



# **ENDOCRINE & REPRODUCTION-II MODULE**

## **4<sup>th</sup> Year MBBS**

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**Khyber Medical University (KMU) Vision:**

Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

**Khyber Medical University (KMU) Mission:**

Khyber Medical University aims to promote professional competence through learning and innovation for providing comprehensive quality health care to the nation.

**Institute of Health Professions Education & Research (IHPER) Mission:**

To produce leaders, innovators and researchers in health professions education who can apply global knowledge to resolve local issues.

**Table 1: Themes**

<b>S. No</b>	<b>Theme</b>	<b>Duration in days</b>
1	Tall/short stature	3
2	Neck swelling and Muscle cramps	6
3	Excessive thirst and urination	6
4	Moon face	5
5	Infertility and pregnancy	15
6	Breast lump	3

# Teaching Hours Allocation

Table 2: Total hours of different subjects

S#	Subject	Hours
1	Pathology	44
2	Pharmacology	23
3	Forensic medicine	16
4	Medicine	19
5	Community medicine	30
6	Gynaecology	14
7	Surgery	05
8	Paediatrics	02
9	Physiology	02
10	Urology	01
11	Neurosurgery	01
12	Family medicine	03
13	PRIME/MEDICAL EDUCATION	2
14	Research*	14**
	<b>Total</b>	<b>162</b>

\* Two hours per week for research project in the whole academic session

\*\*these hours are neither included in total hours nor in assessment as separate marks have been allotted to research in viva

# Learning Objectives

**By the end of Endocrine & Reproduction Module, 4th year MBBS students will be able to:**

- 1) Describe the pathology, clinical features, investigations, and treatment of Hyper and hypopituitarism
- 2) Describe the pathology, clinical features, investigations, and treatment of Hyper and hypothyroidism, and hyper and hypoparathyroidism
- 3) Describe the classification, pathogenesis, clinical features, investigations, and treatment of Diabetes mellitus
- 4) Explain the pathology, clinical features, investigations, and treatment of Hyper and hypoadrenalism
- 5) Explain the causes of male and female infertility and its management
- 6) Explain the classification, pathology, and management of testicular tumors
- 7) Explain benign and malignant breast disease
- 8) Discuss the etiology, risk factors, clinical features, investigations, and treatment of carcinoma of breast
- 9) Describe the pharmacokinetics and pharmacodynamics of pituitary, gonadal, pancreatic, thyroid, and adrenocortical hormones, their synthetic analogues and antagonists, and their role in the management of relevant disease conditions
- 10) Formulate prescriptions for patients with Graves' disease and Diabetes mellitus
- 11) Discuss the laws related to sexual offenses, and management of a rape victim in forensic aspects
- 12) Explain the pathophysiology and surgical management of benign prostatic hyperplasia and carcinoma of the prostate

**Table 3: Theme Wise Learning Objectives**

<b>Theme-1: Tall / short stature</b>			
<b>Subject</b>	<b>Topic</b>	<b>Hours</b>	<b>Learning Objectives</b>
Pathology	Pituitary gland- Physiological anatomy	1	Explain the gross and microscopic structure of pituitary gland
			Explain the functions of hormones of the anterior and posterior pituitary gland and their regulation by the Hypothalamus
	Hyperpituitarism/Pituitary adenomas: <ul style="list-style-type: none"> <li>• Prolactinomas</li> <li>• Somatotrophic tumors</li> <li>• Corticotrophic tumors</li> <li>• others</li> </ul>	1	Explain the causes of hyperpituitarism
			Discuss the gross and microscopic structure of pituitary adenomas, and the hormones secreted from these
			Explain the clinical manifestations of different types of pituitary adenomas

	Hypopituitarism	1	Describe the etiology and clinical manifestations of hypopituitarism
Medicine	Acromegaly/Gigantism	2	Explain the etiology, clinical features, investigations, treatment, and complications of Acromegaly/gigantism
	Hyperprolactinemia		Discuss the etiology, clinical features, investigations, and treatment of hyperprolactinemia
	Hypopituitarism/Sheehan`s syndrome		Explain the etiology, clinical features, investigations and treatment of Hypopituitarism and Sheehan`s syndrome
Pharmacology	Growth hormone	1	Describe the sources of Growth hormone (old and new sources)
			Describe the mechanism of action, clinical uses, and adverse effects of Growth hormone
	Growth hormone antagonists (Octreotide and others)		Enlist Growth hormone antagonists
			Describe the clinical role of Octreotide in acromegaly
			Describe the route of administration, dosage, and adverse effects of octreotide in acromegaly and gigantism



	Bromocriptine	1	Describe the mechanism of action, clinical uses, and adverse effects of Bromocriptine
Paediatrics	Short stature	1	Describe the method to measure and plot height; and calculate height velocity and midparental, target height to allow early diagnosis of growth disorders in paediatric patients
			Explain the diagnostic criteria that allow to differentiate causes of growth deficiency
			Discuss the tools for better communication with patients and families and coordination of multidisciplinary care
			Discuss treatment of growth hormone deficiency or other diseases responsible for short stature and their appropriate management
Neurosurgery	Surgical management of pituitary adenoma	1	Explain the surgical treatment and complications of pituitary macro/microadenomas
Community medicine	Occupational Health: Introduction	1	Define occupational health
			Discuss importance of occupational health
			Describe ergonomics
			Describe principles and responsibilities of occupational health officer [OHO]

	Physical hazards	1	Enumerate physical hazards (heat, cold, noise, light, vibrations, pressure effect, Radiations)
			Discuss its ill effects on health
			Discuss its preventive measures
	Chemical hazards	1	Enumerate chemical hazards (inorganic dust diseases, organic dust diseases, metals & chemicals)
			Discuss its ill effects on health
			Discuss preventive measures
	Mechanical, Biological & Psychosomatic hazards	1	Describe mechanical hazards
			Discuss control measures of mechanical hazards
			Discuss control measures of mechanical hazards
			Discuss control measures of biological hazards
			Describe psychosomatic stressors
			Discuss control measures of psychosomatic stressors
Animal hazards	1	Describe types, prevalence, and statistics of snake bite	
		Discuss prevention and management of snake bite	
		Discuss causes of poor management with respect to awareness and vaccination	

	Preventive measures, health insurance, social security schemes	1	Describe various preventive measures of occupational hazards (Medical engineering and legal measure)	
			Discuss role and benefits of health insurance	
			Discuss social security and its benefits	
	Demography: Introduction	3	Define demography and various related terms	
			Explain and interpret population pyramid	
			Explain demographic transition	
			Describe the causes of high and low fertility and mortality	
			Growth rate	Define population growth rate, CDR, CBR
				Describe growth rate
				Describe population explosion & its implications
Demographic indicators		Explain advantages of population control		
		Describe the demographic indicators of Pakistan		
PRIME/MEDICAL EDUCATION	Dealing with patients	1	Serve the patient as an individual, considering lifestyle, beliefs, and support system	
	Community Need analysis		Identify the health care needs of community.	

## Theme-2: Neck swelling and muscle cramps

Physiology	Physiologic anatomy of the Thyroid gland	1	Explain the gross and microscopic structure of Thyroid gland
			Explain the synthesis and functions of hormones of the thyroid gland and their regulation by the anterior pituitary
Pathology	Hyperthyroidism including Grave`s disease	1	Discuss the etiology, pathogenesis and morphology of Hyperthyroidism and Grave`s disease
	Hypothyroidism	1	Discuss the etiology, pathogenesis, morphology, and clinical features of Hypothyroidism
	Thyroiditis	1	Discuss the classification, morphology, and presentations of Thyroiditis
	Multinodular goitre		Explain the etiology, clinical features, and complications of multinodular goitre
	Thyroid malignancies	1	Classify thyroid malignant disorders
	Explain morphology, clinical features, and prognosis of thyroid malignancies		
Medicine	Hyperthyroidism including Grave`s disease	1	Discuss the etiology, clinical features, investigations and treatment and prognosis of Hyperthyroidism and Grave`s disease

			Explain the pathogenesis, clinical features, and management of Grave`s Ophthalmopathy
	Hypothyroidism	2	Discuss the types, etiology, clinical features, investigations, and treatment of Hypoparathyroidism
	Thyroiditis		Describe the classification, etiology, clinical features, investigations, and treatment of Thyroiditis
	Multinodular goitre	1	Discuss the etiology, clinical features, investigations, and management approach to a patient with multinodular goitre
	Thyroid malignancies		Classify thyroid malignant disorders
			Discuss the pathogenesis, clinical features, investigations, and management of Thyroid malignancies
	Hyperparathyroidism	1	Discuss the types, etiology, clinical features, investigations, and treatment of Hyperparathyroidism
	Hypoparathyroidism		Discuss the types, etiology, clinical features, investigations, and treatment of Hypoparathyroidism

Pharmacology	Thyroid hormones	1	Enlist thyroid preparations (used clinically as well as older-obsolete ones)
			Describe the mechanism of action, pharmacological effects, clinical use, and adverse effects of Thyroxine (T <sub>4</sub> ) and Triiodothyronine (T <sub>3</sub> )
	Antithyroid drugs	2	Classify Antithyroid drugs
			Describe the mechanism of action, clinical use, and adverse effects of Thioamides
			Describe the mechanism of action, clinical use, and adverse effects of Potassium iodide
			Describe Lugol's iodine solution
Paediatrics	Congenital hypothyroidism	1	Discuss the types and clinical features of hypoparathyroidism
			Discuss investigations and treatment of Hypoparathyroidism
Community medicine	Iodine deficiency / Goitre	1	Discuss sources of iodine and goitrogens
			Discuss iodine deficiency disorders and daily requirement of Iodine
			Explain the epidemiological determinants and control strategies for iodine deficiency/goitre

Theme-3: Excessive thirst and urination			
Pathology	Diabetes Mellitus <ul style="list-style-type: none"> <li>• Classification</li> <li>• Diagnosis</li> <li>• Insulin resistance</li> <li>• Beta cell dysfunction</li> <li>• Complications <ul style="list-style-type: none"> <li>○ Acute</li> <li>○ Chronic</li> </ul> </li> </ul>	1	Classify Diabetes mellitus Explain the diagnostic criteria of DM Explain the mechanisms of insulin resistance Explain the mechanisms of beta cell dysfunction Explain the acute and chronic complications of DM
	Pancreatic neuroendocrine tumors	1	89 Describe the types and clinical presentations of pancreatic neuroendocrine tumors
Medicine	Diabetes mellitus <ul style="list-style-type: none"> <li>• Types</li> <li>• Insulin resistance syndromes</li> <li>• Clinical features investigations</li> <li>• Treatment</li> <li>• Complications</li> </ul>	2	Explain the different types of DM
			Discuss the mechanism presentation, and management of insulin resistance
			Discuss the clinical features of DM
			Explain the diagnostic workup of a patient with DM
			Classify the pharmacological treatment of DM
			Explain lifestyle modifications in the management of DM

		1	Discuss the acute and chronic complications of DM
	Hypoglycemic coma	1	Explain the etiology, clinical features and management of hypoglycemic coma
	Diabetic ketoacidosis	1	Explain the precipitating factors, diagnostic work up, and treatment of a patient with diabetic ketoacidosis
	Hyperosmolar non-ketotic diabetic coma		Explain the precipitating factors, diagnostic work up, and treatment of a patient with Hyperosmolar non-ketotic diabetic coma
	Lactic acidosis		Explain the precipitating factors, diagnostic work up, and treatment of a patient with Lactic acidosis
	Posterior pituitary gland	1	Discuss the functions of hormone Vasopressin secreted by the posterior pituitary gland
	SIADH		Explain the etiology, clinical features, investigations, and treatment of Diabetes insipidus
			Explain the etiology, and pathogenesis of SIADH secretion
Pharmacology	Insulin	1	Classify Insulins
			Describe the sources of Insulin



			Describe the differences between the human, bovine and porcine Insulins
			Describe the mechanism of action and clinical uses of Insulin
			Describe the complications of Insulin therapy
			Describe the management of hypoglycemia caused by Insulin
			Describe the management of diabetic ketoacidosis
	Oral hypoglycemic drugs	2	Classify oral hypoglycemic drugs
			Enlist euglycaemic drugs
			Describe the mechanism of action and adverse effects of Sulphonylureas
			Describe the mechanism of action and clinical use of Meglitinides
			Describe the mechanism of action, clinical use, and adverse effects of Biguanides
			Describe the mechanism of action, clinical use, and adverse effects of Thiazolidinediones
			Describe the mechanism of action, clinical use, and adverse effects of $\alpha$ -glucosidase inhibitors

			Describe the mechanism of action and clinical use of Pramlintide, Exenatide and Sitagliptin
	Glucagon	1	Describe the mechanism of action and clinical use of Glucagon
	Vasopressin/Desmopressin		Describe the mechanism of action, clinical use, and adverse effects of Desmopressin
			Enlist the drugs used in nephrogenic diabetes insipidus
Paediatrics	Management of Type 1 Diabetes mellitus in children	1	Enumerate the blood glucose parameters and the clinical signs for an early diagnosis of diabetes in a child.
			Recognize how diabetes may present in young children or babies, to make the diagnosis and prevent coma or death
			Plan investigations and management plan for a newly diagnosed and a known diabetic child.
			Enumerate the different types of insulins.
Community medicine	Non-communicable diseases: Prevention of diabetes mellitus	2	Discuss Prevalence of diabetes mellitus globally and in Pakistan
			Discuss modifiable and non-modifiable risk factors for diabetes mellitus
			Describe epidemiological determinants of diabetes mellitus
			Discuss screening methods for diabetes mellitus
			Discuss the prevention (Primary, secondary, and tertiary) and care of diabetes mellitus

<b>Theme-4: Moon face</b>			
Physiology	Physiology of the Adrenal cortical hormones	1	Explain the gross and microscopic structure of Adrenal gland
			Explain the synthesis and functions of hormones of the adrenal cortex and their regulation by the anterior pituitary
Pathology	Hypercortisolism and Cushing`s syndrome	1	Discuss the etiology of Hypercortisolism
			Explain the etiology and clinical features, of Cushing`s syndrome
	Hyperaldosteronism	1	Explain the etiology, and presentation of primary Hyperaldosteronism
	Adrenogenital syndrome		Explain the etiology, clinical features, of Adrenogenital syndrome
	Adrenal insufficiency <ul style="list-style-type: none"> <li>• Primary (Acute and Chronic)</li> <li>• Secondary</li> </ul>	1	Classify adrenal insufficiency in the context of its etiology
			Discuss the clinical presentations and complications of adrenal insufficiency
Adrenal neoplasms	1	Discuss the types of adrenal neoplasms	
		Explain the morphology, and clinical features of adrenal neoplasma	
Pheochromocytoma	1	Explain the morphology, and clinical features of Pheochromocytoma	

	Multiple Endocrine Neoplasia syndromes (MEN)		Classify Multiple endocrine neoplasia syndrome Explain the morphology and clinical features of MEN
Medicine	Hypercortisolism and Cushing`s syndrome	1	Explain the etiology, clinical features, diagnostic workup, and management of Hypercortisolism/Cushing`s syndrome
	Primary Hyperaldosteronism	1	Explain the etiology, clinical features, diagnostic workup, and management of Primary Hyperaldosteronism
	Adrenogenital syndrome	1	Explain the etiology, clinical features, diagnostic workup, and management of Adrenogenital syndrome
	Adrenal insufficiency <ul style="list-style-type: none"> <li>• Primary (Acute and Chronic)</li> <li>• Secondary</li> </ul>	1	Classify adrenal insufficiency
			Explain the etiology, clinical features, investigations, and treatment of primary Addison`s disease Explain the etiology, clinical features, investigations, and treatment of pituitary adrenal insufficiency
	Adrenal neoplasms	1	Explain the types of adrenal tumors
Discuss the clinical presentations, diagnostic workup, and treatment of adrenal tumors			

	Pheochromocytoma	1	Explain the clinical features, investigations, management, and complications of Pheochromocytoma
	Gastro-entero-pancreatico-neuroendocrine tumors (GEP-NETs) including Carcinoid tumors		Explain the clinical features, investigations, management of GEP-NETs/Carcinoid tumors
Pharmacology	Glucocorticoids	1	Classify Glucocorticoids
			Describe the mechanism of action, pharmacological effects, clinical uses, and adverse effects of glucocorticoids
	Describe dexamethasone suppression test		
Glucocorticoid antagonists/synthesis inhibitors	1	Enlist Glucocorticoid antagonists/synthesis inhibitors	
		Describe the mechanism of action, clinical uses and adverse effects of Mifepristone, Ketoconazole, Metyrapone and Aminoglutethimide	
Aldosterone antagonists		Describe the mechanism of action, clinical uses, and adverse effects of Spironolactone (apart from being used as diuretic)	
Community medicine	Introduction to nutrition, basic measurements & allowances Macronutrients	8	Classify nutrients
			Discuss quality of nutrients in diet
			Discuss the balanced diet
			Discuss energy value of different nutrients
			Describe classification of macronutrients
			Discuss the functions and importance of various macronutrients
Discuss daily allowance of macro nutrients			

			Discuss the diseases caused by their deficiency and excess
	Micronutrients -Vitamin deficiencies allowances & control		Describe classification of micronutrients
			Discuss the function and importance of various vitamins
			Discuss daily allowances of vitamins
			Discuss diseases caused by their deficiency
	Micronutrients -mineral deficiencies allowances and control		Discuss the function and importance of various minerals essential for health
			Discuss daily allowance of minerals intake
			Discuss diseases caused by their deficiency
	Undernutrition - Protein calorie malnutrition and control		Define undernutrition and its classification
			Discuss protein calorie malnutrition & its causes
			Describe the various classifications for assessment of PEM
			Discuss control strategies of malnutrition
	Over-nutrition / obesity and it's control		Define obesity
			Calculate BMI
			Discuss Epidemiology of obesity.
			enumerate Causes of obesity.
			Explain the Complications of obesity
			Formulate a management plan for obesity
			Discuss Prevention of obesity

## Theme-5: Infertility and pregnancy

Pathology	Testicular tumors	1	Classify testicular tumors
			Explain the gross and microscopic morphology of benign and malignant testicular tumors
			Discuss the staging and prognosis of testicular malignant tumors
	Prostatic disorders	2	Explain the etiology and morphology of Prostatitis
	<ul style="list-style-type: none"> <li>• Prostatitis</li> <li>• Benign prostatic hyperplasia (BPH)</li> <li>• Prostatic carcinoma</li> </ul>		Explain the gross and microscopic morphology and complications of BPH
			Explain the clinical features, types and staging of prostatic carcinoma
	Sexually transmitted diseases (STDs)	1	Explain the types of STDs
	<ul style="list-style-type: none"> <li>• Syphilis</li> <li>• Gonorrhoea</li> </ul>		Explain the stages, morphology, clinical features, and complications of Syphilis
			Name the organisms causing Gonorrhoea and its clinical features
	Introduction to gynecological cancers	1	Enlist different types of gynecological cancers
Cervical carcinoma		Explain the gross and microscopic morphology, clinical features and staging of Cervical carcinoma	

	Endometritis	1	Explain the etiology and pathogenesis of endometritis
	Uterine fibroids		Explain the etiology and morphology of uterine fibroids
	Endometriosis		Explain the etiology, pathogenesis and morphology of endometriosis
	Endometrial hyperplasia and endometrial carcinoma	1	Explain the etiology, pathogenesis, morphology of Endometrial hyperplasia /carcinoma
	Polycystic ovarian disease	1	Explain the etiology, risk factors, clinical features, and morphology of Polycystic ovary syndrome
	Tumors of the ovary <ul style="list-style-type: none"> <li>• Benign</li> <li>• malignant</li> </ul>	1	Classify benign and malignant tumors of the ovary
	Explain the gross and microscopic morphology, clinical features, staging and complications of ovarian carcinoma		
Gynaecology	Anatomy of the reproductive tract	1	Describe the anatomy of the perineum, the vagina, cervix and uterus, the adnexa and ovary
	Menopause	1	Define Menopause.
Describe physiological and non-physiological menopause			



			<p>Explain the clinical effects of menopause on women</p> <p>Outline the assessment of menopausal women, based on modifiable and non-modifiable risk factors.</p> <p>Explain the management of menopause</p> <p>Describe the types, side-effects, relative and absolute contraindications of hormone replacement therapy (HRT)</p>
	Contraception	1	<p>Define contraception</p> <p>Classify contraceptive methods</p> <p>Explain their mechanisms of action, efficacy, and failure rates</p> <p>Explain the risks and benefits of each method</p> <p>Identify the complications of different contraceptive methods</p>
	Polycystic ovary syndrome	1	<p>Explain the risk factors, etiology, clinical features, investigations, treatment, complications, and prognosis of polycystic ovary syndrome</p>

	Uterine fibroids		Explain the risk factors, clinical features, and management of uterine fibroids
	Endometrial cancers	1	Explain the risk factors, clinical features, investigations, prognosis, and management of endometrial carcinoma
	Cervical carcinomas		Explain the risk factors, clinical features, investigations, prognosis, and management of cervical carcinoma
	Female infertility	1	Define infertility
			Discuss the causes and management of female infertility
	Malignant diseases of the ovaries	1	Classify benign and malignant diseases of the ovaries
			Explain the clinical features, diagnosis, serological markers, staging, management and complications of ovarian carcinoma
	Uterovaginal prolapse	1	Describe the etiology, clinical features, complications, and management of Uterovaginal prolapse
	Urinary incontinence	1	Classify urinary incontinence

			Explain the etiology, clinical features, management, and prevention of urinary incontinence
	Endometriosis	1	Define endometriosis
			Explain the etiology, clinical features, investigations, and management of Endometriosis
	Abnormal uterine bleeding	1	Explain the etiology of abnormal uterine bleeding
			Describe the diagnostic approach to a patient with abnormal uterine bleeding
	Miscarriage	1	Define miscarriage
			Explain the etiology, risk factors, management, and prevention of miscarriage
	Ectopic gestation		Describe the etiology, clinical features, diagnosis, and management of ectopic gestation
	Gestational trophoblastic diseases (GTDs)	1	Classify GTDs
			Explain the etiology, clinical features, diagnosis, management, and complications of H. Mole
			Explain the etiology, clinical features, diagnosis, management, and complications of Choriocarcinoma

	Vaginal discharge and STDs	1	<p>Explain the etiology and diagnostic workup of vaginal discharge</p> <p>Describe the risk factors, etiology, clinical features, management, complications, and prevention of STDs</p>
Pharmacology	Gonadotropins (FSH & LH) and human chorionic gonadotropin	1	<p>Describe the mechanism of action, clinical uses, and adverse effects of Gonadotropins (FSH &amp; LH) and human chorionic gonadotropin (hCG)</p> <p>Describe the role of gonadotropins in male infertility</p>
	Gonadotropin-releasing hormone and analogues (Gonadorelin and others)		Describe the mechanism of action, clinical uses and adverse effects of Gonadotropin-releasing hormone and analogues (Gonadorelin and others)
	Oxytocin	1	Describe the mechanism of action, clinical uses, and adverse effects of Oxytocin
	Oestrogens	1	<p>Classify Oestrogens</p> <p>Describe the mechanism of action, organ system effects, clinical uses, adverse effects, and contraindications of Oestrogens</p>
			Describe Premarin
	Progestins	1	Classify Progestins

			Describe the mechanism of action, organ system effects, clinical uses, adverse effects, and contraindications of Progestins
Oral contraceptives	2		Classify Oral contraceptives
			Describe the mechanism of action, organ system effects, clinical uses, adverse effects, and contraindications of oral contraceptive pills
			Describe mini pills with their advantages and disadvantages
			Describe post-coital contraceptives
Parenteral and implantable contraceptives			Describe the use of Parenteral (Medroxyprogesterone) and implantable (Norplant system) contraceptives
Ovulation-inducing agent (Clomiphene)	1		Describe the mechanism of action, clinical use, and adverse effects of Clomiphene
Mifepristone			Describe the mechanism of action, clinical uses, and adverse effects of Mifepristone
Danazol			Describe the mechanism of action, clinical uses, and adverse effects of Danazol
Androgens and anabolic steroids	1		Enlist Androgens and anabolic steroids
			Describe the mechanism of action, clinical uses, and adverse effects of androgen preparations

	Antiandrogens		Classify antiandrogens
	Male contraception		Describe the role of Ketoconazole as steroid synthesis inhibitor, its clinical uses, and adverse effects
			Describe the mechanism of action and clinical use of Finasteride
			Describe the mechanism of action and clinical use of Cyproterone acetate
			Describe the role of Spironolactone as androgen receptor blocker and its use in this context
			Enlist the drugs used for male contraception
			Describe the role of Gossypol as male contraceptive agent
Forensic medicine	Impotence and sterility	1	Define impotence
			Define sterility
			Examine under supervision a case of sterility and impotence
			Describe important causes leading to sterility and impotence in males as well as in females
			Appreciate difference between sterility and impotence

			Medicolegal importance of sterility and impotence
Sterilization	1		Define sterilization
			Medicolegal importance of sterilization
			Discuss the technique of sterilization in males and females
			enumerate legal formalities before sterilization
Artificial insemination	1		Define artificial insemination
			Enumerate its different types
			Describe medicolegal aspects of artificial insemination
			Define test tube baby
			Define surrogate motherhood and enumerate its medicolegal importance
Virginity	1		Define virginity
			Discuss signs of virginity
			Enumerate different types of hymens
Pregnancy	1		Define pregnancy
			Describe presumptive signs of pregnancy
			Discuss probable signs of pregnancy
			Appreciate conclusive signs of pregnancy

			Enumerate signs of pregnancy in dead
			Discuss Medicolegal aspects of pregnancy
			Describe Isqat e Haml & Isqat E Janin as per PPC
	Delivery	1	Define delivery
			Appreciate signs of recent delivery in living
			Appreciate or identify signs of recent delivery in dead
			Identify signs of remote delivery in living and dead
			Enumerate medicolegal aspects of delivery
	Legitimacy & dissolution of marriage	1	Define legitimacy
			Define illegitimate child
			Enumerate medicolegal aspects of legitimacy
			Define superfetation
			Enumerate medicolegal aspects of affiliation/ adoption.
			Enlist legal grounds for nullity and dissolution of marriage
	Natural sexual offences: Rape & Incest	1	Define rape as per CrPC
			Enumerate medicolegal aspects of rape
			Examine under supervision a case of rape victim



			Examine under supervision examination of the accused
			Define incest
	Zina	1	Define Muhsan as per Hudood ordinance 1979.
			Define Zina according Huddod ordinance 1979.
			Enumerate the conditions required for liability in case of Zina.
			Enlist punishment of Zina
			Enumerate steps of proof of Zina in the court
			Describe steps of complaint in case of Zina as per Cr PC
	Unnatural sexual offences Sodomy	1	Define sodomy
			Enumerate steps of examination of passive agent in sodomy
			Enumerate steps of examination of active agent
			Define and describe buccal coitus
			Define and describe tribadism
			Define bestiality
	Sexual perversions	1	Define sexual perversions
			Enumerate its different types
			Define and describe sadism

			Define and describe masochism
			Define and describe fetishism
			Define and describe exhibitionism
			Define and describe transvestism
			Define and describe uranism
			Define and describe voyeurism
			Define and describe frotteurism
			Define and describe urolagnia
	Abortion	1	Define abortion
			enumerate its different types
			enumerate salient features of natural abortion
			enumerate salient features of artificial abortion
			differentiate between natural and criminal abortion
			examine under supervision a case of criminal abortion and legal formalities to be fulfilled in such a case
Urology/Surgery	Causes of male infertility	1	Discuss the causes of male infertility
			Explain the diagnostic workup of a male infertile patient
Surgery	Cryptorchidism	1	Define Cryptorchidism

			Explain the etiology, complications and management of Cryptorchidism
	Hydrocele and varicocele		Explain the cause, clinical features, complications and surgical management of hydrocele and varicocele
	Benign prostatic hyperplasia	1	Explain the etiology, clinical features, complications, and management of BPH
	Carcinoma of prostate		Explain the etiology, clinical features, complications, staging, management, and prognosis of carcinoma of the prostate
Community medicine	Safe motherhood	1	Define reproductive health
			Describe components of reproductive health
			Define safe motherhood
			Discuss pillars of safe motherhood
	Antenatal care	1	Discuss antenatal care
			Discuss antenatal visits as per WHO
	Family planning and post abortion care	1	Define family planning
			Discuss different methods of family planning
			Discuss contraceptive prevalence rate and factors responsible for low CPR
			Discuss Post abortion care
		2	Define IMNCI & IMCI

	Child promotion and development strategies (IMNCI, IMCI and growth monitoring)		Describe components of IMNCI
			Enumerate principles of IMNCI
	Prevention of reproductive health diseases	1	Discuss different reproductive health diseases
			Discuss STIs in detail
			Discuss risk factors and Prevention of CA cervix
Family medicine	Menstrual disorders	1	Enlist menstrual disorders
			Explain the etiology, investigations and management of menstrual disorders in primary care
	Menopause		Explain the clinical features, and management of menopausal symptoms and complications in primary care
	Contraception	1	Explain the types of contraception methods
	Vaginal discharge and STDs	1	Explain the merits and demerits of different contraceptive techniques
			Describe the complications associated with the use of oral and injectable contraceptives
			Explain the etiology of vaginal discharge
			Describe the diagnosis and management of vaginal discharge in primary care
			Classify Sexually transmitted infections in females
			Describe the clinical features, investigations, and management of STDs in females in primary care

## Theme-6: Breast lump

Pathology	Fibrocystic changes <ul style="list-style-type: none"> <li>• Cysts and fibrosis</li> <li>• Epithelial hyperplasia</li> <li>• Adenosis</li> </ul>	1	Explain the fibrocystic changes in breast including cysts, fibrosis, epithelial hyperplasia and adenosis
	Fibro-adenoma		Explain the morphology of Fibro-adenoma of the breast
	Papilloma		Explain the morphology of papilloma of the breast
	Carcinoma of the breast	1	Explain the risk factors, etiopathogenesis, clinical features, staging, and complications of carcinoma of the breast
	Gynecomastia		Discuss the causes and morphology of Gynecomastia
Surgery	Investigations of breast diseases	1	justify the investigations of a patient with a breast lesion
	Benign breast diseases		Classify benign breast diseases
	Malignant breast diseases	2	Classify malignant breast diseases
	Discuss the risk factors, etiology, clinical features, investigations, management, and prognosis of a patient with breast cancer		

			Describe the role of hormone receptors in breast cancer
			Explain the complications of breast cancer surgery
			Discuss the role of pharmacological treatment options in breast cancer management
			Explain the role of selective estrogen receptors modulators in the prevention of breast cancer in high-risk women
Pharmacology	Selective Estrogen Receptor Modulators (SERMs)- Tamoxifen and others	1	Enlist Selective Estrogen Receptor Modulators (SERMs)
			Describe the mechanism of action and clinical uses of Tamoxifen
Community medicine	Breast feeding	1	Discuss advantages of breast feeding
			Discuss artificial feeding
			Discuss baby friendly hospital initiative
			Discuss guidelines on infant and child feeding
	Screening and prevention of breast cancer		Discuss different methods of screening for breast cancer
			Discuss levels of prevention of breast cancer
Radiology	Radiological approaches to breast cancer screening	1	Explain the indications, procedure, and interpretation of ultrasound and mammography in the investigation of breast lumps
PRIME/MEDICAL EDUCATION	Counselling- Breaking bad news	1	Explain the concept of SPICES model of breaking bad news.

Practical work			
Pharmacology	Graves' disease	1.5	Formulate prescription for a patient with Graves' disease
	Diabetes mellitus	1.5	Formulate prescription for a patient with type 1 and type 2 Diabetes mellitus
Pathology	Glucose estimation	1.5	Check glucose in urine
			Check blood glucose in each sample
	Goitre	1.5	Identify the microscopic features of multinodular goitre
	Pap smear	1.5	Interpret a pap smear slide
	Fibroids	1.5	Identify the microscopic features of uterine fibroids
	Carcinoma breast	1.5	Identify the microscopic features of carcinoma of the breast
Forensic medicine	Examination of a rape victim and assailant	2	Take consent from a rape victim
			Examine a rape victim/manikin
			Describe the procedure of taking sample from the victim/manikin/item
			Describe the procedure of Sealing and preservation of the specimen
	Examination of sodomy victim and assailant	2	Describe the procedure of Examining a victim of sodomy

			Describe the procedure of Taking sample from the victim/manikin/item
			Describe the procedure of Sealing and preservation of the specimen
Community medicine	Contraception	1.5	Identify the contraceptive device/drug
			Explain the merits and demerits
			Discuss the method of administration of the given device/drug
	Mother and child health	1.5	Identify the chart
			Devise a schedule plan for antenatal visits as per WHO criteria
	EPI schedule	1.5	Counsel the mother for EPI schedule
	Vaccination and immunization	1.5	Identify the vaccine
			Explain its uses
			Discuss its schedule of administration
			Discuss the results of VVM (vaccine vial monitor) and its uses in epidemics
	IMCI- anthropometric measures / Shakir`s tape	1.5	Identify the model
			Measure the mid-arm circumference
Calculate the weight and height of the child			
Interpret the results			



	Growth chart	1.5	Identify the chart
			Plot the graph using a scenario
			Interpret different parts of the chart
	Demographic indicators	1.5	Interpret the given demographic indicator (population pyramid, HDI, PQLI, Growth rate and dependency ratio)

# Learning Resources

Table 4: References Textbooks

S#	Subjects	Resources
1.	Anatomy	<b>A. GROSS ANATOMY</b> 1. K.L. Moore, Clinically Oriented Anatomy <b>B. EMBRYOLOGY</b> 1. KeithL. Moore. The Developing Human 2. Langman’s Medical Embryology
2.	Community Medicine	1. Community Medicine by Parikh 2. Community Medicine by M Ilyas 3. Basic Statistics for the Health Sciences by Jan W Kuzma
3.	OBGYN	1. Obstetrics by Ten Teachers, Louise C. Kenny, Jenny E. Myers 2. Gynaecology by Ten Teachers, Louise Kenny, Helen Bickerstaff 3. Hacker & Moore's Essentials of Obstetrics and Gynecology 4. Textbook of Gynecology, Rashid Latif Khan 5. Fundamentals of Gynaecology, Dr Arshad Chohan
4.	Pathology	1. Robbins & Cotran, Pathologic Basis of Disease, 9 th edition. 2. Rapid Review Pathology, 4 th edition by Edward F. Goljan MD
5.	Physiology	1. Textbook Of Medical Physiology by Guyton And Hall 2. Ganong’s Review of Medical Physiology 3. Human Physiology by Lauralee Sherwood 4. Berne & Levy Physiology 5. Best & Taylor Physiological Basis of Medical Practice
6.	Paeds	Basis of Pediatrics (8th Edition Pervez Akbar)

# Assessment Plan - 4<sup>th</sup> Year MBBS

The year-4 will be assessed in 4 blocks

- 1) Block-1 (Neurosciences-2 module) will be assessed in **paper-J**
- 2) Block-2 (GIT and hepatobiliary module) will be assessed in **paper-K**
- 3) Block-3 (Renal-2, Endocrine & Reproduction-2 module) will be assessed in **paper-L**
- 4) Block-4 (ENT and EYE modules) will be assessed in **paper-M**
- 5) Each written paper consists of 120 MCQs.
- 6) Internal assessment will be added to final marks in KMU as shown in below table.
- 7) In OSPE, each station will be allotted 6 marks, and a total of 120 (+10% marks of internal assessment) marks are allocated for each OSPE/OSCE examination.

## 4<sup>th</sup> Year MBBS Modules Assessment Plan

Theory paper	Modules	Theory marks	Internal assessment theory (10%)	OSPE/OSPE	Internal assessment OSPE/OSPE (10%)	Total Marks
Paper J	Neurosciences-2	120	13	120	13	266
Paper K	GIT-2	120	13	120	13	266
Paper L	Renal-2, Endocrine & Reproduction-2	120	14	120	13	267
Paper M	ENT and EYE	120	13	120	13	266
Research*				20	15	35
<b>Total Marks</b>		<b>480</b>	<b>53</b>	<b>500</b>	<b>67</b>	<b>1100</b>

\*Research viva of 20 marks will be conducted in paper-L. However, the rest of 15 marks will be decided by the concerned department internally for the contribution of the students in research project/thesis.

# Assessment Blueprints

Table 2: Paper L (MCQs)

Subject	Renal-2	Endocrine and Reproduction-2	Total MCQs
Community medicine	11	12	23
Pharmacology	02	13	15
Pathology	11	22	33
Forensic medicine	01	09	10
Surgery	06	03	09
Gynaecology	01	09	10
Medicine	05	09	14
Pediatrics	02	01	03
Family medicine	01	02	03
<b>Total</b>	<b>40</b>	<b>80</b>	<b>120</b>

**Table 3: Paper L OSPE/OSCE distribution**

<b>Subject</b>	<b>Viva stations</b>	<b>OSPE/OSCE stations</b>	<b>Total</b>
Pharmacology	2	1	3
Pathology	2	2	4
Forensic medicine	2	1	3
Community medicine	2	6	10
Research viva	2**	X	
Medicine (endocrine examination)	X	1	1
Surgery (physical/local examination)	X	1	1
<b>Total</b>	<b>10</b>	<b>12</b>	<b>22</b>

\* A minimum of 22 stations will be used in final exams. Total marks will be 120 (6 marks for each station).

\*\*there will be 2 allocated stations for research viva (one internal and one external) at one time for which the number of marks for each station will be 10 (with a total of 20 marks) allocated for research viva plus 15 marks for conduction of research). A total of 35 marks have been allocated for thesis (research project).