PEOPLES UNIVERSITY OF MEDICAL & HEALTH SCIENCES FOR WOMEN.(SBA)

REPRODUCTIVE STUDY GUIDE

Second Year MBBS

Module -VI

S #	TABLE OF CONTENTS

INTRODUCTION

WHAT IS A STUDY GUIDE?

A study guide provides a focus for different educational activities in which the students are engaged. It equips students with information on the topic of study and assists in management of student learning. Furthermore, it imparts relevant information about the organization of the module and thus helps students organize their educational activities accordingly. Another important purpose of a study guide is the dissemination of information about rules and policies and teaching and assessment methods.

HOW DOES A STUDY GUIDE HELP LEARNERS?

- Includes information on organization and management of the module.
- Advises the learners about representatives who can be contacted in case of need.
- Defines the outcomes and objectives which are expected to be achieved at the end of the module.
- Elaborates the teaching and learning strategies which will be implemented during the module.
- Inform learners about the learning resources in order to maximize their learning.
- Provides information about the assessment methods that will be held to determine every student's achievement of objectives.

CURRICULUM MODEL:

Integrated modular curriculum is followed at **Peoples University of Medical & Health Sciences for Women (SBA)** for MBBS program. This implies that instead of studying basic and clinical sciences separate and apart, students will experience a balanced and integrated combination of basic and clinical sciences in the form of a system –based modules.

The modular curriculum followed by **Peoples University of Medical & Health Sciences for Women (SBA)** is integrated both in the vertical and the horizontal directions. However, in order to prepare the students for clinical teaching with a sound background knowledge of the basic sciences, the curriculum has been divided in three spirals. The three spirals are:

1. Spiral -1 Basic Sciences
2. Spiral -2 Clinical Sciences
3. Spiral -3 Integrated Supervised Practical Training

The Basic Sciences Spiral is spread over the first two years and Clinical Sciences Spiral is distributed over the next two years. In the final year students are given practical hands-on training in the role similar to that of a shadow house officer. The whole curriculum is divided into modules, each module

being related to a particular system. For example, Cardiovascular 1 module is in the Basic Sciences Spiral-1 and Cardiovascular 2 module is in the Clinical Sciences Spiral-2 and the relevant practical and clinical teaching/learning will be accomplished in Final year Spiral-3.

TEACHING & LEARNING METHODOLOGIES:

The following teaching/ learning methods may be used to facilitate the learning process:

1. **Interactive Lectures**: Lectures are considered as an efficient means of transferring knowledge to large audiences.

2. **Small Group Discussion**: Small group discussion such as Demonstrations, tutorials and case-based learning (CBL) sessions facilitate interactive learning which helps students develop discussion skills and critical thinking.

3. **Practical**: Practical related to Basic Sciences are held to facilitate student learning.

4. **Skills**: Skills sessions are scheduled parallel with various modules at fully equipped Skills Lab and Simulation Lab in which students observe and learn skills relevant to the respective modules under guidance of Clinical Faculty.

5. **Self-Directed Learning (Self- Study)**: Students have a measure of control over their own learning. They diagnose their needs, set objectives in accordance to their specific needs, identify resources and adjust their pace of learning

05 YEAR CURRICULAR ORGANIZATION

<table>
<tr><th>Spiral</th><th>year</th><th colspan="5">Modules</th></tr>
<tr><td rowspan="4">First Spiral</td><td rowspan="2">I</td><td colspan="3">FND1- Foundation
Cell, Genetics & Cell Death
(Basics of Anatomy, Physiology, Biochemistry, Gen. Pathology, Gen. Pharmacology, Community Medicine & Behavioral Sciences,
9 Weeks</td><td colspan="2">HEM1- Blood Module
Immunity, Inflammation, Tissue repair,
Antimicrobials & Neoplasia
9 Weeks</td></tr>
<tr><td colspan="3">LCM1- Locomotion: Bones, Joints, Nerves & Muscles 9 weeks</td><td>RSP1- Respiratory System
6 weeks</td><td>CVS1- Cardiovascular System
4 weeks</td></tr>
<tr><td rowspan="2">II</td><td colspan="3">NEU1- Nervous System 8 weeks</td><td>HNN1- Head & Neck & Special senses 6 weeks</td><td>END1- Endocrinology 5weeks</td></tr>
<tr><td colspan="3">GIL 1-GIT and Liver 8 weeks</td><td>EXC1- Renal and Excretory System
5 weeks</td><td>REP1-Reproductive System
5 weeks</td></tr>
<tr><td rowspan="4">Second Spiral</td><td rowspan="2">III</td><td>Foundation 2 2 weeks</td><td>IDD 1- Infectious diseases
6 weeks</td><td>HEM2- Hematology 5 weeks</td><td>RSP2- Respiratory System 5 weeks</td><td>CVS2- Cardiovascular System
4 weeks</td></tr>
<tr><td colspan="3">GIL 2-GIT and Liver (including Nutritional Disorders) 8 weeks</td><td>EXC2- Renal & Excretory System
4 weeks</td><td>END2- Endocrinology 5 weeks</td></tr>
<tr><td rowspan="2">IV</td><td colspan="2">ORT2- Orthopedics, Rheumatology, Trauma
7 weeks</td><td colspan="2">PMR-Physical Med icine & Rehabilitation
DPS-Dermatology Plastic Surgery / Burns
GEN-Genetics 6 weeks</td><td>REP2- Reproductive System
8 Weeks</td></tr>
<tr><td colspan="3">NEU2- Neurosciences and Psychiatry 8 weeks</td><td>ENT* 4 weeks</td><td>OPHTHALMOLOGY/ EYE
4 weeks</td></tr>
<tr><td>Third Spiral</td><td>V</td><td colspan="3">Clinical Rotation 9:45 to 3:00 (with Ambulatory, Emergency, Intensive care)
In Medicine, Pediatrics, Cardiology and Neurology units
✦ Lecture on problem based approach, twice a week
✦ Ward tutorial twice a week
✦ Student research presentation once a week</td><td colspan="2">Clinical Rotation 9:45 to 3:00
(Inpatient, Ambulatory, Emergency, Intensive care and Operation Theatres)
In Surgery, Gynecology & Obstetrics,
Orthopedics and Neurosurgery.
✦ Lecture on problem based approach, twice a week
✦ Ward tutorial twice a week
✦ Student research presentation once a week</td></tr>
</table>

OVERVIEW OF REPRODUCTIVE MODULE

Program	**MBBS**	
Year	Second year MBBS	
Module Title	**Reproductive Module**	
Module Code	REP-1	
Duration	05 weeks	
	Anatomy	41.5
	Pathology	20.5
	Biochemistry	18.5
	Physiology	15.5
	Pharmacology	3.5
	Community Medicine	05
	Behavioral Sciences	02
	Radiology	01
	Skills	1.5
	Gynecology	02
Total Hours	Reproductive Module	111 Credit Hours

INTEGRATED MODULE COMMITTEE

NAMES	DESIGNATIONS
Prof. Dr. Muhammad Ali Suhail	**Director Academic & Principal, PUMHSW**
Prof: Dr. Alina Saqib	**Focal Person Module Committee , & Chairperson Department of Anatomy PUMHSW**
Prof: Dr. Anwar Ali	**Chairman of Medicine, PUMHSW**

MODULE DESCRIPTION:

This module has been designed for students to introduce them to the basic concepts of Reproductive Module. This module includes Anatomy, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, Gynecology and Behavioral sciences. Lectures, tutorials, small group sessions including CBL and practical are important components of this module. History taking, as part of clinical skills, is included in this module. Your co-operative and teamwork abilities will be improved by working in different teams. You will be able to develop problem solving skills to apply your medical knowledge to practical situations by means of group and individual tasks. This study guide has been developed to assist you and keep you focused to achieve your goals.

RATIONALE:

The anatomical relationships of pelvic and perineal organs to each other are important to understand as often diseases afflicting one of these also affect other organs by contiguity. It is necessary to study this region as a separate entity. This module provides the basic understanding of the anatomy and physiology of the reproductive organs along with other subjects.

LEARNING OUTCOMES:

At the end of Five years MBBS program, student shall be able to:

- Identify the common reproductive problems
- Show improved confidence, attitudes and skills in treating common problems of reproductive system.
- Manage appropriate referrals regarding problems of reproductive system.

MODULE OBJECTIVES:

The 2nd year MBBS student at the end of module shall be able to:

- List the male and female reproductive organs in the body with their respective hormones.
- Describe the anatomy and physiology of the reproductive system.
- Explain the biochemical nature of various hormones, their structure, mechanism of action and its receptors.
- Describe the synthesis, regulation, and secretion of hormones produced by the reproductive system and their target sites.
- Identify the role of hormones in maintaining homeostasis, metabolism, growth, and development.
- Recognize the pathophysiology of common reproductive system disorders.
- Develop skills in interpreting tests and laboratory investigations used in diagnosing reproductive system disorders.
- Discuss the principles of pharmacological management for various reproductive system
- Apply the principles of reproductive system to clinical scenarios, making appropriate diagnoses and suggesting management plans.
- Discuss the Public health issues associated with the more common reproductive system disease in Pakistan.

DISCIPLINE-WISE LEARNING OBJECTIVES AND CONTENTS

At the end of the module, the student of 2nd year MBBS should be able to:

ANATOMY

Learning Objectives:

- Define bony pelvis and describe surfaces of sacrum, its articulation, to identify muscles associated with sacrum.
- Differentiate between male and female sacrum, enlist various types of joints of pelvis, explain type, articulations, ligaments & relations of joints, and enlist factors providing stability to joint and describe blood supply, nerve supply & movements of joint • Differentiate between the greater & lesser pelvis and its boundaries.
- Differentiate the shapes of female pelvis regarding childbirth.
- Differentiate between male & female pelvis, describe the anatomy of the pelvic walls, the muscles of pelvic floor and develop an understanding of blood supply, nerve supply, and lymphatic drainage of muscles and describe actions of pelvic diaphragm
- Describe the coverings of testis, internal features of testis, the significance of pampiniform plexus.
- Integrate the knowledge of descent of testis to its vessels, lymphatics and nerves and recall the different clinical conditions associated with testis.
- Describe the gross features of male internal organs: Epididymis, Ductus Deferens, and seminal Vesicles & Prostate and explain their blood supply, nerve supply & lymphatic drainage.
- Describe gross anatomy of male external genitalia and urethra, their arterial, venous drainage & nerve supply.
- Discuss the normal human embryology of human genital tract, differentiate between male & female sex organs, and describe the male development of external genitalia.
- Identify parts and describe blood, nerve, lymphatic supply of female reproductive parts: ovaries and fallopian tubes, uterus, cervix and vagina along with external genitalia and urethra. Enumerate the clinical correlates of these structures.
- Identify divisions of internal iliac by their relationships to pelvic organs or wall structures, Describe main veins of the pelvis and their tributaries, area of drainage of these veins.
- Identify pelvic nerves, describe sacral plexus, coccygeal plexus, and pelvic hypogastric plexus.
- Describe and recall the related anatomy of different pelvic organs.
- Identify borders and relations of the perineum, Describe divisions of the perineum, explain cutaneous nerves of the perineum.
- Define perineal body and its applied anatomy.
- Identify and classify the perineal spaces, its boundaries and contents.
- Identify the relations of the anal canal with the surrounding structures and its related clinical anatomy.

Lectures / Demonstrations:

- Sacrum and coccyx, Joints of pelvic cavity
- Bony Pelvis, (inlet and outlet)
- Difference between male and female pelvis, Types of bony pelvis & Cephalopelvic disproportion -Pelvic walls, Pelvic Floor and pelvic fascia, Division of pelvis
- Male internal genital organs 1: Gross Anatomy of Testes, epididymis and vas deferens.
- Male internal genital organs: Prostate, seminal vesical and bulbo-uretheral gland
- Male external genital organs, Male urethra, penis and scrotum
- Female genital tract: ovary, fallopian tube
- Female genital tract, Uterus, cervix, Vagina • Female External genitalia And female urethra
- Internal iliac artery and its branches.
- Venous and lymphatic drainage of Pelvis
- Nerves of the pelvis and the perineum + sacral plexus
- Overview of pelvic organs sigmoid colon, rectum, urinary bladder and anal canal.
- Division of perineum and cutaneous nerves and perineal body.
- Perineal spaces
- Ischiorectal fossa

HISTOLOGY

Learning Objectives:

- Enlist the male reproductive organs.
- Describe the histological anatomy of testis and duct system • Differentiate these two structure under microscope.
- Explain the histology of Seminal Vesicle.
- Explain the histology of Prostate gland.
- Describe the histology of Bulbourethral glands of Cowper.
- Enlist the secretions of the above mentioned accessory exocrine glands.
- Describe the composition of Semen.
- Describe components of the female reproductive system.
- Explain the general organization of the ovaries.
- Identify ovary and ovarian follicles under microscope.
- Identify layers and cells of fallopian tubes under microscope.
- Discuss uterus histology.
- Identify layers of uterus histologically.
- Identify phases of menstruation of uterus.
- Identify cervix histologically.
- Identify both uterus and vagina histologically**.**

Lectures:

- Histology of Testes and duct system.
- Prostate, seminal vesicles, bulbo-urethral glands
- Ovary, fallopian tube
- Uterus, cervix, Vagina

EMBRYOLOGY

Learning Objectives:

- Discuss the development of parts of male reproductive system.
- Explain the applied anatomy of development of male reproductive system
- Discuss the precursor and migration of primordial germ cell.
- Define the location and division genital ridge.
- Differentiate development of male and female genital tract.
- Describe the development of female genital ducts.
- Discuss the development and differentiation of Paramesonephric ducts and development uterus and vagina.
- Development of male external genitals

- Development of female external genitals
- Congenital Anomalies of Male Genital Tract, Mixed Gonadal Dysgenesis, Hypospadias, epispadias, Agenesis of External Genitalia, Bifid Penis and Double Penis, Micropenis.
- Congenital Anomalies of Uterine Tubes, Uterus, and Vagina, Double uterus, Absence of the Vagina and Uterus, Vaginal Atresia , Androgen Insensitivity Syndrome, Hermaphroditism and its classification.
- Describe placental hormone production and identify the cellular components of the placenta that produce the hormones.
- Explain the placental barrier.
- Describe a chorionic villus.
- Explain the formation and structure of the mature placenta.
- Discuss the placental barrier and maternal and fetal blood flow in the placenta.

Lectures:

- Development of male reproductive system
- Development of female reproductive system
- Development of External genitals
- Congenital Anomalies of Male Genital Tract, Testicular Atrophy and Epididymo-orchitis • Congenital Anomalies of female Genital tract
- Structure of Placenta

Practical:

- Testes and duct system
- Prostate, seminal vesicle, bulbourethral glands
- Female Genital Tract: Ovaries and fallopian tube
- Female Genital Tract: Uterus, cervix and vagina

PHYSIOLOGY

Learning Objectives:

- Describe the scrotum's temperature-regulating role, testis structure, sperm production, spermatogenesis, semen's function, and the sperm cell component for fertilization.
- Discuss testosterone and androgen synthesis, transport, metabolism, target organs, and their actions at the cellular level.
- Identify sperm transport ducts, describe their function and structure, trace sperm's path, list spermatic cord components, and explain ovarian structure and oogenesis.
- Learn about ovarian estrogen and progesterone regulation, target organs and effects, hormonal actions and mechanisms, and progesterone and progestin physiological roles.
- Comprehend the age-related changes in the hypothalamus-pituitary-gonadal axis that drive puberty, reproductive maturity, and menopausal senescence.
- Detail fertilization, blastocyst movement, implantation, and the roles of hormones in parturition.
- Describe placenta development and functions, list placental hormones, and explain hCG's role in early pregnancy.
- Examine hormone roles in parturition and mammary gland development, describe milk inhibition during pregnancy and initiation in lactation, and explain neuroendocrine regulation of milk processes.
- Summarize the fetal period, the transition from fetal to neonatal life in various organ systems, and the closure of fetal blood vessels after birth.
- Evaluate birth control methods, understand oral contraceptives, explore STD protection, recognize male contraceptive challenges, and distinguish induced from spontaneous abortions.
- Differentiate the causes of infertility in males and females, assess infertility risk factors, and offer patient education on testing and treatment options for both genders.
- Topics/Contents:

Lectures:

- Spermatogenesis, semen, capacitation of sperm
- Testosterone & its functions
- Gonads and Oogenesis
- Female sex hormones: Estrogen and Progesterone
- Menarche & menopause, Menstrual cycle
- Pregnancy, fertilization & Implantation
- Functions & hormones of placenta
- Parturition & lactation
- Fetal and neonatal physiology
- Contraception
- Male and female infertility

Tutorials:

- Menarche & menopause, menstrual cycle
- Fetal and neonatal physiology

Practical:

- To perform the Semen analysis on a sample of semen • To perform Pregnancy test using pregnancy strips

BIOCHEMISTRY

Learning Objectives:

- Explain the structural organization of Genome.
- Describe the central Dogma of Molecular biology.
- Discuss the DNA replication, transcription, and translation processes in detail.
- Explain regulation of gene expression in pro & eukaryotes.
- Identify the underlying mechanisms of gene defects.
- Demonstrate the clinical application of Molecular Biology Techniques
- Demonstrate the process of DNA isolation.
- Interpret the clinical application of DNA Hybridization/PCR
- Explain the biochemical synthesis regulation and functions of male & female sex hormones.
- Discuss endocrine changes during the reproductive age.
- Demonstrate the clinical application of urinary Beta-HCG.

Topics/ Contents:

Lectures:

- DNA/RNA Structure, Function, and Genetic Organization.
- DNA Replication and Repair.
- Transcription.
- Post-Transcriptional Modification.
- Translation & Post-Translational Modification
- Protein Synthesis and regulation.
- Regulation of Gene Expression.
- Gene defects.
- Male sex hormones biochemical forms and functions.
- Estrogen: Synthesis, regulation, and functions.
- Progesterone: Synthesis, regulation, and functions.
- Prolactin: Synthesis, regulation, and functions.

Practical:

- Molecular Biology Techniques.
- DNA Isolation.
- DNA Hybridization/PCR.
- Determination of urinary beta hCG in Pregnancy.

Tutorial:

- Endocrine changes before, during and after the female reproductive age.

PATHOLOGY

Learning Objectives:

- Enlist the major congenital anomalies of the male and female reproductive system.
- Describe their pathological and clinical features.
- Describe the clinical features of testicular atrophy and epididymo-orchitis.
- Describe the pathology and clinical features of non-neoplastic lesions of vulva, vagina, ovary and uterus.
- Describe the features of gestational trophoblastic disease and choriocarcinoma
- List the causes of Dysfunctional uterine bleeding
- Describe the pathophysiology and clinical features of endometrial hyperplasia.
- Enlist the disorders related to early pregnancy and related diagnostics.
- Describe the pathophysiology and clinical features of placental inflammations and infections.
- Describe the pathophysiology and clinical features of ectopic pregnancy.
- Enlist the sexually transmitted diseases found in males and females.
- Describe their pathophysiology and clinical features.
- Enlist the lab diagnostics related to sexually transmitted diseases.
- Describe the clinical and pathological features related to prostatitis and BPH.

Topics/ Contents:

Lectures:

- Congenital anomalies of Male Genital tract, Testicular Atrophy and Epididymo-orchitis
- Prostatitis & BPH
- Non-Neoplastic Lesions of Vulva, Vagina and Cervix
- Non-Neoplastic and Functional Cysts of Ovary & PCOS
- Congenital Anomalies of Female Genital Tract & PIDs
- Disorders of Early and Late Pregnancy
- Sexually Transmitted Disease in Males
- Gestational Trophoblastic Disease and Chorio-carcinoma
- Sexually Transmitted Disease in Females
- Dysfunctional Uterine Bleeding & Endometrial hyperplasia

Practical:

- Non-Neoplastic Lesions of Vulva, Non-Neoplastic and Functional Cysts of Ovary and PCOS: Lab Investigations
- Lab Investigations for Detection and Monitoring of Pregnancy
- Sexually Transmitted Disease in Males: Lab Investigations
- Placental Inflammations, Infections and Ectopic Pregnancy
- Sexually Transmitted Disease in Females: Lab Investigations

Museum Study:

- Pathology Museum: Non-Neoplastic and Cystic Lesions of the Ovary • Pathology Museum: Congenital and Fetal Abnormalities

PHARMACOLOGY

Learning Objectives:

- Classify male and female sex hormones
- Know the important pharmacological actions related to male & female sex hormones

Topics:

Lectures:

- Gonadal pharmacology-I (Male sex hormones)
- Gonadal pharmacology-II (Female sex hormones)

Tutorial:

- Gonadal Pharmacology

COMMUNITY MEDICINE

Learning Objectives:

- Define components of reproductive health.
- Converse maternal and child care.
- Recognize the significance of Child spacing and family planning in context of Pakistan.
- Analyze reproductive health programs of Pakistan
- Define Family Planning and various methods of contraception
- Appreciate the importance of Adolescent health
- Identify common health issues related to adolescents

Topics:

Lectures:

- Introduction to Reproductive Health
- Family planning and methods of contraception
- Maternal Care
- Infant Care
- Adolescents Health

BEHAVIORAL SCIENCES

Learning Objectives:

- To understand awareness about violence against women, psychological first aid.
- To understand basics of CBT, cognitive distortions, cognitive restructuring, CBT techniques.

Topics:

Lectures:

- Gender based violence
- Cognitive Behavioral Therapy (CBT)

GYNAECOLOGY

Learning Objectives:

- Discuss the common developmental anomalies of female reproductive system including menstrual disorders.

Topics:

Lectures:

- Common developmental anomalies of female reproductive system.
- Menstrual disorders.

RADIOLOGY

Learning Objectives:

- Describe the radiological anatomy of reproductive system (male and female)

Topics:

Lectures:

- Radiological anatomy of Reproductive system (male and female)

SKILLS

Topic:

- Examination of prostate.

LEARNING RESOURCES

ANATOMY:

- Clinically oriented anatomy Keith.L.Moore, Arthur F. Dalley, Anne M.R. Agur 7th or latest edition
- Gray's Anatomy for students Drake & Vogl & Mitchell 3rd or latest edition
- Clinical Anatomy By Regions (Reference Book) Richard S. Snell 9 Th Edition
- Last's Anatomy: Regional & Applied (Reference Book) Chummy S. Sinnatamby 12 Th Or Latest Edition
- Atlas of Human Anatomy Frank H.Netter 6th Edition

EMBRYOLOGY:

- Langman's Medical Embryology T.W.Sadler 13th Edition
- The Developing Human Clinically Oriented Embryology (Reference Book) Moore & Persaud & Torchia 10th Edition.

HISTOLOGY:

- Wheaters Functional Histology Barbara Young 5th Edition
- Basic Histology (Text And Atlas) (Reference Book) Luiz Junqueira, Jose Carneiro 11th or Latest Edition

PHYSIOLOGY:

- Guyton and Hall Textbook of Medical Physiology- Guyton And Hall 13th Edition

BIOCHEMISTRY:

- Lippincott's Illustrated Reviews Series Denise R. Ferrier 6th Edition
- Harpers Illustrated Biochemistry (Reference Book) Victor Rodwell, David Bender, Kathleen M. Botham, Peter J. Kennelly, P. Anthony Weil 28th Edition

PATHOLOGY:

- Robbins Basic Pathology Kumar & Abbas 10th Edition
- Robbins &Cotran Pathologic Basis Of Disease Kumar & Abbas & Aster 10th Edition

COMMUNITY MEDICINE:

- Public Health And Community Medicine Shah, Ilyas, Ansari 7th Edition

PHARMACOLOGY:

- Lippincott's Illustrated Review Pharmacology Karen Whalen 6th or Latest Edition
- Basic And Clinical Pharmacology Bertram G. Katzung 11th Edition.

ASSESSMENT

Assessment will be done in two parts:

At the end of module

- Module Exam (Theory) -20%
- Module Exam Practical Internal Evaluation- 20%

At the end of Year

- Annual Exam (Theory) -80%
- Annual Exam (OSPE, Viva)-80%

MCQs (Multiple choice questions), OSPE (Objective Structured Practical Exam) and structured viva will be the main assessment tool.