BO110 BIOLOGY

BO110	BIOLOGY	3-1-0

COURSE OBJECTIVE:

To provide students with a basic foundation in the fundamental concepts and knowledge base of modern biology and help students develop the skills that are integral to the process of various disciplines of biomedical sciences. This course provides a coherent framework for understanding basics of botany and zoology and prepares students for their upper-level subjects in the field of biomedical sciences.

COURSE CONTENT:

Theory: Significance of basics of biology in biomedical science. Cell (Plant and animal): its structure, living and non- living inclusions, cell cycle and cell division, stages of mitosis, meiosis and their significance.

Elementary tissues of the human body: epithelial, connective, muscular and nervous tissues. Different types of plant tissues and their functions.

Morphology and histology of plant parts: root, stem, bark, wood, leaf, flower, fruit and seed. Modifications of roots and stems.

Physiology of plants: photosynthesis, respiration and transpiration.

Plant Taxonomy: Classification of plant kingdom. Study of the following families with special reference to medicinally important plants: apocynaceae, solanaceae, umbelliferae, labiatae, leguminosae, and liliaceae. Introduction to plant products of economic importance like plant drugs, dyes, fibers, spices, scents, beverages, resins.

Introduction to animal products of economic importance like animal biological products, honey, pearl, lac, silk, lather, etc.

Animal kingdom: Classification and its basis. Fundamentals of parasitology, general morphology and life history of internal parasites like plasmodium, taeniasolium(tapeworm). General structure and life history of insects like mosquito.

Basic study of the following systems of frog: Gastro Intestinal (Digestive enzymes), nervous, cardiovascular: genitourinary (glands and hormones), musculo-skeletal, respiratory systems.

Simple and compound microscopes used in biology. Origin and evolution of life: an outline. Fundamental laws of inheritance: Mendel's law. Molecular basis of inheritance – DNA, RNA, replication, transcription, genetic code and translation.

COURSE OUTCOMES

After completion of course, student should be able to:

•Understand the structures and functions of basic components of prokaryotic and eukaryotic cells.

•Understand the process of cell division in both somatic and germ cells.

•Understand general terminology of plant structures, morphology, internal anatomical features and families.

•Understand the economical importance of products of animals and plants.

•Understand formation of RNA, DNA, proteins and process of inheritance.

•Understand the organ systems of frog and human parasites.

EVALUATION: Evaluation will be continuous an integral part of the class as well through external assessment.

REFERENCES:

1. Dutta A.C., "Botany for Degree students", 20th edition, Oxford university press publisher, 2006.

2. Vidyarthi R.D., Pandey P. N., "A Text Book of Zoology", 1st edition, S Chand & Co. Pvt. Ltd. Publisher, 2006.

3. John E. Hall, Guyton & Hall: "Textbook of Medical Physiology", 13th edition, WB Saunders Company,2015.

4. Bhatia K.N., "Truemans: Elementary Biology", Vol. II, 27th edition, Trueman book company-New Delhi, 2014.

5. Evans W. C., "Trease and Evans Pharmacognosy", 16th edition, Saunders Ltd, 2009.

6. NaliniChandar, Cell and Molecular Biology (Lippincott's Illustrated Reviews Series), Lippincott Williams & Wilkins publisher, 2012.