



**Hindi Vidya Prachar Samiti's**

**Ramniranjan Jhunjhunwala College**

**of Arts, Science & Commerce**

***(Empowered Autonomous College)***

**Affiliated to**

**UNIVERSITY OF MUMBAI**

**Syllabus for the B.Sc.**

**Program: B.Sc. Medical Laboratory Technology**

**Program Code: RJSUMLT**

**National Education Policy (NEP 2020)**

**Level 5.5**

SEMESTER	:	V
TITLE	:	<b>Discipline specific elective I</b>
TITLE OF THE SUBJECT/COURSE	:	CLINICAL PATHOLOGY – 2
COURSE CODE	:	RJDSCMLT351
CREDITS	:	04
DURATION	:	60 hrs

**LEARNING OBJECTIVES**

1	Describe advanced principles of clinical pathology, including hematology, clinical biochemistry, and immunopathology.
2	Explain the pathophysiology behind common and complex diseases detected through laboratory investigations.

Course Outcome No.	On completing the course, the student will be able to:	PSO Addressed	Bloom's Levels
CO1	Apply advanced knowledge of disease mechanisms to evaluate abnormal findings.	1, 3	BT level 1 & 2
CO2	Apply advanced knowledge of disease mechanisms to evaluate abnormal findings.	1, 3	BT level 1 & 2
CO3	Identify pre-analytical, analytical, and post-analytical errors and minimize inaccuracies.	1, 3	BT level 1 & 2

<b>SEMESTER V</b>			
<b>Course Code : RJDSCLMT351</b>		<b>Title: CLINICAL PATHOLOGY 2</b>	<b>Credits</b>
<b>Unit</b>	<b>Unit Name</b>	<b>Topics</b>	<b>4</b>
I	Advanced Hematology	Hematopoiesis and blood cell disorders, Anemia, polycythemia, leukocytosis, leukopenia, Platelet disorders and bleeding disorders, Hemoglobin estimation and RBC indices, Peripheral blood smear preparation and interpretation, Total and differential leukocyte count, ESR and reticulocyte count, Coagulation studies: BT, CT, PT, aPTT, INR, D-dimer, Hemophilia, DIC and coagulation abnormalities, Automated hematology analyzers: principle, operation, QC, Quality control in hematology laboratory	2
II	Clinical Biochemistry & Immunology	Renal function tests (urea, creatinine, uric acid, clearance), Urine analysis: physical, chemical, microscopic examination, Proteinuria, hematuria, casts and crystals, Liver function tests (bilirubin, enzymes, proteins), Jaundice and liver disease interpretation, Lipid profile and cardiac markers, Thyroid function tests: T3, T4, TSH, Blood glucose tests and HbA1c, Electrolytes and acid–base balance, Basics of clinical immunology (antigen–antibody reactions), Autoimmune markers (ANA, RF, CRP), ELISA principle and applications, Laboratory errors: pre-analytical, analytical, post-analytical, Biosafety, infection control and biomedical waste management.	2
<b>References:</b> <ul style="list-style-type: none"> <li>• <b>Clinical Diagnosis and Management by Laboratory Methods</b> <i>By: John Bernard Henry (Henry's Clinical Laboratory Methods)</i></li> <li>• <b>Textbook of Medical Laboratory Technology</b> <i>By: Ramnik Sood</i></li> </ul>			

SEMESTER	:	V
TITLE	:	<b>DISCIPLINE SPECIFIC CORE 2</b>
TITLE OF THE SUBJECT/COURSE	:	<b>Endocrinology 1 and Parasitology</b>
COURSE CODE	:	<b>RJDSCMLT352</b>
CREDITS	:	04
DURATION	:	60 hrs

LEARNING OBJECTIVES	
1	Understand the structure, functions, and regulation of major endocrine glands. Explain hormone synthesis, secretion, transport, and mechanisms of action.
2	Understand basic concepts of parasitism, host–parasite relationships, and vector biology.
3	Describe life cycles, morphology, and pathogenicity of medically important parasites.
4	Identify protozoa, helminths, and arthropods of clinical significance.

Course Outcome No.	On completing the course, the student will be able to:	PSO Addressed	Bloom's Levels
CO1	Understand basic concepts of parasitism, host–parasite relationships, and vector biology.  Describe life cycles, morphology, and pathogenicity of medically important parasites.	1, 2	BT level 1 & 2
CO2	Demonstrate knowledge of endocrine glands and hormonal mechanisms.  Describe major endocrine disorders and their clinical significance.	1, 2	BT level 1, 2 & 3
CO3	Demonstrate professionalism, biosafety, and accuracy in endocrine laboratory procedures.	1, 2	BT level 1, 2 & 3

SEMESTER V			
<b>Course Code :</b> RJMAJMLT312		<b>Title: Endocrinology 1 and Parasitology</b>	<b>Credits</b>
<b>Unit</b>	<b>Unit Name</b>	<b>Topics</b>	<b>4</b>

I	Fundamentals of Endocrine System	Introduction to endocrine glands and hormones, Hormone synthesis, secretion, transport and mechanisms of action, Feedback regulation (positive and negative), Hypothalamus and pituitary hormones, Disorders of pituitary gland (acromegaly, dwarfism, diabetes insipidus), Thyroid gland physiology and hormone, Disorders: hypothyroidism, hyperthyroidism, goitre, Adrenal gland: cortex and medulla hormones, Disorders: Cushing's, Addison's, pheochromocytoma	1
II	Metabolic and Reproductive Endocrinology	Pancreatic hormones and glucose regulation, Diabetes mellitus: types, lab diagnosis and complications, Parathyroid gland and calcium metabolism, Disorders: hyperparathyroidism, hypoparathyroidism, Reproductive hormones: estrogen, progesterone, testosterone,	1
III	General parasitology	Introduction to parasites, hosts, vectors, Classification and life cycles of parasites, Pathogenesis, transmission and diagnosis, Medically important protozoa: <ul style="list-style-type: none"> <li>– <i>Entamoeba histolytica</i></li> <li>– <i>Giardia lamblia</i></li> <li>– <i>Trichomonas vaginalis</i></li> <li>– <i>Plasmodium</i> species (malaria)</li> <li>– <i>Leishmania</i> species</li> <li>– <i>Toxoplasma gondii</i></li> </ul> Laboratory diagnosis of protozoal infections, Staining techniques and sample collection	
IV	Helminths & Arthropods	Trematodes (flukes): <i>Schistosoma</i> , <i>Fasciola</i> , Cestodes (tapeworms): <i>Taenia</i> , <i>Echinococcus</i> , Nematodes (roundworms): <i>Ascaris</i> , <i>Enterobius</i> , hookworm, Filariasis: <i>Wuchereria bancrofti</i>	

**References:****Textbook of Endocrinology** – Williams**Textbook of Endocrinology** – A.C. Guyton & Hall (Endocrine chapters)**Medical Parasitology** – C.K. Jayaram Paniker