIS Biochemistry Central Dogma (Overview) LGIS Pathology Diseases of Adrenal gland		1:10 – Break	2:00 – 3:00 SGD Physiol Topic Calcium Regulation ogy s Team Biochemist Topic Pedigree & Mode of inheritance ry Team

ISLAM MEDICAL COLLEGE, SIALKOT

Endocrinology/Reproduction Module

Week 6/7

2ndYear MBBS 2024-2025

Day/Date	8:00 – 9:30	9:30 – 10:20	10:20 – 11:10	11:10-12:10	12:10-01:00	1:00 – 1:40	1:40 – 3:00
Monday 21/7/2025	LGIS ANATOMY	LGIS Physiology Spermatogenesis	DSL Anatomy	Practical Anatomy A Uterus, Cervix & vagina Biochemistry B ALL CFRC C Surgery Ward	LGIS PERLS Anonymity Misconduct	Break	SGD Physiology Topic Reproduction Team Biochemistry Topic Chromosomal Abnormalities & Karyotype
Tuesday 22/7/2025	(DISSECTION HALL) Anatomy SGD Perineum-4 Batch A Batch C (DISSECTION HALL)	LGIS Physiology Spermatogenesis Capacitation & Acrosome reaction	LGIS Biochemistry Gene Expression	Practical Anatomy B Uterus, Cervix & vagina Biochemistry C ALL CFRC A Surgery Ward	LGIS PERLS Goal setting and Action Planning in Area of Research And Biomedical Ethics	Break	Team SGD Physiology Topic Reproduction Team Biochemi Topic Chromosomal Abnormalities & Karyotype Team
Wednesday 23/7/2025							
Thursday 24/7/2025	Anatomy SGD Perineum-5 Batch Batch (DISSECTION HALL)	LGIS Physiology Tertartorane	LGIS Histology Vagina Prof. Dr. Riaz Ahmed	11:40- 12:30 LGIS Biochemistry Gene Expression	12:30-01:20 LGIS Physiology Tertartorane	Break	SGD Physiology Topic Reproduction Team Biochemistry Topic Mutations Central Dogma (Overview) Team
Friday 25/7/2025	Anatomy SGD Clinical of Perineum Batch A Batch D (DISSECTION HALL)	LGIS Physiology Menstrual cycle	LGIS Histology Mammary Gland	LGIS Biochemistry Techniques	LGIS Pathology Diseases of Female Rep. System.	1:20-2:00	2:00 – 3:00 Physiology Topic Reproduction Team Biochemi Topic Mutations Central Dogma (Overview) Team

DSL : Directed Self Learning

ISLAM MEDICAL COLLEGE, SIALKOT
Endocrinology/Reproduction Module
Week 7/7
2ndYear MBBS 2024-2025

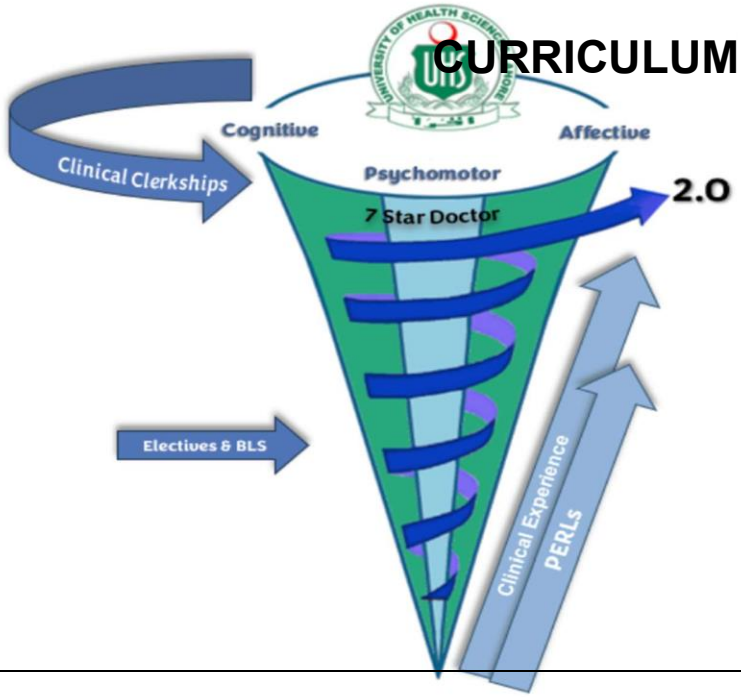
Day/Date	8:00 – 9:30	9:30 – 10:20	10:20 - 11:10	11:10-12:10	12:10-01:00	1:00 – 1:40	1:40 – 3:00
Monday 28/7/2025	FORTNIGHTY EXAM	LGIS Physiology Menstrual cycle	DSL Anatomy	Practical Anatomy A Mammary Gland Biochemistry B ALL Physiology C Reproduction	DSL Biochemistry	Break	SGD Physiology X Topic Team Reproduction Biochemistry Y Topic Team Gene Expression
Tuesday 29/7/2025	Anatomy SGD Revision Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Female sexual hormones	LGIS Biochemistry Techniques	Practical Anatomy B Mammary Gland Biochemistry C ALL Physiology A Reproduction	DSL Physiology		SGD Physiology Y Team Topic Reproduction Biochemistry X Team Topic Gene Expression
Wednesday 30/7/2025	Anatomy SGD Revision Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Puberty, menarche & menopause	LGIS Embryology Revision	Practical Anatomy C Mammary Gland Biochemistry A ALL Physiology B Reproduction	LGIS Community Medicine Reproductive Health		SGD Physiology X Team Topic Reproduction Biochemistry Y Topic Team Techniques
Thursday 31/7/2025	Anatomy SGD Revision Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Normal Pregnancy	LGIS Histology Revision	11:10-12:00: LGIS Biochemistry Techniques 12:00-12:50: LGIS Physiology Normal Pregnancy	DSL Biochemistry		01:40– 02:20: LGIS Pathology Diseases of Male Rep. System 2:20 – 03:00: DSL Anatomy
Friday 1/9/2025	Anatomy SGD Revision Batch A Batch B Batch C (DISSECTION HALL)	LGIS Physiology Lactation	LGIS Histology Revision	LGIS Biochemistry Revision ALL Module Team LGIS Ageing(ob|Gyn) Menopause		01:40- 02:00	2:00 – 03:00 Physiology Y Topic Team Reproduction Biochemistry X Topic Team Techniques

DSL : Directed Self Learning
Respective HOD,S To Ensure Sending Demonstrator For SDL Conducting

Module Lead _____ HoD Medical Education _____ HOD Students Affair _____ Principal IMC _____

MODULE NO. 09:
HEAD & NECK, SPECIAL SENSES

MODULAR INTEGTARTED CURRICULUM 2K23 version 2.0



MODULE RATIONALE

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

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

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

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

MODULE OUTCOMES

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

professionals to provide comprehensive care for patients.

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

THEMES

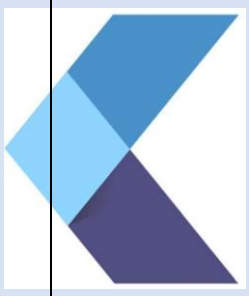
- Vision
- Hearing
- Taste
- Olfaction
- Head & Neck

CLINICAL RELEVANCE

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

IMPLEMENTATION TORs

- The time calculation for completion of modules and blocks is based on 35 hours per week. Total hours of teaching, learning and formative/summative internal assessment to be completed in a year are 1200.
- The hours mentioned within each module are the mandatory minimum required. The rest of the hours are left to the discretion of the institution that can be used in teaching, learning and assessment as per decision of the institutional academic council.
- The content and the intended learning outcomes written are mandatory, to be taught, at the level required, as the end year assessment will be based on these.
- However, the level of cognition can be kept at a higher level by the institution.
- The Table of Specifications provided will be used for the three papers of the Second professional examination. The same table of specifications should be used for the respective three block exams for internal assessment.



SYLLABUS OF HEAD & NECK, SPECIAL SENSES MODULE

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

	pterygopalatine ganglia.	Anatomy	
	Give the anatomical structure of eyeball emphasizing on its three coats and their neurovascular supply	Human Anatomy	
HNSS-A-002	Describe the boundaries of nasal cavity: nasal septum, lateral wall of nose, roof and floor. Give their anatomical features and neurovascular supply.	Human Anatomy	Olfaction
	Describe the anatomical features and neurovascular supply of external nose	Human Anatomy	
	List the paranasal sinuses giving their locations, openings, neurovascular supply and clinical significance.	Human Anatomy	
	Describe the course and distribution of olfactory nerve in reference to olfactory pathway. Give the effects of its lesions.	Human Anatomy	
	Describe the anatomical features and neurovascular supply of external ear	Human Anatomy	
HNSS-A-003	Describe the boundaries, contents, neurovascular supply and communications of middle ear cavity.	Human Anatomy	Hearing
	Describe the parts, anatomical features and neurovascular supply of internal ear.	Human Anatomy	
	Describe the course and distribution of vestibulocochlear neve mentioning the effects of its lesion. Describe auditory pathway.	Human Anatomy	
HNSS-A-004	Describe the anatomical features of tongue with emphasis on its mucosa, attachments, musculature, vascular supply and lymphatic drainage.	Human Anatomy	Taste
	Describe the nerve supply of tongue (general sensory, special sensory and motor) with reference to their lesions and embryological basis.	Human Anatomy	

	List taste buds mentioning their structure, location and nerve supply. Describe the taste pathway.	Human Anatomy	
	Discuss lesions of motor and sensory nerves supplying the tongue. Discuss the anatomical correlates of lingual carcinoma in reference to lymphatic drainage of tongue.	Human Anatomy	
HNSS-A-005	Describe the features of Norma Frontalis, Norma Verticalis, Norma Parietalis, Norma occipitalis and Norma Basalis	Human Anatomy	Skull
	Describe the features of Norma lateralis: temporal, infratemporal & pterygopalatine fossae giving their boundaries, contents and communications.	Human Anatomy	
	Discuss the sutures and fontanelles of skull, their age changes and clinical significance.	Human Anatomy	
HNSS-A-006	List the layers of scalp and describe the anatomical features with neurovascular supply and lymphatic drainage of scalp.	Human Anatomy	Scalp
	Give anatomical justification of spread of scalp infections, profuse bleeding in superficial scalp lacerations, gaping of scalp wounds and black eye.	Human Anatomy	
HNSS-A-007	Enlist in tabulated manner the muscles of facial expression and mastication, giving their nerve supply and actions. Define modiolus.	Human Anatomy	Muscles of facial expressions
HNSS-A-008	Describe the functional modalities, course, branches, and distribution of cranial nerves innervating the face (sensory and motor): trigeminal and facial nerves	Human Anatomy	Neurovascular supply of face
	Describe the vascular supply and lymphatic drainage of face.	Human Anatomy	
	Draw a diagram to illustrate cutaneous innervation of face.	Human Anatomy	

	Discuss anastomoses of facial artery with contralateral vessels and branches of internal carotid artery with their clinical significance.	Human Anatomy	
HNSS-A-009	Describe the danger area of face with it its clinical significance. Define the routes of spread of infection from face and scalp to intracranially.	Human Anatomy	Danger area
HNSS-A-010	Describe the bony features and muscle attachment of mandible.	Human Anatomy	Mandible.
	Classify temporomandibular joint mentioning its ligaments, relations, nerve supply and movements (with their mechanics and muscles producing them).	Human Anatomy	
HNSS-A-011	Describe anatomical features, relations and neurovascular supply of parotid gland and its duct, mentioning the structures entering and exiting the gland	Human Anatomy	Parotid gland
	Discuss the clinical correlates of parotid gland: parotiditis, Mumps, Frey's syndrome, parotid duct stones and parotid tumor surgery with its complications	Human Anatomy	
HNSS-A-012	Describe the parts and boundaries of oral cavity and give its relation to the Waldeyers' ring.	Human Anatomy	Waldeyers' ring
HNSS-A-013	Describe the anatomical features of hard and soft palate with their neurovascular supply.	Human Anatomy	Hard and soft
HNSS-A-014	Describe anatomical features, relations and neurovascular supply of submandibular and sublingual glands with their ducts.	Human Anatomy	Submandibular Sublingual glands
HNSS-A-015	Describe the location, roots and distribution of otic and submandibular ganglia.	Human Anatomy	Otic and Submandibular ganglia.
HNSS-A-016	Describe the anatomical features of Hyoid bone and give attachments on the bone.	Human Anatomy	Hyoid bone
HNSS-A-017	Enumerate the types of cervical vertebrae and list the differences between them.	Human Anatomy	cervical vertebrae

	Describe the anatomical features and attachments on cervical vertebrae.		
	Classify the joints of cervical vertebrae mentioning their ligaments, movements with muscle producing them and neurovascular supply.	Human Anatomy	
HNSS-A-018	List the prevertebral muscles of cervical region. Describe their attachments, actions and innervation.	Human Anatomy	Prevertebral muscles
HNSS-A-019	Enumerate parts of deep cervical fascia with their respective extents, attachments, relations and contents.	Human Anatomy	Deep cervical fascia
HNSS-A-020	Describe the facial spaces in head and neck mentioning their communications and their relation to spread of infection.	Human Anatomy	Facial spaces
HNSS-A-021	Describe the attachments, actions and nerve supply of infrahyoid and suprahyoid muscles of neck.	Human Anatomy	Infrahyoid and suprahyoid muscles
HNSS-A-022	Describe the location, formation and distribution of ansa cervicalis.	Human Anatomy	Ansa cervicalis.
HNSS-A-023	Describe the attachments, actions and nerve supply of sternocleidomastoid and trapezius.	Human Anatomy	Sternocleidomastoid and trapezius
HNSS-A-024	Describe the boundaries and contents of suboccipital, anterior and posterior triangles of neck.	Human Anatomy	Triangles of neck
HNSS-A-025	Describe the cervical part of trachea and esophagus with their neurovascular supply.	Human Anatomy	Trachea and esophagus
HNSS-A-026	Describe the location, anatomical features and vascular supply of thyroid and parathyroid glands. List the variations in location of parathyroid glands.	Human Anatomy	Thyroid, Parathyroid glands
HNSS-A-027	Describe the carotid arteries mentioning their origin, course, branches, distribution and termination.	Human Anatomy	Carotid arteries
HNSS-A-	Describe carotid body and carotid sinus and give	Human	Carotid body

028	their clinical significance.	Anatomy	
HNSS-A-029	Give the venous drainage of Head and Neck region. Describe the formation, tributaries and area of drainage of vessels constituting jugular venous system.	Human Anatomy	Head & Neck venous supply
HNSS-A-030	Name the superficial and deep cervical lymph nodes and give their location and drainage areas	Human Anatomy	Lymphatics
HNSS-A-031	Describe the location, formation, branches, distribution and lesions of cervical plexus	Human Anatomy	Cervical plexus
HNSS-A-032	Name the parts of pharynx giving their extent, anatomical features, structure and neurovascular supply.	Human Anatomy	Pharynx
	Name the pharyngeal constrictor muscles defining their attachments, innervation and structure traversing the gaps between adjacent muscles.	Human Anatomy	
HNSS-A-033	Name the parts of larynx giving their extent, anatomical features, musculoskeletal framework and neurovascular supply.	Human Anatomy	Larynx
HNSS-A-034	Discuss the location, anatomical features, relations and vascular supply of tonsils: nasopharyngeal, palatine and lingual.	Human Anatomy	Tonsils
CODE	**EMBRYOLOGY & POST-NATAL DEVELOPMENT**	**TOTAL HOURS = 15**	
	SPECIFIC LEARNING OUTCOMES	**DISCIPLINE**	**TOPIC**
HNSS-A-035	List the components of pharyngeal apparatus. Describe the development of pharyngeal arches, grooves, pouches and membrane and give derivatives and fate of each of them.	Embryology	Pharyngeal apparatus pharyngeal arches
HNSS-A-036	Describe the development and histogenesis of auditory tube, tympanic cavity, tonsils, thymus and parathyroid	Embryology	auditory tube, tympanic cavity, tonsils, thymus and parathyroid
HNSS-A-	Discuss the embryological basis of congenital	Embryology	Congenital

037	anomalies related to the development of pharyngeal arches, pharyngeal clefts and pharyngeal pouches: cervical sinus/fistula/cyst, 1st arch syndrome, DiGeorge syndrome, congenital malformations of thymus and parathyroid glands		anomalies
HNSS-A-038	Describe the development of tongue and thyroid gland.	Embryology	Tongue and Thyroid gland.
	List and provide embryological basis of congenital anomalies of tongue and thyroid gland.	Embryology	
HNSS-A-039	Describe the development of face and nasolacrimal duct and their respective congenital anomalies.	Embryology	Face and nasolacrimal duct
HNSS-A-040	Describe the development of nasal cavity and paranasal sinuses. Give the associated congenital anomalies.	Embryology	Nose
HNSS-A-041	Describe the development of lip and palate and their associated congenital malformations.	Embryology	Lips and palate
	Explain the types and embryologic basis of cleft lip and cleft palate.	Embryology	
HNSS-A-042	Describe the development of optic vesicle and retina.	Embryology	Eye & ear
	Describe the development of cornea, sclera, choroid, iris, ciliary body and lens and relate it to their respective congenital anomalies.	Embryology	
	Describe the development of internal ear and give the embryological basis of associated congenital anomalies.	Embryology	
CODE	**MICROSCOPIC ANATOMY (HISTOLOGY & PATHOLOGY)**	**TOTAL HOURS = 08**	
	SPECIFIC LEARNING OBJECTIVES	**DISCIPLINE**	**TOPIC**
HNSS-A-043	Describe the light and electron microscopic structure of tongue mentioning the histological structure of lingual papillae and taste buds.	Histology	Tongue

HNSS-A-044	Describe the histological structure of parotid, submandibular and sublingual glands.	Histology	Glands
	Compare and contrast the histological structures of parotid, submandibular and sublingual glands.	Histology	
HNSS-A-045	Differentiate between serous and mucous acini. Describe the structure and location of serous demilunes. Describe the serous and mucous acini and give histological differences between the two.	Histology	Head & Neck
HNSS-A-046	Describe the histological structure of thyroid gland and parathyroid gland.	Histology	Thyroid, Parathyroid glands
HNSS-A-047	Describe the histological structure of layers of eyeball, eyelid and retina.	Histology	Eye
	Describe the light and electron microscopic structure of cornea.	Histology	
HNSS-A-048	Describe the histological and ultramicroscopic structure of internal ear with special reference to Organ of Corti.	Histology	Ear

PRACTICAL

CODE	HISTOLOGY	TOTAL HOURS = 09	
	SPECIFIC LEARNING OBJECTIVES	**DISCIPLINE**	**TOPIC**
HNSS-A-049	Identify, draw and label diagrams to show histological structure of tongue, lingual papillae and taste buds.	Histology	tongue
HNSS-A-050	Identify, draw and label a diagram to show histological structure of parotid, submandibular and sublingual glands.	Histology	Glands
HNSS-A-051	Draw and label diagrams to show histological structure of serous demilunes, serous and mucous acini.	Histology	Head & Neck

HNSS-A-052	Draw and label a diagram to show histological structure of thyroid and parathyroid gland.	Histology	Thyroid, Parathyroid
HNSS-A-053	Draw and label diagrams to show histological structure of eyelid and cornea.	Histology	Eye
	Draw and label a diagram to show histological structure of retina. List its histological layers and their respective components	Histology	
HNSS-A-054	Draw and label a diagram to show histological structure of internal ear.	Histology	Ear
NORMAL FUNCTION			
THEORY			
CODE	**MEDICAL PHYSIOLOGY**	**TOTAL HOURS = 30**	
	SPECIFIC LEARNING OBJECTIVES	**DISCIPLINE**	**TOPIC**
HNSS-P-001	Define and describe the visual acuity	Physiology	Visual Acquity
	Define Emmetropia	Physiology	
	Enlist the errors of refraction	Physiology	
	Explain the cause, features, physiological basis, and correction of Hyperopia	Physiology	
	Explain the cause, features, physiological basis, and correction of myopia	Physiology	
	Explain the cause, features, physiological basis, and correction of astigmatism	Physiology	
	Describe the pathophysiology and treatment of cataract	Integrate with Ophthalmology	
HNSS-P-002	Interpret common treatment modalities for Refractive errors	Physiology	Refractive Errors
HNSS-P-003	Describe the mechanism of formation and outflow of aqueous humor	Physiology	Fluid systems of the Eye
	Describe normal value of intraocular pressure and its regulation	Physiology	

	Describe the method for measuring the intraocular pressure	Integrate with Ophthalmology	
	Describe the causes and features and pathophysiology of glaucoma	Physiology	
HNSS-P-004	Discuss the clinical features of Open Angle and Angle Closure Glaucoma	Physiology	Glaucoma
HNSS-P-005	Describe the physiological anatomy and function of structural elements of retina	Physiology	Retina
	Enlist different layers of retina	Physiology	
	Explain the significance of melanin pigment in retina	Physiology	
	Describe macula and foveal region of retina and their significance	Physiology	
	Describe the structure of rods and cones	Physiology	
	Comment on the location of optic disc and its significance	Physiology	
	Describe the cause, features, and treatment of retinal detachment	Physiology	
	Enlist the current investigations for Retinal Diseases	Integrate with Ophthalmology	
HNSS-P-006	Describe the rhodopsin-retinal visual cycle	Physiology	Photochemistry of vision
	Describe the mechanism of excitation of rods/ rods receptor potential	Physiology	
	Describe the causes and treatment of night blindness	Physiology	
HNSS-P-007	Define and describe different mechanisms of light adaptation	Physiology	Adaptation
	Define and describe different mechanisms of dark adaptation	Physiology	
	Enumerate the diseases leading to Night Blindness and retinal detachment	Integrate with Ophthalmology	
HNSS-P-	Explain the tri color mechanism of color	Physiology	Color vision

008	determination		
	Define term protanopes, deuteranopes, tritanopes	Physiology	
	Enlist the types of color blindness and their causes	Physiology	
	Enlist clinical features of Color vision deficiencies	Integrate with Ophthalmology	
HNSS-P-009	Trace the visual pathway	Physiology	Visual Pathways
	Enlist and describe the abnormalities of visual pathway & visual field		
	Explain the effect of removal of primary visual cortex		
HNSS-P-010	Define the physiological blind spot and describe its location	Physiology	Field of vision
	Define scotoma/ pathological blind spot and enlist causes	Physiology	
HNSS-P-011	Illustrate the abnormalities of field of vision	Integrate with Ophthalmology	Visual fields
HNSS-P-012	Describe the muscular and neural control of eye movements	Physiology	Eye movements
HNSS-P-013	Define and enlist the types of Strabismus	Integrate with Ophthalmology	Strabismus
HNSS-P-014	Explain the mechanism of accommodation	Physiology	Accommodation
	Enlist the components of near response in accommodation	Physiology	
	Describe the neural pathway for accommodation reflex	Physiology	
	Describe the regulation of accommodation	Physiology	
	Enlist the clinical features of Presbyopia	Integrate with Ophthalmology	
HNSS-P-015	Trace the neural pathway for pupillary light reflex	Physiology	Pupillary light reflex
	Explain the pupillary light reflexes or reactions in CNS diseases	Physiology	
	Describe the cause and features of Horner syndrome	Physiology	
	Illustrate the differential diagnosis of Anisocoria	Integrate with	

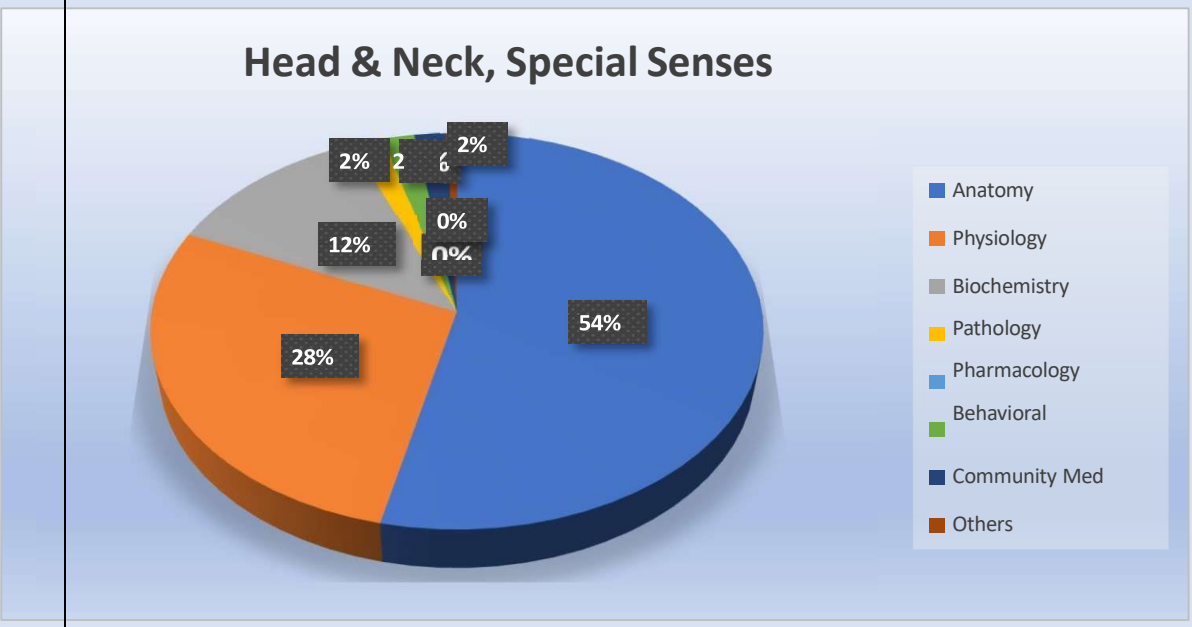
		Ophthalmology	
HNSS-P-016	Describe the physiological anatomy of outer and middle ear	Physiology	Sense of hearing
	Enlist the functions of middle ear	Physiology	
	Discuss clinical features and treatment of impacted wax	Integrate Otorhinolaryngology	
	Define causes and clinical features of Otomycosis	Integrate Otorhinolaryngology	
	Describe the mechanism of impedance matching and its significance	Physiology	
	Describe the mechanism of attenuation reflex and its significance	Physiology	
HNSS-P-017	Describe the physiological anatomy of inner ear	Physiology	Inner Ear/ Cochlea
	Describe the mechanism of transmission of sound waves in cochlea	Physiology	
HNSS-P-018	Describe the physiological anatomy and function of organ of Corti	Physiology	Organ of Corti
	Describe the mechanism of generation of endo-cochlear potential and its significance	Physiology	
HNSS-P-019	Write down the normal range of frequency for hearing	Physiology	Determination of sound frequency
	Describe the role of place principle in determination of sound frequency	Physiology	
	Describe the role of volleys principle in determination of sound frequency	Physiology	
HNSS-P-020	Trace the normal auditory nervous pathway	Physiology	Auditory pathway
	Describe the types of deafness	Physiology	
	Discuss the clinical features and investigations of Congenital and Acquired hearing loss	Integrate with Otorhinolaryngology	
HNSS-P-021	Enlist the primary taste sensations	Physiology	Sense of Taste
	Define and explain the term taste blindness	Physiology	

	Describe the physiological anatomy and location of taste buds	Physiology	
HNSS-P-022	Describe the mechanism of stimulation of taste buds/ receptor potential	Physiology	Excitation of Taste buds
	Trace the pathway of taste sensation	Physiology	
HNSS-P-023	Define and explain the terms: Ageusia, Hypergeusia, Hypogeusia and dysgeusia	Physiology	Abnormalities of Taste sensations
	Describe the senile changes in taste buds		
HNSS-P-024	Explain the terms: Taste preference and taste aversion	Physiology	Taste preference and aversion
HNSS-P-025	Enlist the primary sensations of smell	Physiology	Sense of smell
	Describe the physiological anatomy and location of olfactory membrane	Physiology	
HNSS-P-026	Enlist the causes and clinical features of Rhinitis	Integrate with Otorhinolaryngology	Rhinitis
	Differentiate between viral and allergic Rhinitis	Integrate with Otorhinolaryngology	
CODE	**MEDICAL BIOCHEMISTRY**	**TOTAL HOURS = 7**	
	SPECIFIC LEARNING OBJECTIVES	**DISCIPLINE**	**TOPIC**
HNSS-B-001	Discuss the metabolism of mono and disaccharides	Biochemistry	Metabolism of mono and disaccharides
	Interpret Hereditary fructose intolerance, fructosuria, galactosemia and lactose intolerance, in relevance to the clinical findings	Biochemistry	
	Explain the Polyol pathway and effect of hyperglycemia on sorbitol pathway	Biochemistry	
	Discuss the sources, metabolically active forms, biochemical role and clinical correlation of Vit-A with vision	Biochemistry	
HNSS-B-002	Discuss biochemical basis and clinical aspects of Riboflavin	Biochemistry	Vitamins

HNSS-B-003	Discuss the sources, absorption, regulation, biomedical functions and clinical aspect of Zn, Fl	Biochemistry	Eye
PRACTICAL			
CODE	**SPECIFIC LEARNING OBJECTIVES**	**TOTAL HOURS = 16+05=21**	
		DISCIPLINE	**TOPIC**
HNSS-P-027	Examine the Second, Third, Fourth & Sixth Cranial Nerves	Physiology	Cranial Nerves
HNSS-P-028	Examination of Light Reflex		Light reflex
HNSS-P-029	Determine the Visual Acuity for Far and Near vision		vision
HNSS-P-030	Perform Ophthalmoscopy		ophthalmoscopy
HNSS-P-031	Examine Field of Vision and interpretation of visual field plotted	Physiology	Visual field
HNSS-P-032	Examine Color Vision		Color vision
HNSS-P-033	Perform Tuning fork test and audiometry, interpret the report		Ear
HNSS-B-004	Perform estimation of uric acid level in blood	Biochemistry	Uric acid level in blood
HNSS-B-005	Perform HbA1C by chromatographic method		HbA1C
HNSS-B-006	Detect abnormal constituents in urine by chemical methods		Abnormal constituents in urine
PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS			
CODE	**SPECIFIC LEARNING OBJECTIVES**	**TOTAL HOURS = 09**	
		DISCIPLINE	**TOPIC**
HNSS-Pa-001	Enlist the common causative agents of Eye, Ear infections	Pathology (Microbiology)	Eye/Ear infections
	Discuss the pathogenesis and clinical features of common pathogens	Pathology (Microbiology)	

HNSS-B-004	Correlate proto-oncogene and oncogene concept with relevance of tumors	Biochemistry	Oncogenes
HNSS-B-005	Discuss tumor markers and their significance		Tumor markers
HNSS-B-006	Discuss the concept of xenobiotics Explain and interpret pedigree of multifactorial mitochondrial disorder i.e. Libers hereditary optic neuropathy		Genetics
DISEASE PREVENTION AND IMPACT			
CODE	**SPECIFIC LEARNING OBJECTIVES**	**TOTAL HOURS = 07**	
		DISCIPLINE	**TOPIC**
HNSS-B-007	Explain the role of antioxidants (selenium (Se), Vit-E & C, Glutathione) in preventing oxidative stress	Biochemistry	Anti-oxidants
HNSS-CM-001	Identify factors leading to noise pollution	Community Medicine/ Otorhinolaryngology	Hearing loss
HNSS-CM-002	Describe the common causes of blindness in community	Community Medicine	Blindness
	Describe risk factors and preventive strategies for blindness at community level	Behavioral Sciences	
HNSS-BhS-001	At end of module the students will learn the psychosocial aspects of pain which will help in understanding the complex and multidimensional nature of pain.		Pain
AGING			
CODE	**SPECIFIC LEARNING OBJECTIVES**	**TOTAL HOURS = 03**	
		DISCIPLINE	**TOPIC**
HNSS-Ag-001	Identify the role of oxidative radicals and the process of lipid peroxidation that leads to aging	Biochemistry	Lipid oxidation
HNSS-Ag-002	Familiarize with the age-related hearing loss	Otorhinolaryngology	Deafness

HNSS-Ag-003	Discuss the age changes of mandible	Anatomy	Head & Neck



Module Weeks	Recommended Minimum Hours
05	164

Tentative timetables for the Endocrinology and Reproduction module (module-8)

ISLAM MEDICAL COLLEGE, SIALKOT
Head and Neck, Special Senses Module
Week 1/5
2ndYear MBBS 2024-2025

Day/Da	8:00 – 10:00	10:00 – 10:50	10:50 - 11:40	11:40-01:10	01:10 - 01:40	01:40– 03:00
Monda y #####	DISECTION HALL	DSL Physiology	LGIS Embryology Pharyngeal Apparatus And Pharyngeal Archer	Practical Anatomy A Tongue Biochem irtry B Uric acid level in blood Physiolo gy C Examine the Second, Third, Fourth & Sixth Cranial Nerves Demonstrator	B r e a k	SGD Physiology I Topic Introduction to Special Sensor topics Biochemi try I Team Demonstrator Introduction
Tuesda y #####	SGD Grazz Anatom – Batc Batc Batc Extraocula r Muscles & Eye Movements SGD Grazz Anatom – Bat Bat Bat (DISSECTION HALL)	LGIS Physiology Visual Acuity & Refractary Errorz-I	LGIS Embryology Auditory tube, Tympanic cavity, Tonsils, Thymus, Parathyroid gland and Congenital anomalies	Practical Anatomy B Tongue Biochem irtry C Uric acid level in blood Physiolo gy A Examine the Second, Third, Fourth & Sixth Cranial Nerves Demonstrator		SGD Physiology I Topic Introduction to Special Sensor topics Biochemir y II Team Demonstrator Introduction
Wednes day #####	SGD Grazz Anatom Batc & C Batc Ciliary and Pterygopal atine ganglia SGD Grazz Anatom] Bat ch D Bat (DISSECTION HALL)	LGIS Physiology Visual Acuity & Refractary Errorz-II	LGIS Histology Tongue	Practical Anatomy C Tongue Biochem irtry A Uric acid level in blood Physiolo gy B Examine the Second, Third, Fourth & Sixth Cranial Nerves Demonstrator		SGD Physiology II Topic Visual Acuity & Refractary Errorz Team Demonstrator Biochemir y I Topic Correlation Team
Thursd ay #####	SGD Grazz Anatom Batc Batc Batc Eyelids, Conjunctiva and Lacrimal Apparatus SGD Grazz Anatom Bat Bat Bat (DISSECTION HALL)	LGIS Biochemistry Metabolism of Mono and Diraccharidez	LGIS Histology Salivary glandz	11:40- 12:30 LGIS Physiology Fluid System of eye & Glaucoma 12:30-01:10 LGIS Pathology Eye and Ear infectionz		01:40– 2:20 DSL Anatomy Department 2:20 - 3:00 DSL Biochemistry Department
Friday #####	SGD Grazz Anatom Batc Batc Batc Eyeball and Blood Supply of Eye SGD Grazz Anatom Bat Bat Bat (DISSECTION HALL)	LGIS Biochemistry Metabolism of Mono and Diraccharidez	LGIS Grazz Anatomy Cranial Nervez Innervating Eye and Extraocular Muscles	LGIS Physiology Retina, Photochemistry & Adaptation-I LGIS Community Medicine Blindnezz	Break	2:00 – 03:00 Physiology I Topic Visual Acuity & Refractary Errorz Biochemi stry II Team Demonstrator Topic Correlation Team

DSL : Directed Self Learning

ISLAM MEDICAL COLLEGE, SIALKOT

Head and Neck, Special Senses Module

Week: 2/5

2ndYear MBBS 2023-2024

Day/Date	8:00 – 10:00	10:00- 10:50	10:50 - 11:40	11:40-1:10	1:10 -	1:40 – 3:00
Monday [illegible]	FORTNIGHTLY EXAM (DISSECTION HALL)	LGIS PHYSIOLOGY(EYE) (DISSECTION HALL)	LGIS Embryology Tongue and Thyroid gland	Practical Anatomy A: Salivary glands Biochemistry B: HbA1C Physiology C: Examination of Light Reflex Perform Ophthalmoscopy Demonstrator		SGD Physiology X Topic Team: [illegible] Demonstrator Biochemistry Topic: Metabolism of Mono and Disaccharides Y Team
Tuesday [illegible]	SGD Gross Anatomy: Batch A, Batch C, Batch E Paranasal Sinuses and Olfactory Nerve SGD Gross Anatomy: Batch B, Batch D, Batch F (DISSECTION HALL)	10:00 – 10:50 LGIS Physiology Retina, Photochemistry & Adaptation-II	10:50 – 11:40 LGIS Embryology Face, Nasolacrimal duct and Nose	Practical Anatomy B: Salivary glands Biochemistry C: HbA1C Physiology A: Examination of Light Reflex Perform Ophthalmoscopy Demonstrator		SGD Physiology Y Topic Team: Fluid system of eye & Glaucoma Retina, Photochemistry & Adaptation-I Demonstrator Biochemistry X Topic Team: Metabolism of Mono and Disaccharides
Wednesday 13/8/2025	SGD Gross Anatomy: Batch A, Batch C, Batch E Tongue SGD Gross Anatomy: Batch B, Batch D, Batch F (DISSECTION HALL)	LGIS Physiology Color vision-I	LGIS Histology Histology of Serous and Mucous acini	Practical Anatomy C: Salivary glands Biochemistry A: HbA1C Physiology B: Examination of Light Reflex Perform Ophthalmoscopy Demonstrator		SGD Physiology X Topic Team: Viva Voce Demonstrator Biochemistry Y Topic Team: Metabolism of Mono and Disaccharide
Thursday 14/8/2025	SGD Gross Anatomy: Batch A, Batch C, Batch E Salivary Glands, Oral Cavity and Palate SGD Gross Anatomy: Batch B, Batch D, Batch F (DISSECTION HALL)	LGIS Biochemistry Metabolism of Mono and Disaccharides	LGIS Histology Thyroid and Parathyroid Glands	11:40-12:30: LGIS Physiology Color Vision-II 12:30-1:10: LGIS ENT Hearing loss and Deafness		1:40 – 2:20: LGIS Pathology Eye and Ear infections 2:20 - 3:00: DSL Physiology Department
Friday 15/8/2025	SGD Gross Anatomy: Batch A, Batch C, Batch E External and Middle Ear SGD Gross Anatomy: Batch B, Batch D, Batch F (DISSECTION HALL)	LGIS Biochemistry Metabolism of Mono and Disaccharides	LGIS Gross Anatomy Internal Ear and Vestibulocochlear Nerve	LGIS Physiology Field of Vision & Visual Field LGIS Community Medicine Blindness	1:10 -	2:00 – 3:00 SGD Physiology Y Topic Team: Viva Voce Demonstrator Biochemistry X Topic Team: Metabolism of Mono and Disaccharides

Head and Neck, Special Senses Module
Week 3/5
2ndYear MBBS 2023-2024

Day/Da	8:00 – 10:00	10:00-10:50	10:50 – 11:40	11:40-1:10	1:10 – 1:40	1:40 – 3:00
Monday 18/8/2025	ANATOMY .Disection Hall(ALL BATCHES)	DSL	LGIS Embryology Ear-1	Practical Anatomy A Thyroid and Parathyroid glands Biochemistry B Abnormal Constituents in urine Physiology C Determine the Visual Acuity for Far and Near virianExamine Color Virian		SGD Physiology Topic: Reflex, Photoadaptation & Adaptation-II Color vision Field of Vision & Visual Field X Team Biochemistry Topic: Metabolism of Mono and Diraccharides Y Team
Tuesday 19/8/2025	8:00 – 10:00 SGD Gross Anatomy Batch A Batch B Batch C Skull-2 SGD Gross Anatomy Batch D Batch E Batch F (DISSECTION HALL)	10:00 – 10:50 LGIS Physiology Eye Movements & Strabismus	10:50 – 11:40 LGIS Embryology Eye-1	Practical Anatomy B Thyroid and Parathyroid glands Biochemistry C Abnormal Constituents in urine Physiology A Determine the Visual Acuity for Far and Near virian	Short Break	SGD Physiology Topic: Reflex, Photoadaptation & Adaptation-II Color vision Field of Vision & Visual Field Y Team Demonstrator Biochemistry Topic: Metabolism of Mono and Diraccharides X Team
Wednesday 20/8/2025	SGD Gross Anatomy Batch A Batch C Batch E Scalp SGD Gross Anatomy Batch B Batch D Batch F (DISSECTION HALL)	LGIS Physiology Accommodation	LGIS Histology Eye-1	Practical Anatomy C Thyroid and Parathyroid glands Biochemistry A Abnormal Constituents in urine Physiology B Determine the Visual Acuity for Far and Near virianExamine Color Virian		SGD Topic: Viva Voce Demonstrator Z Team Biochemistry Topic: Metabolism of Mono and Diraccharides T Team
Thursday 21/8/2025	SGD Gross Anatomy Batch A Batch C Batch E Muscles of Facial Mastication SGD Gross Anatomy Batch B Batch D Batch F (DISSECTION HALL)	LGIS Biochemistry Oncogenes & Tumor Markers	LGIS Histology Eye-2	11:40-12:30: LGIS Physiology Pupillary Light Reflex 12:30-1:10: LGIS PERLS Advantages of co curricular and extra-curricular activities in Development of personality and		1:40-2:20: LGIS Behavioral Science Pain 2:20 – 3:00: DSL Anatomy Department
Friday 22/8/2025	SGD Gross Anatomy Batch A Batch C Batch E Mandible and Temporomandibular Joint SGD Gross Anatomy Batch B Batch D Batch F (DISSECTION HALL)	LGIS Biochemistry Xenobiotics & Genetics	LGIS Gross Anatomy Neurovascular supply of Face	LGIS Physiology Sense of Hearing-I LGIS CFRC Nasal Examination	Short Break	2:00 – 3:00 SGD Physiology Topic: Viva Voce Demonstrator T Team Biochemistry Topic: Metabolism of Mono and

ISLAM MEDICAL COLLEGE, SIALKOT
Head and Neck, Special Senses Module
Week 4/5
2ndYear MBBS 2023-2024

Day/Da	8:00 – 9:30	9:30 – 10:50	10:50 – 11:40	11:40-1:10	1:10 – 1:40	1:40 – 3:00
Monday 25/8/2025	FORTNIGHTLY EXAM	SGD Gross Hyoid Bone and Muscles Batch A Batch B Batch C Batch D Batch E Batch F (DISSECTION HALL)	LGIS Embryology Ear-2	Practical Anatomy A Eye Biochemistry B Abnormal Constituents in urine Physiology C Examine Field of Vision and interpretation of visual field studied	Break	SGD Physiology Topic: Eye Movements & Strabismus Accommodation Pupillary Light Reflex Demonstrator X Team Biochemistry Topic: Oncogenes & Tumor Markers Xenobiotics & Genetics Y Team
Tuesday 26/8/2025						
Wednesday 27/8/2025	8:00 – 10:00 SGD Gross Anatomy Batch A Batch C Batch E Cervical Vertebrae, Cervical joints and Prevertebral Muscles SGD Gross Anatomy Batch B Batch D Batch F (DISSECTION HALL)	10:00 – 10:50 LGIS Physiology Sense of Hearing-II	10:50 – 11:40 LGIS Histology Ear-1	Practical Anatomy C Eye Biochemistry A Abnormal Constituents in urine Physiology B Examine Field of Vision and interpretation of visual field	Break	SGD Physiology Topic: Viva Voce Demonstrator Z Team Biochemistry Topic: Oncogenes & Tumor Markers Xenobiotics & Genetics Y Team
Thursday 28/8/2025	SGD Gross Anatomy Batch A Batch C Batch E Trachea, Esophagus, Thyroid and Parathyroid glands SGD Gross Anatomy Batch B Batch D Batch F (DISSECTION HALL)	LGIS Biochemistry Vitamins & Eye	LGIS Histology Ear-2	11:40-12:30: LGIS Physiology Sense of Hearing-III 12:30-2:00: Grand Revision Of Assessment MCQs	2:00 – 2:20: Break	2:20 – 3:00: LGIS PERLS Structure of a dialogue Formatting of a dialogue Role of a dialogue in creative writing
Friday 29/8/2025	SGD Gross Anatomy Batch A Batch C Batch E Pharynx, Tonsils and Larynx SGD Gross Anatomy Batch B Batch D Batch F (DISSECTION HALL)	LGIS Biochemistry Vitamins & Eye	LGIS Gross Anatomy Deep Cervical Fascia	LGIS Physiology Sense of Taste-I 12:30-1:10: LGIS CFRC Neck lump Examination	1:10 –	2:00 – 3:00 SGD Physiology Topic: Viva Voce Demonstrator T Team Biochemistry Topic: Oncogenes & Tumor Markers Xenobiotics & Genetics Z Team

ISLAM MEDICAL COLLEGE, SIALKOT
Head and Neck, Special Senses Module
Week 5/5
2ndYear MBBS 2023-2024

Day/Da	8:00 – 9:30	9:30 – 10:50	10:50 - 11:40	11:40-1:10	1:10 – 1:40	1:40 – 3:00
Monda y *****	DSL	SGD Gross Triangles of Neck and Contents Batch A Batch B Batch C Batch D Batch E Batch F	LGIS Embryology Lips and Palate	Practical Anatomy A Ear Biochem istry B ALL DSL C Perform Tuning fork test and Audiometry, interpret the report	B r e a k	SGD Physiology Topic Viva Voce (Sense of hearing) Team Demonstrator Biochemistry Topic Vitamins & Eye Team
	8:00 – 10:00	(DISSECTION HALL)				
Tuesda y *****	SGD Gross Anatomy Batch C Batch E Lymphatic Drainage of Head and Neck SGD Gross Anatomy Batch D Batch F (DISSECTION HALL)	10:00 – 10:50 LGIS Physiology Sense of Smell-I	10:50 – 11:40 LGIS Embryology Eye-2	Practical Anatomy B Ear Biochemistry C ALL DSL A Perform Tuning fork test and Audiometry, interpret the Report		SGD Physiology Topic Viva Voce (Sense of hearing) Team Demonstrator Biochemistry Topic Vitamins & Eye Team
Wednes day *****	SGD Gross Anatomy – Batch C Batch Neurovascular supply of Head and Neck SGD Gross Anatomy – Batch D Batch (DISSECTION HALL)	LGIS Physiology Sense of Smell-II	LGIS Gross Anatomy Histology of Ear	Practical Anatomy C Ear Biochemistry A ALL DSL B Perform Tuning fork test and audiometry, interpret the report		LGIS Biochemistry Anti-Oxidants &Lipid oxidation
Thursd ay *****	EOB Prep Leave					
Friday *****						

EXAM TOS FOR BLOCK 5

MBBS 2nd Professional

Block-5

Theme	Subject	Written Exam			Oral/Practical/Clinical Exam			
		MCQ (1 mark)	SEQ (5 mark each)	Marks	OSPE (8 marks each observed)	OSCE (8 marks each observed)	OSVE (16 marks each observed)	Marks
Normal Structure	Anatomy applied/clinical	30	04	50	04	-	01	48
Normal Function	Physiology applied/clinical	18	02	28	02	-	01	32
	Biochemistry applied/clinical	11	01	16	01	-	01	24
Disease Burden & Prevention	Community Medicine & Public Health	08	-	08	-	-	-	-
	Behavioral Sciences	04	-	04	-	-	-	-
Pathophysiology & pharmacotherapeutics	Pathology	12	-	12	-	-	-	-
	Pharmacology	02	-	02	-	-	-	-
CFRC	CF-2-2	-	-	-	-	01	-	08
PERLs	PERLs-2-2	-	-	-	-	01	-	08
Total		**85**	**7x5=35**	**120**	**07 stations x 08 = 56**	**02 stations x 08 = 16**	**03 stations x 16=48**	**120**

2nd professional exam blocks wise

YEAR-2						
Block 4 **Modules** (GIT & Nutrition-I + Renal-I)	Part I MCQs (85)	85 Marks	Practical / Clinical Examination	07 OSPE 02 OSCE 03 OSVE	Marks 56 16 48	**300**
	Part II SEQS (7)	35 Marks				
	Internal Assessment 10%	30 Marks	Internal Assessment 10%	30 Marks		
	Total	**150**	Total	**150**		
Block 5 **Modules** (Endocrinology & Reproduction-I + Head& Neck, Special Senses)	Part I MCQs (85)	85 Marks	Practical / Clinical Examination	07 OSPE 02 OSCE 03 OSVE	Marks 56 16 48	**300**
	Part II SEQS (7)	35 Marks				
	Internal Assessment 10%	30 Marks	Internal Assessment 10%	30 Marks		
	Total	**150**	Total	**150**		
Block 6 **Modules** (Neurosciences-I + Inflammation)	Part I MCQsPart II SEQS	85 Marks 35 Marks	Practical / Clinical Examination	120 Marks		**300**
	Internal Assessment	30 Marks	Internal Assessment	30 Marks		
	Total	**150**	Total	**150**		
	Total Marks					**900**

ASSESSMENT TOOLS

Students will be assessed by the following methods

1. **Weekly Assessments / Fortnightly Assessments:**

Weekly assessments will be conducted every Monday.

2. **Assignments/ PBLs:**

Assignments /PBLs will be given monthly.

3. **Block exam:**

At the end of block an exam will be conducted comprising of theory (MCQs & SEQs) and practical/ OSPE content. This will comprise 40% of block assessment.

4. **Departmental quizzes, presentations & group projects:**

Above mentioned can be the assessment tools for different departments on their will.

RECOMMENDED SOURCES

Anatomy

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

Physiology

- Guyton AC and Hall JE. Textbook of Medical Physiology. W. B. Sunders & Co., Philadelphia 14th Edition.
- Essentials of Medical Physiology by Mushtaq Ahmed

Biochemistry

- Harpers illustrated Biochemistry 32nd edition. Rodwell.V.W MCGrawHill publishers.
- Lippincott illustrated Review 8th edition Kluwer.W.
- Essentials of Medical Biochemistry vol 1&2 by Mushtaq Ahmed.

Pathology

- Vinary Kumar, Abul K. Abbas and Nelson Fausto Robbins and Cotran, Pathologic basis of disease, WB Saunders.
- Richard Mitchall, Vinary Kumar, Abul K. Abbas and Nelson Fausto Robbins and Cotran, Pocket Companion to Pathologic basis of diseases. Saunder Harcourt.

- Walter and Israel. General Pathology.
- Churchill Livingstone.

Behavioural Sciences

- Handbook of Behavioural Sciences by Prof. Mowadat H.Rana, 3rd Edition
- Medical and Psychosocial aspects of chronic illness and disability SIXTH EDITION by Donna R.Falvo, PhD Beverely E.Holland, PhD, RN

Community medicine

- Parks Textbook of Preventive and Social Medicine. K. Park (Editor)
- Public Health and Community Medicine Ilyas, Ansari (Editors)

MODULE COORDINATORS

PHYSIOLOGY

Dr. Maham Tahir

Assistant professor Physiology

Office: Assistant Prof. Office Physiology, Academic block 1, Ground Floor

Office Hours: Monday to Friday from 0800 Hours till 1500 Hours

BIOCHEMISTRY

Dr. Adnan Riaz

Associate Professor of Biochemistry

Office: HOD Office Biochemistry Academic block 1, First Floor

Office Hours: Monday to Friday from 0800 Hours till 1500 Hours

PATHALOGY

Dr Hamza

Lecturer Pathology

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Office Hours: Monday to Friday from 0800 Hours till 1500 Hours

COMMUNITY MEDICINE

Dr. Sehar

Lecturer Community Medicine

Office: Community Medicine, Academic block

1, First Floor Office Hours: Monday to Friday

from 0800 Hours till 1500 Hours

BEHAVIOUR SCIENCES

Dr. Rubab Waseem

Senior Lecturer Behavioural Sciences

Office Hours: Monday to Friday from 0800 Hours till 1500 Hours

IMPORTANT NOTE

To be able to sit in Annual Exam

85 % attendance and at least 50 % in internal assessment is mandatory

DISCLAIMER

This module guide may be subject to changes, and students should stay updated through official communication channels