

Branch Name:	BACHELOR OF PHYSIOTHERAPY
Program Code:	PT101
Course Title:	PATHOLOGY & MICROBIOLOGY
Course Code:	2PT1010201
Pre-requisite Course:	Human Anatomy, Human Physiology & Biochemistry

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)			Credit	Evaluation Scheme (Marks)					
Lecture	Tutorial	Practical		Theory(T)		Practical(P)		Total Marks	
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment		
								Theory	Practical
4 (2+2)	-	-	8 (4+4)	80 (40+40)	20 (10+10)	-	-	100	-

PATHOLOGY

COURSE OUTCOMES:

At the end of the course the candidate will be able to:

1. Acquire the knowledge of concepts of cell injury and changes produced thereby in different tissues and organs; capacity of the body in healing process.
2. Recall the etio-pathogenesis, the pathological effects and the clinical-pathological correlation of common infection and non-infectious disease.
3. Acquire the knowledge of concepts of neoplasia with reference to the etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body.
4. Correlate normal and altered morphology of different organ systems in different diseases needed to understand the disease process and their clinical significance (with special emphasis to neuro-musculoskeletal and cardiovascular – respiratory system).
5. Acquire knowledge of common immunological disorders and their resultant effects on the human body.
6. Understand in brief, about the hematological diseases and investigations necessary to diagnose them and determine their prognosis.

Subject Contents:

Sr. No.	Topic	Hours
1	General Pathology: a) Introduction: Aims and objects of study of pathology, definitions of health, disease, causes of disease, methods of study of disease. b) Inflammation – General morphology, types, phenomenon of acute inflammation. c) Tissue repair – Wound healing, fracture, skin, nerves, muscles d) Cell Injury – Degeneration, physical and chemical irritants, ionizing radiations, cellulitis. e) Disturbance of circulation – edema, thrombosis, infarction, embolism. f) Necrosis, Gangrene g) Growth and its disorders – atrophy and hypertrophy (pseudo), Hyperplasia h) Cellular ageing i) Tumors – definitions, classification, characteristics of benign and malignant tumors, etiology and spread of tumors, systemic effects. j) Infection – Acute, chronic, including AIDS.	33

	k) Blood-Anemia, definition, classification, etiology, lab investigations, blood picture; Hemorrhagic disorders – causes and classification (hemophilia) l) Immunity, Hypersensitivity and Autoimmune disorders (RA, SLE)	
2	Systemic Pathology: (Each condition in this section is to be taught under the specific headings of Causes, Development, Gross and Microscopic only). a) Respiratory System: Pneumonia, Bronchitis, Bronchiectasis, Asthma, Emphysema, Tuberculosis and Carcinoma of Lungs Occupational Lung Diseases b) Cardiovascular System: Rheumatic Heart diseases, Myocardial infarction, Atherosclerosis and other disease of blood vessels – TAO, Buerger's diseases, Thrombophlebitis, Congenital Heart diseases, c) Alimentary System: Peptic Ulcer, Ulcerative lesions of intestine d) Liver: Hepatitis, Cirrhosis e) CNS: Meningitis, Encephalitis, Cerebral Hemorrhage, CVA, Brief outline of CNS Tumors f) Peripheral Nerves: Neuritis, Neuralgia, GBS, Neuropathies. g) Bones and Joints: Osteomyelitis, Osteoarthritis, Septic, Arthritis, Gout, Osteomalacia, Bone Tumors briefly*-Giant Cell tumor, Osteosarcoma, Ewing's j) Urinary System:** Nephritis, Glomerulonephritis, Nephrotic Syndrome k) Endocrine System:*** Thyroid – Thyroiditis and Thyroid tumors, Diabetes	43

List of References:

Text Books:

1. Text Books: Essential Pathology for Physiotherapy Students, Harsh Mohan – 1st Edition.

Reference Books:

1. Essentials of Clinical Pathology, Shirish M Kawthalkar - 2nd Edition.

List of Open Source Software/learning website:

- k-hub.in e library/A single platform for all e resources (K-hub, E-Resource)
 - User Name- KB4605VNG
 - Password- BL@69BX!
- knowledgegainer.delnet.in (Delnet , E-Resource)
 - User Name- gjspum
 - Password- spu10924

MICROBIOLOGY

COURSE OUTCOMES:

At the end of the course the candidate will be able to

1. Have sound knowledge of the agents responsible for causing human infections pertaining to CNS, CVS, musculoskeletal and Respiratory system.

Subject Contents:

Sr. No.	Topic	Hours
1	General Bacteriology: a) Introduction, historical background, classification of micro – organisms b) Morphology of bacteria c) Staining of bacteria d) Sterilization e) Cultivation and culture media	12
2	Systemic Bacteriology: a) Gram-Positive cocci – Streptococci, Pneumococci, Staphylococci b) Gram-Negative Cocci – Gono and Meningococci c) Gram-Positive Bacilli d) Gram-Negative Bacilli-Typhoid, Cholera, Dysentery e) Aerobic-Diphtheria, T.B., Leprosy f) Anaerobic-Tetanus, Gas Gangrene, Botulism	15
3	Immunology: a) Immunity, Antigens b) Antibodies, Ag-Ab Reaction c) Agglutination, precipitation d) Hypersensitivity reactions	10
4.	General Virology: a) Poliomyelitis b) Rabies c) Demonstration of test in: diagnosis of AIDS, Hepatitis and Syphilis d) Coronavirus disease e) Chikunguniya f) Dengue g) H1N1 Virus	15
5.	Parasitology: a) Malaria b) Amoebiasis c) Round worm and loop worm	8
6.	Mycology: a) Candidiasis b) Ringworm c) Scabies	6
7.	Applied Microbiology: Concerning systemic, Parasitology, Mycology, Immunology, hypersensitivity tests a) Infection of bones/joints b) Infection of burns case c) Serological test – interpretation of Antistreptolysin O (ASO), Rheumatoid Arthritis (RA), Venereal Disease Research Laboratory (VDRL), C-Reactive Protein (CRP), Widal, Enzyme-Linked Immunoassay (ELISA) (HIV, HBsAg), PCR based diagnosis	5

	d) Demonstration of gross/microscopic appearance of various parasite	
8.	Aseptic universal precautions & practices Biomedical waste and universal precautions	5

List of References:

Text Books:

1. Textbook of Microbiology, (Late) R Ananthanarayan - 11th Edition.

Reference Books:

1. Textbook of Microbiology, Surinder Kumar-1st Edition.

List of Open Source Software/learning website:

- k-hub.in e library|A single platform for all e resources (K-hub, E-Resource)
 - User Name- KB4605VNG
 - Password- BL@69BX!
- knowledgegainer.delnet.in (Delnet , E-Resource)
 - User Name- gjspum
 - Password- spu10924

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

	Description	Bloom's Taxonomy Level
CLO1	Discuss Aims and objects of study of pathology & microbiology , understand cell injury and changes produced thereby in different tissues and organs	1 Remembering 2 Understanding
CLO2	Recall the etio-pathogenesis, the pathological effects and the clinical-pathological correlation of common infection and non-infectious disease.	1 Remembering 2 Understanding
CLO3	Enable them to Acquire the knowledge of concepts of neoplasia with reference to the etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body.	1 Remembering 2 Understanding 3 Applying
CLO4	Able to Correlate normal and altered morphology of different organ systems in different diseases needed to understand the disease process and their clinical significance	2 Understanding 3 Applying 5 Evaluate
CLO5	Acquire knowledge of common immunological disorders and their resultant effects on the human body.	2 Understanding 3 Applying 4 Analyze
CLO6	Discuss the Applied Microbiology causing human infections pertaining to CNS, CVS, musculoskeletal and Respiratory system.	1 Remembering, 2 Understanding

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)								Program Specific Outcomes (PSOs)							
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO 2	PSO 3	PSO4	PSO5	PSO6	PSO7	PSO8
CLO1	H								H		H					
CLO2		L								M					M	
CLO3	M		M			M					L		M			
CLO4				M			M									
CLO5					L							M		L		M
CLO6			M					L			H					M

H: High, M: Medium, L: Low