

COURSE WISE BREAKUP

Fourth Year Eighth Semester

SPECILIZATION

BIOCHEMISTRY

THEORY

COURSE CODE	TITLE	CREDIT HOURS	MARKS
CHEM-434	PAPER-IV: BIOCHEMISTRY	03	100
CHEM-435	PAPER-V: BIOCHEMISTRY	03	100
CHEM-436	PAPER-VI: BIOCHEMISTRY	03	100

PRACTICALS

COURSE CODE	TITLE	CREDIT HOURS	MARKS
CHEM-432	BIOCHEMISTRY (RESEARCH PROJECT)	06	200

- Total Credits of the Semester = 15 (theory 09 & practicles 06 credits)
- Maximum Marks = 500 (theory 300 & practicles 200 marks)

4th Year; 8th Semester

PAPER-IV

Title of the Course: **BIOCHEMISTRY**

Code: **CHEM-434**

Credit Hours: **03**

Marks: **100**

Course Contents:

Physiological Chemistry

Respiration

Structure and function of lungs, Physical exchange of gases, Transport of oxygen by blood, Transport of CO₂ in blood, Buffer system of the blood, Acid-Base balance.

Kidney

Structure and function of nephrons, Formation of urine, Filtration, Glomerular filtration rate, Action of the tubule, Reabsorption of Na, Cl and water, Loop of Henle. Structure and function of muscle tissues, Nerve tissues and Connective tissues, Nerve conduction and sensory system. Circulatory system.

Chemotherapy

Structure and mode of action of antipyretics analgesic, antimalarial, supra-drugs, antibiotics with special reference to penicillin, sulphanilamides. Mechanism of drugs action and resistance.

RECOMMENDED BOOKS:

1. Principles of Biochemistry by White Hundler and Smith.
2. Biochemistry by Lehninger.
3. Review of Physiological Chemistry by H.A.Harper.
4. Text Book of Biochemistry by West Todd/Mason/Von Brugge.
5. Text Book of Biochemistry by Mazur/Harrow.
6. The Pharmacological basis of Therapeutics edited by L.S.Goodman and A.Gilman (Macmillan).

4th Year; 8th Semester

PAPER-V

Title of the Course: **BIOCHEMISTRY**

Code: **CHEM-435**

Credit Hours: **03**

Marks: **100**

Course Contents:

Fundamentals of Microbiology

Prokaryotic cell structure and function, Prokaryotic growth and nutrition. Prokaryotic genetics.

Virus and Eukaryotic Microorganisms

Virus, Bacteria, fungi and parasites

Bacterial Diseases

Airborne, Foodborne and waterborne bacterial diseases.

Industrial Microbiology and Biotechnology

Microorganisms in industry. Alcoholic beverages. Other important microbial products

Immunology

Chemistry of immunoglobulins, myeloma and hybridoma immunoglobulins. Immune system and its abnormalities. Allergy and inflammation. Complement system, peripheral leucocytes and macrophages.

Immune Disorders

Type I IgE-Mediated Hypersensitivity, other types of hypersensitivity, Autoimmune disorders, Immunodeficiency disorders.

RECOMMENDED BOOKS:

1. Nester, E.W. D.G. Anderson, C.E. Roberts, N.N Pearsall and M.T. Nester. Microbiology 4th Ed. McGraw Hill Companies Inc.
2. Doan T., R.Melvold, S.Viselli and C. Waltenbaugh. Immunology: Lippincott Illustrated Reviews Lippincott Williams& Wilkins.
3. Stroll, W.A. H.Rouse, P.C. Champe, and R.A. Harvey. Microbiology Lippincott Illustrated Reviews Lippincott Williams& Wilkins.
4. Prescott, L.M. J.P. Harley and D.A.Klein Microbiology McGraw Hill Companies Inc.

4th Year; 8th Semester

PAPER-VI

Title of the Course: **BIOCHEMISTRY**

Code: **CHEM-436**

Credit Hours: **03**

Marks: **100**

Course Contents:

Major Dietary Constituents

Nutritional importance of Carbohydrates, Proteins and Amino Acids, Lipids , and Dietary fiber Energy Needs, Assessment and requirement of energy in different age groups. Nutrition in Growth and Aging Nutritional requirement during infancy and childhood. Diet, nutrition and adolescence. Nutrition in the Elderly. Minerals: Biochemical role of Calcium, Chromium, Copper, Iron, Iodine, Magnesium, phosphorous, Selenium, and Zinc. Their dietary sources, daily requirements and deficiency diseases.

Vitamins

Role of vitamins as coenzymes. Structure, physiological functions, deficiency diseases and recommended dietary allowances of the following vitamins. Fat Soluble vitamins: A, D, E, and K Water Soluble vitamins: Thiamine, Riboflavin, Niacin Pantothenic acid, Folic acid, Biotin and Ascorbic acid.

RECOMMENDED BOOKS:

1. Shils, M.E., J.A. Olson and M. Shike. Modern Nutrition in Health and Disease. Lea & Febiger USA
2. Passmore, R and M.A. Eastwood. Human Nutrition and Dietetics. Churchill Livingstone.
3. Murray, R.K., D.K. Grannar, P.A. Mayes and V.W. Rodwell. Harper's illustrated Biochemistry McGraw-Hill Companies Inc.
4. Smith, E.L., R.L. Hill, I.R. Lehman, R.J. Lefkowitz, P. Handler, and A. White. Principles of Biochemistry (Mammalian Biochemistry) McGraw-Hill Companies Inc.

4th Year; 8th Semester

Title of the Practicals: **BIOCHEMISTRY (RESEARCH PROJECT)**

Code: **CHEM-432**

Credit Hours: **01**

Marks: **200**

RECOMMENDED BOOKS:

1. Plummer, D.T., An introduction to practical biochemistry, TATA McGraw-Hill Publishing Company LTD.
2. Deyer, R. L. and G. F. Lata, Experimental Biochemistry, Oxford University Press.
3. Gowenlock, A. H., Varley's Practical Clinical Biochemistry, 6th Ed., Heinemann Professional Publishing, Oxford (1988).
4. Sawhney, S. K. and R. Sing (Editors), Introductory Practical Biochemistry, Narosa Publishing House, New Delhi, (2005)
5. Gosling, J. P., Immunoassay: Laboratory Analysis and Clinical application (1994).