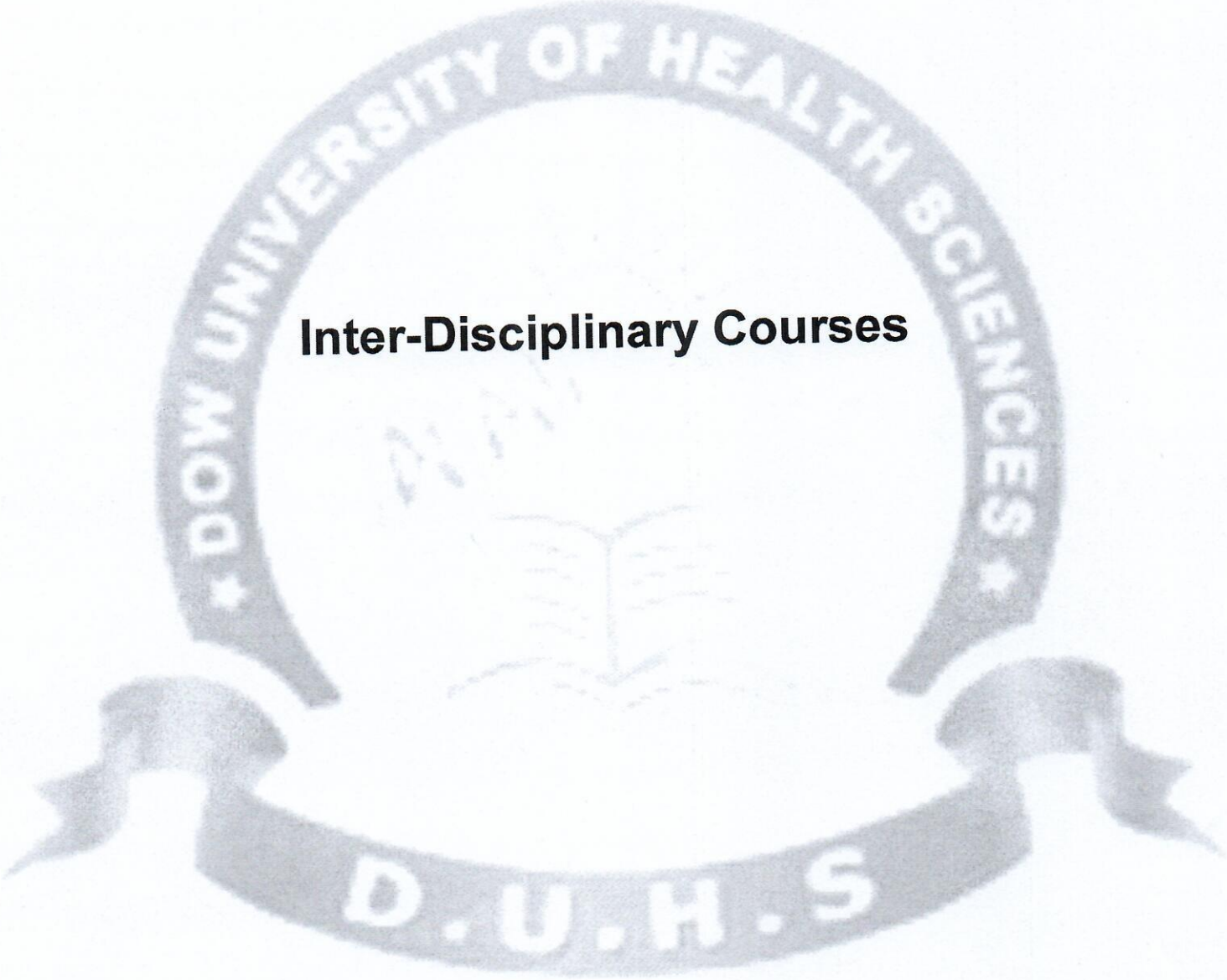


The logo of Dow University of Health Sciences (D.U.H.S.) is a circular emblem. The outer ring contains the text "DOW UNIVERSITY OF HEALTH SCIENCES" at the top and "D.U.H.S." at the bottom, separated by two small stars. In the center of the circle is an open book with rays of light emanating from it. A banner at the bottom of the circle also displays "D.U.H.S.".

## **Inter-Disciplinary Courses**



DOW INSTITUTE OF MEDICAL TECHNOLOGY  
DOW UNIVERSITY OF HEALTH SCIENCES,  
B.S MEDICAL TECHNOLOGY PROGRAM



# Course Name: ANATOMY

**Credit Hours:** 03

**Course Code:** ANAT 201

**Placement:** Year I, Semester I

## Course Description

This course provides a comprehensive introduction to human anatomy, focusing on the structure and function of various organ systems. Students will explore skeletal, muscular, nervous, circulatory, respiratory, digestive, integumentary, and lymphatic systems. The course aims to develop a strong anatomical foundation through interactive learning, case discussions, and practical applications.

## Learning Objectives

By the end of this course, students will be able to:

1. Understand fundamental principles of human anatomy and its clinical significance.
2. Identify and describe different parts of the human body, including major organ systems.
3. Explain the anatomical structures and their relationship with physiological functions.
4. Analyze the structural differences in male and female anatomy.
5. Apply anatomical knowledge during clinical training and practical sessions.

## Learning Outcomes

Upon completing this course, students will be able to:

- ✓ Demonstrate a clear understanding of human body structures.



- ✓ Identify major bones, muscles, organs, and tissues.
- ✓ Apply anatomical knowledge to clinical and practical scenarios.
- ✓ Explain anatomical variations and their significance.
- ✓ Interpret body planes, cavities, and anatomical positions accurately.

## **Course Contents**

### **Unit 1: Introduction to the Human Body**

- Definition of Anatomy and its branches.
- Levels of organization of the body.
- Anatomical position, planes, and terminology.
- Body cavities and their organs.
- Abdominopelvic regions and quadrants.

### **Unit 2: The Skeletal System**

- Structure, types, and functions of bones.
- Classification of axial and appendicular skeleton.
- Bones of the skull, vertebral column, rib cage, pectoral girdle, and pelvic girdle.
- Differences between male and female pelvis.

### **Unit 3: The Joints**

- Types of joints: Fibrous, Cartilaginous, and Synovial.
- Characteristics and functions of synovial joints.
- Movements at synovial joints and their significance.

### **Unit 4: Muscular System**

- Major muscles of the body: Neck, Face, Back, Arms, and Legs.
- Functions and locations of these muscles.

### **Unit 5: Organ and Body Systems**

- **Respiratory system** (Upper and Lower respiratory tract).

- **Cardiovascular system** (Heart, arteries, veins, thoracic wall).
- **Gastrointestinal system** (Oral and tubular parts).
- **Genitourinary system** (Kidneys, bladder, reproductive organs).

## **Unit 6: Nervous System**

- **Neurons:** Structure and function.
- **Central Nervous System (CNS):** Brain and spinal cord.
- **Peripheral Nervous System (PNS):** Nerve classification.
- **Cranial nerves** and their functions.

## **Unit 7: Integumentary System**

- **Structure and functions of skin layers:** Epidermis, Dermis, Hypodermis.
- **Skin derivatives:** Sweat glands, sebaceous glands, hair, and nails.

## **Unit 8: The Lymphatic System**

- **Lymph and lymphatic circulation.**
- **Organs of the lymphatic system:** Lymph nodes, spleen, thymus gland.
- **Functions and drainage of the lymphatic system.**

## **Unit 9: Cells, Tissues, and Membranes**

- **Structure and function of a cell.**
- **Cell division:** Mitosis and Meiosis.
- **Types of tissues:** Epithelial, Connective, Muscle, Nervous.

## **Learning Activity**

- **Lectures** on anatomical structures and their functions.
- **Group discussions** on key anatomical concepts.
- **Individual and small group assignments** on body systems.
- **Role-play presentations** on anatomical movements and joint functions.
- **Independent reading and self-assessment activities.**

## **Assessment and Evaluation**

- **Internal Evaluation (Quizzes, Viva, Presentations, Assignments): 15%**
- **Mid-Term Examination: 15%**
- **Final Examination: 70%**
- **Total: 100%**

## **Recommended Readings**

### **Primary Textbooks**

- **"Snell's Clinical Anatomy" (10th Edition)**
- **"Gray's Anatomy" (Latest Edition)**

# **Course Name: PHYSIOLOGY**

**Credit Hours:** 03

**Course Code:** PIO 201

**Placement:** Year I, Semester I

## **Course Description**

This course provides a comprehensive introduction to human physiology, focusing on the mechanisms that regulate body functions and maintain homeostasis. It explores cellular physiology, nervous and endocrine control systems, cardiovascular dynamics, respiratory mechanisms, renal function, digestion, and musculoskeletal physiology. The course is designed to enhance students' analytical skills and practical knowledge, equipping them with a strong foundation in physiological principles relevant to health sciences and clinical applications.

## **Learning Objectives**

By the end of this course, students will be able to:

1. Understand fundamental principles of physiology and homeostasis regulation.
2. Describe the structure and function of the cell membrane and its transport mechanisms.
3. Explain the generation and propagation of action potentials in nerves and muscles.
4. Analyze neuromuscular transmission and muscle contraction mechanisms.
5. Identify the components of blood and their physiological roles.
6. Explain hemostasis, immunity, and blood coagulation processes.
7. Understand blood grouping and its clinical significance.
8. Describe cardiovascular physiology, including circulation and ECG interpretation.
9. Analyze respiratory mechanics, gas transport, and pulmonary function.
10. Explain renal physiology, acid-base balance, and fluid-electrolyte homeostasis.



11. Describe digestion, absorption, and gastrointestinal motility.
12. Understand the functions of major endocrine glands and hormonal regulation.
13. Apply physiological concepts in laboratory and clinical settings.

## **Learning Outcomes**

Upon completing this course, students will be able to:

- ✓ Demonstrate a clear understanding of physiological concepts related to major organ systems.
- ✓ Apply knowledge of physiology to analyze clinical case studies and disorders.
- ✓ Interpret physiological data, including ECG, respiratory volumes, and electrolyte balance.
- ✓ Develop problem-solving skills in understanding homeostatic mechanisms.
- ✓ Perform basic physiological laboratory activities to reinforce theoretical knowledge.

## **Course Contents**

### **Unit 1: Introduction to Physiology**

- Definition and scope of physiology.
- Concept of homeostasis and feedback mechanisms.

### **Unit 2: Cell Physiology**

- Cell structure and function.
- Transport mechanisms: Passive and active transport.

### **Unit 3: Blood and Immunity**

- Composition and functions of blood.
- ABO blood group and Rh factor.
- Hemostasis and blood coagulation.
- Red and white blood cells: Functions and disorders.
- Immunity: Innate and adaptive.

### **Unit 4: Cardiovascular Physiology**

- Cardiac cycle and heart sounds.
- Blood flow through the heart and systemic circulation.
- Conduction system and innervation of the heart.
- Coronary circulation and cardiac output regulation.
- Electrocardiogram (ECG) and its clinical significance.

### **Unit 5: Respiratory System**

- Mechanics of breathing and pulmonary circulation.
- Respiratory volumes and lung function tests.
- Gas transport and exchange mechanisms.
- Respiratory adaptations at high altitudes and diving physiology.

### **Unit 6: Renal Physiology and Acid-Base Balance**

- Structure and function of nephrons.
- Glomerular filtration, tubular function, and urine formation.
- Fluid and electrolyte balance.
- Acid-base homeostasis and pH regulation.

### **Unit 7: Musculoskeletal System**

- Resting membrane potential and action potentials.
- Skeletal, smooth, and cardiac muscle physiology.
- Sliding-filament mechanism of muscle contraction.
- Neuromuscular junction and excitation-contraction coupling.

### **Unit 8: Digestive System**

- Digestive processes and hormonal control of digestion.
- Role of liver, pancreas, and accessory organs in metabolism.
- Intestinal enzymes and absorption of nutrients.

### **Unit 9: Nervous System**

- Organization and divisions of the nervous system.
- Action potential, nerve conduction, and synaptic transmission.

- Autonomic nervous system and reflexes.
- Sensory physiology: Vision, hearing, taste, and smell.
- Higher brain functions: Sleep, memory, and learning.

## **Unit 10: Endocrine System**

- Hormone classification and general functions.
- Regulation of pituitary, hypothalamus, thyroid, adrenal, and pancreatic hormones.
- Hormonal control of metabolism, growth, and reproduction.
- Endocrine disorders and hormonal imbalances.

## **Learning Activity**

Students will engage in **interactive and practical exercises**, including:

- **Lectures** on physiological systems and their clinical applications.
- **Group discussions and case studies** on common physiological disorders.
- **Laboratory activities** in blood analysis, ECG interpretation, and spirometry
- **Problem-solving sessions** on homeostasis, metabolism, and hormonal regulation.

## **Assessment and Evaluation**

- **Internal Evaluation (Quizzes, Assignments, Viva, Assignments, Presentations): 15%**
- **Mid-Term Examination: 15%**
- **Final Examination: 70%**
- **Total: 100%**

## **Recommended Readings**

### **Primary Textbooks**

- **"Guyton and Hall Textbook of Medical Physiology"** (13th Edition) – John E. Hall

- **"Ganong's Review of Medical Physiology"** (24th Edition) – Kim E. Barrett, Susan M. Barman, Scott Boitano, Heddwen Brooks

### **Supplementary Readings**

- **"Ross & Wilson Anatomy and Physiology in Health and Illness"** (13th Edition)
- **"Tortora's Principles of Anatomy and Physiology"** (15th Edition)
- **"Berne & Levy Physiology"** – Bruce M. Koeppen, Bruce A. Stanton

# **Course Name: BIOCHEMISTRY**

**Credit Hours:** 03

**Course Code:** BCHEM 202

**Placement:** Year I, Semester II

## **Course Description**

This course provides a comprehensive introduction to the fundamental principles of biochemistry, covering enzymes, metabolism, genetic information transfer, and biochemical regulation. Designed for non-biochemistry majors, it serves as a prerequisite for advanced courses such as Clinical Chemistry and Pharmacology. The course emphasizes biochemical applications in health sciences and integrates molecular biology, genetics, and metabolic pathways to develop critical analytical and problem-solving skills.

## **Learning Objectives**

By the end of this course, students will be able to:

1. Explain enzyme mechanisms and interpret kinetic parameters ( $V_{max}$ ,  $K_m$ ,  $K_{cat}$ ).
2. Analyze biosynthesis and degradation of macromolecules.
3. Understand genetic information transfer in prokaryotes and eukaryotes.
4. Relate biochemical principles to real-world applications in medicine and health sciences.

## **Learning Outcomes**

Upon completing this course, students will be able to:

- ✓ Define anabolism and catabolism and identify common metabolites in both pathways.
- ✓ Analyze enzyme kinetics using Michaelis-Menten models and Lineweaver-Burk plots.
- ✓ Explain glucose metabolism, including glycolysis, gluconeogenesis, and glycogen synthesis.



- ✓ Differentiate anaerobic and aerobic respiration and their role in ATP generation.
- ✓ Outline oxidative phosphorylation and its energy conversion mechanisms.
- ✓ Describe the citric acid cycle and its role in metabolism and energy production.
- ✓ Understand lipid metabolism, including fatty acid oxidation, synthesis, and cholesterol pathways.
- ✓ Describe DNA replication, transcription, and translation and their regulation in gene expression.

## **Course Contents**

### **Unit 1: Enzymes and Enzyme Kinetics**

- Mechanisms of enzyme action
- Michaelis-Menten kinetics and inhibition
- Lineweaver-Burk plots and enzyme regulation
- Clinical application: Drug development and enzyme therapy

### **Unit 2: Carbohydrate Metabolism**

- Glycolysis, gluconeogenesis, and glycogen metabolism
- Pentose phosphate pathway and metabolic regulation
- Role of glucose in ATP production
- Clinical relevance: Glycogen storage diseases and diabetes

### **Unit 3: Citric Acid Cycle and Oxidative Phosphorylation**

- Pyruvate dehydrogenase complex and its regulation
- Reactions of the citric acid cycle
- Electron transport chain and ATP synthesis
- Clinical connection: Mitochondrial disorders and oxidative stress

### **Unit 4: Lipid Metabolism**

- Fatty acid oxidation and synthesis
- Ketogenesis and cholesterol metabolism
- Clinical connection: Hyperlipidemia and metabolic syndromes

## **Unit 5: Nitrogen Metabolism and Amino Acids**

- Amino acid biosynthesis and catabolism
- Urea cycle and nitrogen balance
- Purine and pyrimidine metabolism
- Clinical relevance: Urea cycle disorders and gout

## **Unit 6: DNA Replication and Repair**

- Mechanisms of DNA replication and proofreading
- Types of DNA damage and repair pathways
- Clinical relevance: Genetic disorders and cancer mutations

## **Unit 7: Transcription and Translation**

- RNA synthesis and processing
- Gene regulation in prokaryotes and eukaryotes
- Protein synthesis and post-translational modifications
- Clinical applications: Genetic diseases and targeted therapies

## **Unit 8: Regulation of Mammalian Fuel Metabolism**

- Hormonal control of metabolism (insulin, glucagon, epinephrine)
- Metabolic adaptations during fasting and exercise
- Clinical connection: Obesity, diabetes, and metabolic syndrome

## **Unit 9: Vitamins and Cofactors**

- Water-soluble and fat-soluble vitamins
- Role of vitamins in metabolism and enzymatic function
- Clinical deficiency disorders and toxicities

## **Learning Activity**

Students will engage in **interactive and practical exercises**, including:

- **Lectures** on biochemical pathways and clinical applications.

- **Problem-solving sessions** for metabolic regulation and enzyme kinetics.
- **Lab activities and case studies** on metabolic disorders.
- **Group discussions** on research-based biochemical advances.

## **Assessment and Evaluation**

- **Internal Evaluation (Quizzes, Assignments, Presentations): 15%**
- **Mid-Term Examination: 15%**
- **Final Examination: 70%**
- **Total: 100%**

## **Recommended Readings**

### **Primary Textbooks**

- **"Essential Biochemistry"** (5th Edition) – Charlotte W. Pratt & Kathleen Cornely
- **"Lehninger Principles of Biochemistry"** (8th Edition) – David L. Nelson & Michael M. Cox

### **Supplementary Readings**

- **"Lippincott Illustrated Reviews: Biochemistry"** (8th Edition) – Emine E. Abali & Susan D. Cline
- **"Harper's Illustrated Biochemistry"** (31st Edition) – Victor W. Rodwell
- **"Biochemistry: A Short Course"** – Tymoczko, Berg, & Stryer

# **Course Name: PHARMACOLOGY**

**Credit Hours:** 03

**Course Code:** PHARM 202

**Placement:** Year I, Semester II

## **Course Description**

This course provides a comprehensive introduction to pharmacology, covering drug mechanisms, pharmacokinetics, pharmacodynamics, drug interactions, adverse effects, and therapeutic uses. The course will emphasize autonomic pharmacology, central nervous system (CNS) drugs, chemotherapeutic agents, anti-inflammatory drugs, and medications used in major systemic disorders. Students will develop an understanding of drug classifications, mechanisms of action, and their clinical applications. The course also aims to prepare students to interpret prescriptions and collaborate with healthcare professionals regarding drug safety and efficacy.

## **Learning Objectives**

By the end of this course, students will be able to:

1. Understand fundamental pharmacological concepts including drug absorption, metabolism, distribution, and excretion.
2. Explain drug-receptor interactions and dose-response relationships.
3. Classify drugs affecting the autonomic and central nervous systems and their clinical uses.
4. Analyze pharmacological treatments for systemic disorders including cardiovascular, respiratory, and metabolic diseases.
5. Evaluate the use of chemotherapeutic agents in infectious diseases and cancer therapy.
6. Interpret drug interactions, adverse reactions, and toxicity profiles.



7. Discuss the role of anti-inflammatory and immunosuppressive drugs in managing chronic diseases.
8. Develop problem-solving skills in pharmacology-related case studies.

## Learning Outcomes

Upon completing this course, students will be able to:

- ✓ Demonstrate a thorough understanding of drug classifications and their mechanisms of action.
- ✓ Apply pharmacological principles to analyze prescriptions and drug interactions.
- ✓ Interpret clinical cases involving adverse drug reactions and therapeutic monitoring.
- ✓ Evaluate the use of pharmacological agents in disease treatment and prevention.
- ✓ Discuss evidence-based pharmacotherapy with healthcare professionals.

## Course Contents

### Unit 1: Introduction to Pharmacology

- **Pharmacokinetics:** Routes of drug administration (Enteral & Parenteral), drug absorption, distribution, metabolism, and excretion.
- **Pharmacodynamics:** Drug-receptor interactions, dose-response relationships, agonists (full, partial, inverse), antagonists (competitive, irreversible), and therapeutic index.

### Unit 2: Autonomic Nervous System Pharmacology

- **Chemical Signaling in the Nervous System:** Neurotransmitters, hormones, and local mediators.
- **Cholinergic Agonists:** Direct and indirect-acting agents, toxicity of acetylcholinesterase inhibitors.
- **Cholinergic Antagonists:** Anti-muscarinic agents, ganglionic blockers, neuromuscular blockers.
- **Adrenergic Agonists:** Mechanisms,  $\alpha$  and  $\beta$  receptor functions, direct and indirect-acting agents.
- **Adrenergic Antagonists:**  $\alpha$  and  $\beta$  blockers and their clinical applications.

### Unit 3: Drugs Affecting the Central Nervous System (CNS)

- **Anxiolytics and Hypnotics:** Benzodiazepines, barbiturates, antidepressants, buspirone, and antihistamines.
- **CNS Stimulants:** Psychomotor stimulants, hallucinogens, their effects, and therapeutic uses.
- **Anesthetics:** Inhalation and IV anesthetics, NMJ blockers, local anesthetics.
- **Antidepressants:** SSRIs, SNRIs, tricyclic antidepressants (TCAs), MAOIs, and bipolar disorder treatments.
- **Epilepsy Treatment:** Classification of seizures, antiepileptic drugs, drug use in pregnancy.

### Unit 4: Chemotherapeutic Agents

- **Antimicrobial Agents:** Cell wall synthesis inhibitors, protein synthesis inhibitors, folic acid antagonists.
- **Anti-Mycobacterial Agents:** Isoniazid, Rifampin, Pyrazinamide, and Ethambutol.
- **Antifungals:** Drugs for subcutaneous, systemic, and cutaneous mycoses.
- **Antimalarial Drugs:** Primaquine, Quinine, and their mechanisms.
- **Antiviral Drugs:** Treatments for respiratory and hepatic viral infections.
- **Anticancer Drugs:** Antimetabolites, alkylating agents, microtubule inhibitors, steroid antagonists, monoclonal antibodies.
- **Immunosuppressants:** Cytokine inhibitors, corticosteroids, and immunosuppressive antimetabolites.

### Unit 5: Anti-Inflammatory Drugs

- **NSAIDs:** Aspirin, Celecoxib, Ibuprofen, Indomethacin, Piroxicam, and Acetaminophen.
- **DMARDs (Disease-Modifying Anti-Rheumatic Drugs):** Methotrexate, Hydroxychloroquine, Sulfasalazine, Glucocorticoids.
- **Rheumatoid Arthritis Management:** Pharmacological interventions.
- **Gout Treatment:** Colchicine, Allopurinol, and Uricosuric agents.

### Learning Activity

Students will engage in **interactive and practical exercises**, including:

- **Lectures** on pharmacological concepts and clinical applications.
- **Group discussions** on drug interactions and case studies.
- **Quizzes and assignments** to reinforce learning.
- **Research-based presentations** on emerging drug therapies.

## **Assessment and Evaluation**

- **Internal Evaluation (Quizzes, Presentations, Assignments, Viva): 15%**
- **Mid-Term Examination: 15%**
- **Final Examination: 70%**
- **Total: 100%**

## **Recommended Readings**

### **Primary Textbooks**

- **"Lippincott Pharmacology"** (6th Edition) – Karen Whalen
- **"Basic & Clinical Pharmacology"** (12th Edition) – Bertram G. Katzung

# **Course Name: MICROBIOLOGY & INFECTION CONTROL**

**Credit Hours:** 03

**Course Code:** MICRO 203

**Placement:** Year II, Semester III

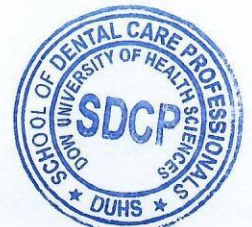
## **Course Description**

This course provides a comprehensive introduction to medical microbiology, covering microbial classification, bacterial cell structure, virology, mycology, parasitology, and infection control. Students will learn about the role of normal microbial flora, host-pathogen interactions, microbial transmission, and infection prevention strategies. The course will serve as a foundation for students pursuing Clinical Laboratory Sciences, complementing Diagnostic Microbiology (DMCP-I 306) and Diagnostic Microbiology (DMCP-II 407) in subsequent semesters.

## **Learning Objectives**

By the end of this course, students will be able to:

1. Understand the historical development of microbiology and its significance.
2. Define and classify microorganisms, differentiating between prokaryotes and eukaryotes.
3. Explain microbial habitats and their role in human health and disease.
4. Describe the structure, function, and reproduction of bacteria, viruses, fungi, and parasites.
5. Understand host-parasite relationships, including the body's defense mechanisms against infections.
6. Interpret various microbiological techniques, including microscopy, culture methods, and bacterial staining procedures.
7. Explain the pathogenesis and clinical features of common bacterial, viral, fungal, and parasitic infections.



8. Discuss the transmission, prevention, and control of infections in healthcare settings.
9. Analyze methods for sterilization, disinfection, and infection control practices.

## **Learning Outcomes**

Upon completing this course, students will be able to:

- ✓ Demonstrate a clear understanding of microbiological concepts relevant to human health.
- ✓ Identify major bacterial, viral, fungal, and parasitic pathogens.
- ✓ Apply microbiological techniques in laboratory diagnostics.
- ✓ Interpret microbial pathogenesis and host immune responses.
- ✓ Implement infection control measures in clinical settings.

## **Course Contents**

### **Unit 1: Introduction to Microbiology**

- Definition and history of microbiology.
- Classification of microorganisms.
- Habitats and ecological roles of microbes.
- Symbiosis and host-microbe interactions.
- Role of normal microbial flora in health and disease.

### **Unit 2: Host-Parasite Interactions and Immune Defense**

- Host defense mechanisms: Non-specific (innate) and specific (adaptive) immunity.
- Types of infections and microbial pathogenicity.
- Microbial virulence factors and immune evasion strategies.

### **Unit 3: General Methods of Studying Microorganisms**

- Microscopy techniques: Bright-field, Dark-field, Phase-contrast, and Fluorescence microscopy.

- Microbial culture and identification methods.
- Gram staining and Acid-fast staining techniques.

#### **Unit 4: Basic Bacteriology**

- Bacterial morphology, arrangement, and cell structure.
- Bacterial growth, reproduction, and metabolism.
- Bacterial classification and taxonomy (Bergey's Manual).
- Pathogenesis and clinical features of bacterial diseases (Gram-positive, Gram-negative, and Acid-fast bacteria).

#### **Unit 5: Basic Virology**

- Structure, classification, and replication of viruses.
- Medically important viruses and their associated diseases.
- Viral pathogenesis and immune response.
- Common viral infections affecting different body systems.

#### **Unit 6: Basic Parasitology**

- Introduction to parasitic organisms.
- Classification of medically important parasites.
- Life cycles and disease associations of major parasites.
- Prevention and control of parasitic infections.

#### **Unit 7: Basic Mycology**

- Structure, classification, and reproduction of fungi.
- Medically important fungal infections (superficial, subcutaneous, systemic).
- Diagnosis and treatment of fungal infections.

#### **Unit 8: Infection Control in Healthcare Settings**

- Modes of microbial transmission in hospitals and community settings.
- Principles of cleaning, disinfection, and sterilization.
- Infection control measures in healthcare environments.
- Antibiotic resistance and its global impact.

## **Learning Activity**

Students will engage in **interactive and practical exercises**, including:

- **Lectures** on microbiology fundamentals and infection control.
- **Laboratory exercises** involving **microbial staining, culture techniques, and microscopy**.
- **Group discussions and presentations** on infectious diseases and epidemiology.
- **Case studies** analyzing clinical microbiology scenarios.
- **Independent research projects** on emerging microbial threats.

## **Assessment and Evaluation**

- **Internal Evaluation (Quizzes, Assignments, Viva, Assignments, Presentations): 15%**
- **Mid-Term Examination: 15%**
- **Final Examination: 70%**
- **Total: 100%**

## **Recommended Readings**

### **Primary Textbooks**

- **"Medical Microbiology and Immunology"** – Jawetz, Melnick & Adelberg
- **"Examination and Board Review in Microbiology"** – Ernest Jawetz, Warren E. Levinson

|                         |                                             |
|-------------------------|---------------------------------------------|
| Title of Course         | <b>GENERAL PATHOLOGY</b>                    |
| Course Code             | DCP-GPATH 304                               |
| Duration                | 2 clock hours a week                        |
| Campus/ Location Office | OJHA campus                                 |
| Total Credit Hours      | 2 Cr. Hours                                 |
| Accredited by           | ALLIED HEALTH PROFESSIONAL COUNCIL PAKISTAN |

### **COURSE INTRODUCTION:**

To fulfil the current **INTERDISCIPLINARY COURSES REQUIREMENTS** of the Higher Education Commission, this course has been introduced in the BS Programs to get the students acquainted with the General Pathological concepts in allied health sciences. This course is placed in Semester – III and is a common course both for Dental Hygiene and Dental Technology Programs.

The General Pathology course, will serve as a pre-requisite for several upper-level courses for various majors. Students are mostly juniors coming from different backgrounds and graduating across various disciplines, including Clinical Laboratory Sciences, Respiratory care and Critical Technology, Perfusion Sciences, Ophthalmic Technology, Optometry, Surgical Technology and Dental Care Professional, etc. Therefore, it aims to facilitate learning in semesters ahead where students will learn to relate not only to the knowledge gain rather, also clearly appreciate its application and practice the same.

Moreover, this course outline will hopefully serve as the benchmark to provide a broad overview of the general pathology course offered to students of Allied Health Sciences. This course will cover fundamental mechanisms in pathologies that result in the change in the normal physiological processes due to any particular reasons, their interactions with each other and host organisms as well as therapeutics. Mechanisms of pathogenicity, host-parasite relationships, the immune response, and principles of disease transmission. Microbial control techniques include sterilization, aseptic procedures, use of disinfectants, antiseptics, and chemotherapy.

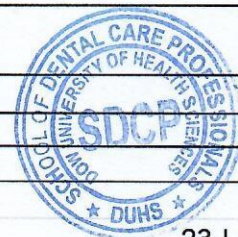
### **COURSE OBJECTIVES:**

At the completion of this course students will be able to:

1. Able to memorize and recognize different pathological conditions in human body
2. Understand and relate the general principles, terminology and modes of spread of disease.
3. Able to understand the pathological cascade of events in human body
4. Understand the cascade of inflammation
5. Understand the defense mechanisms of the human body
6. Understand about pathogenesis, etiology, histopathological and diagnostic features of diseases
7. Able to examine different general pathological conditions and differentiate them with normal conditions
8. Correlate the signs and symptoms of oral abnormalities with etiological factors.
9. Able to differentiate between normal and pathological conditions based on general laboratory findings
10. Distinguish among the group of symptoms such as reactive, neoplastic and infectious.

### **COURSE PLAN**

| WEEK | LESSON TOPIC                                                                    |
|------|---------------------------------------------------------------------------------|
| 1.   | Cell as a unit of health & disease<br>Cell Cycle<br>Cellular response to stress |
| 2.   | Cell injury, cell death and pathological calcification                          |
| 3.   | Acute inflammation                                                              |
| 4.   | Chronic inflammation and systemic effects                                       |



|     |                                                                                                           |
|-----|-----------------------------------------------------------------------------------------------------------|
| 5.  | Tissue repair and healing                                                                                 |
| 6.  | Immune system and immunity                                                                                |
| 7.  | Neoplasia:<br>Nomenclature Characteristics<br>Carcinogenic agents and their interactions Clinical aspects |
| 8.  | Developmental, hereditary and congenital disorders & genetic syndromes                                    |
| 9.  | <b>MIDTERM</b>                                                                                            |
| 10. | Hemodynamic disorders (edema, effusion, hyperemia, congestion, embolism, thrombosis, infarction)          |
| 11. | Hemodynamic disorders (hemostasis, hemorrhagic disorders, shock)<br>Cardio-vascular diseases              |
| 12. | Blood diseases                                                                                            |
| 13. | Endocrine disorders                                                                                       |
| 14. | Respiratory, gastrointestinal, neurological and skeletal disorders                                        |
| 15. | Nutritional disorders                                                                                     |

#### LEARNING RESOURCES AND TEXTBOOKS:

1. Robbin's and Cotran-Pathological Basic of Disease
2. General and Oral Pathology for the Dental Hygienists by Leslie DeLong, Nancy W. Burkhart (Lippincott, Williams & Wilkins)- available online, free downloads