COURSE HANDOUT

PATHOPHYSIOLOGY (THEORY)

COURSE CODE:- BP204T

VISION

Train the minds to think logically and become a success

MISSION

To Develop inventive, pioneering research & high-quality technical education

PROGRAMME EDUCATIONAL OBJECTIVES

PEO 1: To produce graduates with sound theoretical knowledge and technical skills required for career opportunities in various domains.

PEO 2: To incite the students towards research and to address the challenges with their innovative Contributions for the benefit of mankind.

PEO 3: To bring forth a quality professional equipped with technological advances to adapt easily to changes in the ever-evolving pharma and allied industry, hospital and clinical pharmacy setup, pharma retailing and distribution, and governmental and health agencies.

PEO 4: To engage graduates in professional ethical practices in a multidisciplinary environment, while contributing to organization through leadership and building team spirit.

PEO 5: Pharmacists can become lifelong learners, absorb new technologies, and then offer leadership roles in society.

Programme Name	Bachelor of Pharmacy (B. Pharmacy)
Course Name	Pathophysiology (Theory)
Course Code	BP204T
Session	
Semester	II
Lecture/Tutorial (Per Week)	3 (3-1)
Course Credit	4
Course Coordinator Name	

1. Scope of the Course:

Pathophysiology is the study of causes of diseases and reactions of the body to such disease-producing causes. This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms.

2. Course Outcomes (COs):

204.1. Understand the basic concept of pathophysiology, cell injury and mechanism involved in the process of inflammation.

204.2. Promote the knowledge about pathogenesis of the cardiovascular, respiratory and renal systems.

204.3. Describe the etiology of haematological diseases, endocrine, nervous and gastrointestinal systems.

204.4. Acquire extensive and coherent Knowledge of diseases related to orthology, hepatology and oncology.

204.5. Gain knowledge of infectious diseases and sexually transmitted diseases.

3. Text Books:

TB.1 Kumar V, Abbas AK, Aster JC.Robbins & Cotran Pathologic Basis of Disease. Elsevier.

TB.2 Brunton LL, Hilal-Dandan R, Knollmann BC. Goodman & Gilman's: The Pharmacological Basis of Therapeutics. McGraw-Hill, New York.

TB.3 Tandon OP, Tripathi Y. Best and Taylor's Physiological Basis of Medical Practice. Lippinkots.

4. Reference Books:

RB.1 Guyton A, Hall JE. Textbook of Medical Physiology. WB Saunders Company, India.

RB.2 Walker R, Edwards C. Clinical Pharmacy and Therapeutics. Churchill Livingstone, London.

RB.3 DiPiroJ, Talbert R, Yee G, Matzke G, Wells B, Posey LM. Pharmacotherapy: A Pathophysiological Approach. McGraw-Hill.

5. Other Readings &Relevant Websites:

Sr. No.	Link of Journals, Magazines, Websites and Research Papers
1.	https://pathsocjournals.onlinelibrary.wiley.com/journal/10969896/
2.	https://onlinecourses.swayam2.ac.in/aic22_ge08/preview/
3.	https://journals.lww.com/pathologyrcpa/pages/default.aspx/

6. Course Plan:

Subject: Pathophysiology (Theory)		**Subject Code:** BP204T
Sr. No.	**Topics**	**No. of lect.**
1	**Basic principles of Cell injury and Adaptation:** Introduction, definitions, Homeostasis, Components and Types of Feedback systems, Causes of cellular injury, Pathogenesis (Cell membrane damage, Mitochondrial damage, Ribosome damage, nuclear damage), Morphology of cell injury –Adaptive changes (Atrophy, Hypertrophy, hyperplasia, Metaplasia, Dysplasia), Cell swelling, Intra cellular accumulation, Calcification, Enzyme leakage and Cell Death Acidosis &Alkalosis, Electrolyte imbalance **Basic mechanism involved in the process of inflammation and repair:** Introduction, Clinical signs of inflammation, Different types of Inflammation, Mechanism of Inflammation –Alteration in vascular permeability and blood flow, migration of WBC's, Mediators of inflammation, Basic principles of wound healing in the skin, Pathophysiology of Atherosclerosis	**10**
2	**Cardiovascular System:** Hypertension, congestive heart failure, ischemic heart disease (angina, myocardial infarction, atherosclerosis and arteriosclerosis) **Respiratory system**: Asthma, Chronic obstructive airways diseases. **Renal system**: Acute and chronic renal failure.	10
3	**Hematological Diseases:** Iron deficiency, megaloblastic anemia (Vit B12 and folic acid), sickle cell anemia, thalassemia, hereditary acquired anemia, hemophilia **Endocrine system:** Diabetes, thyroid diseases, disorders of sex hormones	05
ST-I (Syllabus Covered from Lecture 01 to 25)		
1	**Nervous system:** Epilepsy, Parkinson's disease, stroke, psychiatric disorders: depression, schizophrenia and Alzheimer's disease. **Gastrointestinal system**: Peptic Ulcer	05
2	**Inflammatory bowel diseases, jaundice, hepatitis (A, B, C, D, E, F) alcoholic liver disease.** **Disease of bones and joints**: Rheumatoid arthritis, osteoporosis and gout **Principles of cancer:** classification, etiology and pathogenesis of cancer **Diseases of bones and joints:** Rheumatoid Arthritis, Osteoporosis, Gout Principles of **Cancer:** Classification, etiology and pathogenesis of Cancer	08
3	**Infectious diseases:** Meningitis, Typhoid, Leprosy, Tuberculosis Urinary tract infections, sexually transmitted diseases: AIDS, Syphilis, Gonorrhoea	07
ST-II (Syllabus Covered from Lecture 26 to 45)		

7. Lecture Plan:

Lect. No.	Topics	Dates (tentative)		CO
		Section A	**Section B**	
01	Basic principle of Cell injury and Adaptation: Introduction, definitions, Homeostasis, Components and types of feedback systems.	24/07/24	24/07/24	204.1
02	Causes of cellular injury, Pathogenesis (Cell membrane damage, Mitochondrial damage).	25/07/24	25/07/24	204.1
03	Ribosome damage, nuclear damage, morphology of cell injury	27/07/24	27/07/24	204.1
04	Adaptive changes (Atrophy, Hypertrophy, hyperplasia, metaplasia, dysplasia), Cell swelling, Intra cellular accumulation.	31/07/24	31/07/24	204.1
05	Calcification, Enzyme leakage and cell death acidosis & alkalosis, electrolyte imbalance.	01/08/24	01/08/24	204.1

06	Basic mechanism involved in the process of inflammation and repair: Introduction, Clinical signs of inflammation.	03/08/24	03/08/24	204.1
07	Different types of inflammation, Mechanism of inflammation-Alteration in vascular permeability and blood flow.	07/08/24	07/08/24	204.1
08	Migration of WBC's, Mediators of inflammation.	08/08/24	08/08/24	204.1
09	Basic principles of wound healing in the skin, pathophysiology of Atherosclerosis.	10/08/24	10/08/24	204.1
10	Class Test-I	14/08/24	14/08/24	204.1
11	Cardiovascular System: Hypertension.	17/08/24	17/08/24	204.2
12	Congestive heart failure.	21/08/24	21/08/24	204.2
13	Basics of Ischemic heart disease.	22/08/24	22/08/24	204.2
14	Angina pectoris.	24/08/24	24/08/24	204.2
15	Myocardial infarction.	28/08/24	28/08/24	204.2
16	Atherosclerosis and arteriosclerosis.	29/08/24	29/08/24	204.2
17	Respiratory system: Asthma.	31/08/24	31/08/24	204.2
18	Chronic obstructive airways diseases.	04/09/24	04/09/24	204.2
19	Renal system: Acute and chronic renal failure.	05/09/24	05/09/24	204.2

8. Tutorial Plan

Sr. No.	Topic	Dates (tentative)	
		Section A	Section B
01	Pathogenesis of cell injury	27/07/24	27/07/24
02	Basic mechanism involved in process of inflammation and repair	03/08/24	03/08/24
03	Mechanism of inflammation	10/08/24	10/08/24
04	Migration of WBC's, Mediators of inflammation	17/08/24	17/08/24
05	Pathophysiology of Atherosclerosis.	24/08/24	24/08/24
06	Chronic obstructive airways diseases	31/08/24	31/08/24
07	Disorders of sex hormones	07/09/24	07/09/24
08	Nervous system: Epilepsy	21/09/24	21/09/24
09	Psychiatric disorders: depression	28/09/24	28/09/24
10	Gastrointestinal system: Peptic Ulcer	05/10/24	05/10/24
11	Hepatitis (A, B, C, D, E, F) alcoholic liver disease	12/10/24	12/10/24
12	Pathogenesis of Cancer	19/10/24	19/10/24
13	Infectious diseases: Meningitis	26/10/24	26/10/24
14	Leprosy	09/11/24	09/11/24
15	Syphilis, Gonorrhea	13/11/24	13/11/24

9. Assignments Plan:

Sr. No.	Type of assignment	Assignment	Marks	CO	PO (Annexure I)	Date
1	Mind map	Diagrammatical representation of basic principle of cell injury and adaptation	10	204.1	PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO9, PO11	07/08/24
2.	Survey report	Make a survey report in group (leader & sub leader) of cardiovascular disease	10	204.2	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO11	31/08/24
3.	Objective	Prepare at least 50 MCQ's in group (leader & sub leader) of different types of anaemia	10	204.3	PO1, PO2, PO3, PO5, PO6, PO7, PO9, PO11	25/09/24
4	Problem-solving	Make a problem-solving report of data interpretation of liver test	10	204.4	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO11	12/10/24
5	Subjective	Prepare an assignment on topic AIDS	10	204.5	PO3, PO6, PO7, PO9, PO11	06/11/24

10. Class Tests Schedule:

Sr. No.	Test type	Topic	Marks	CO	PO	Tentative date
1	Subjective	Homeostasis	10	204.1	PO1, PO3. PO6, PO7, PO9, PO11	14/08/24
2	Subjective (One marks)	Respiratory disease	10	204.2	PO1, PO3. PO4. PO6, PO7, PO9, PO11	18/09/24
3	Oral Seminar	CNS disease	10	204.3	PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO9, PO11	12/10/24
4	Reflective writing	Cancer	10	204.4	PO1, PO3. PO6, PO7, PO9, PO11	26/10/24
5	Subjective	UTI	10	204.5	PO1, PO3. PO6, PO7, PO9, PO10, PO11	09/11/24

11. Content Beyond Syllabus (CBS):

Sr. No.	Topics	PO to be Achieved (Annexure I)
1	Disease and Environmental Purifier Plants	PO1, PO2, PO3, PO6, PO7, PO8, PO9, PO10, PO11

12. Proposed Activity:

Sr. No.	Type of Activity	Topics	Tentative Date
1.	Seminar	CVS Diseases	26/09/24

13. Evaluation Scheme:

The marks allocated for continuous mode of internal assessment shall be awarded for attendance, academic activities and student-teacher interaction. Two sessional exams shall be conducted during mid of the semester. The average marks of two sessional exams shall be computed for internal assessment. Sessional exam shall be conducted for 30 marks and shall be computed for 15 marks. Weightage for various evaluation components is as below:

Sr. No.	Evaluation Component	Weightage
1	Internal Assessment	
	1. Continuous Mode	10
	2. Sessional Exams	15
2	End Semester Exam	75
	Total	100

As per PCI and University guidelines minimum 75% attendance is required to become eligible for appearing in the End Semester Examination.

This document is approved by:

Designation	Name	Signature
Course Coordinator		
HOD		
Principal		

ANNEXURE I: PROGRAM OUTCOMES

1. **Pharmacy knowledge:** Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioural, social, and administrative pharmacy sciences; and manufacturing practices.
2. **Planning abilities:** Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
3. **Problem analysis:** Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
4. **Modern tool usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
5. **Leadership skills:** Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and wellbeing.
6. **Professional identity:** Understand, analyze and communicate the value of their professional roles in society (e.g., health care professionals, promoters of health, educators, managers, employers, employees).
7. **Pharmaceutical ethics:** Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
8. **Communication:** Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
9. **The pharmacist and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
10. **Environment and sustainability:** Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
11. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.