

BHARATHIAR UNIVERSITY (CBCS PATTERN)

B. Sc. BIOCHEMISTRY DEGREE COURSE

For the students admitted during the academic year 2015– 2016 batch and onwards

SCHEME OF EXAMINATION - CBCS PATTERN

Part	Study Components	Course title	Ins. hrs/ week	Examinations				Credit
				Dur.Hrs	CIA	Marks	Total Marks	
	Semester I							
I	Language – I		6	3	25	75	100	4
II	English – I		6	3	25	75	100	4
III	Core Paper I - Biomolecules		3	3	25	75	100	4
	Core Paper II - Cell Biology		3	3	25	75	100	4
	Core Biochemistry Practical – I		2	-	-	-	-	-
	Allied A : Paper I – Chemistry		6	3	20	55	75	4
	Allied Chemistry Practicals		2	3	-	-	-	-
IV	Environmental Studies #		2	3	-	50	50	2
	Semester II							
I	Language – II		6	3	25	75	100	4
II	English – II		6	3	25	75	100	4
III	Core Paper III - Biomedical Instrumentations		5	3	25	75	100	4
	Core Biochemistry Practical – I		3	3	40	60	100	4
	Allied A : Paper II - Chemistry		6	3	20	55	75	3
	Allied Practical – Chemistry		2	3	20	30	50	2
IV	Value Education – Human Rights #		2	3	-	50	50	2
	Semester III							
I	Language – III		6	3	25	75	100	4
II	English – III		6	3	25	75	100	4
III	Core Paper IV - Enzyme and Enzyme Technology		3	3	25	75	100	4
	Core Paper V – Microbiology		3	3	25	75	100	4
	Core Biochemistry Practical - II		2	-	-	-	-	-
	Allied B: Paper I – Basic Mathematics		6	3	20	55	75	3
IV	Skill based Subject I - Bioinformatics		2	3	20	55	75	3
	Tamil @ / Advanced Tamil# (OR) Non-major elective - I (Yoga for Human Excellence)# / Women’s Rights#		2	3	50		50	2
	Semester IV							
I	Language – IV		6	3	25	75	100	4
II	English – IV		6	3	25	75	100	4
III	Core Paper IV – Intermediary Metabolism		4	3	25	75	100	4

	Core Biochemistry Practical – II	3	6	30	45	75	3
	Allied B : Paper II – Computer	4	3	20	55	75	3
	Practical – Computer	2	3	20	30	50	2
IV	Skill based Subject 2 - Basics of Information Technology	3	3	20	55	75	3
	Tamil @ /Advanced Tamil # (OR) Non-major elective -II (General Awareness #)	2	3	50		50	2
	Semester V						
III	Core Paper VII – Human Physiology	4	3	25	75	100	4
	Core Paper VIII – Clinical Biochemistry	4	3	25	75	100	4
	Core Paper IX – Molecular Biology	4	3	25	75	100	4
	Core Paper X – Genetic Engineering and Bioprocess Technology	3	3	25	75	100	4
	Biochemistry Practical – III	4	-	-	-	-	-
	Biochemistry Practical - IV	4	-	-	-	-	-
	Elective – I	4	3	20	55	75	3
IV	Skill based Subject 3 – Basics of Patent and Bioethics	3	3	20	55	75	3
	Semester VI						
III	Core Paper XI – Plant Biochemistry and Plant Therapeutics	4	3	25	75	100	4
	Core Paper XII – Medicinal Chemistry	4	3	25	75	100	4
	Biochemistry Practical – III	4	6	30	45	75	3
	Biochemistry Practical – IV	4	6	30	45	75	3
	Elective – II	4	3	20	55	75	3
	Elective – III	4	3	20	55	75	3
IV	Skill Based Subject 4 - Practical – Bioinformatics	6	6	30	45	75	3
V	Extension Activities @	-	-	50	-	50	2
	Total					3500	140

@ No University Examinations. Only Continuous Internal Assessment (CIA)

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List of Elective papers (Colleges can choose any one of the papers as electives)		
Elective - I	A	Immunology and Immunotechniques
	B	Introduction to Biomaterials
	C	Nutritional Biochemistry
Elective - II	A	Plant and Animal Biotechnology
	B	Nanomaterials and Nanomedicine
	C	Health and Hygiene
Elective - III	A	Diagnostic Biochemistry
	B	Sports Biochemistry
	C	Nanobiotechnology

Note :

The syllabus for the above papers (except Core paper Cell Biology, Semester V - Skill based subject 3) be same as prescribed for the academic year 2010-11. The syllabus for the Core paper Cell Biology and Semester V - Skill based subject 3 –basics of Patent and Bioethics) are furnished below.

SEMESTER – I CORE PAPER II

SUBJECT TITLE: CELL BIOLOGY

SUBJECT DESCRIPTION:

This course presents to identify the range of the cellular activities that are very much specific to the multicellular activities and also the basic ways that cells associate to form the tissue.

GOALS:

To enable the students to get themselves aware on how different tissue types are combined to form organs and how the organs function which follows from the structure and function of the constituent tissue.

OBJECTIVES:

On successful completion of the course the students should have:

- Understood the relationship between cellular organization and biological function of normal cell, pro and eukaryotic cells.
- Learnt on the various cell organelles with their functions and actions.
- Learnt the application of cell biology in research.

CONTENTS:

UNIT – I

An Overview of cells – Origin and evolution of cells. Cell theory, Classification of cells – Prokaryotic cells and Eukaryotic cells. Comparison of prokaryotic and eukaryotic cells.

UNIT – II

Cell Membrane – Fluid mosaic model of membrane structure. Membrane proteins and their properties. Membrane carbohydrates and their role. Transport across membranes – Diffusion - active and passive diffusion.

UNIT – III

Endoplasmic reticulum – Types, structure and function. Golgi apparatus – Structure and function. Lysosome – Structure and functions. Morphology and functions of peroxisomes and glyoxisomes. Ribosomes – Types structure and function.

UNIT – IV

Nucleus: Structure and function. Chromosomes, chromatin structure. Mitochondria – Structure and functions. Cytoskeleton: Types of filaments and their functions. Microtubules – Chemistry and functions – Cilia and flagella.

UNIT – V

Oncogenesis: Development and causes of cancer, Types of cancer, Properties, early detection, Treatment. Cell Cycle: Phases, Meiotic and Mitotic division.

REFERENCES:

1. Cell Biology. Organelle structure and function, David E Sadava, Jones Bartlett Publishers.
2. Cooper M 1995. The cell molecular approach, ASM Press.
3. Principle of cell and molecular biology 2nd edition – Lewis J Kleinsmith, Valerie M Kish.
4. DeRobertis, EDP, E.M.F Robertis, 7th edition 1980. Cell and molecular biology, Saunders Company.
5. Harvey Lodish, Baltimore. Arnold Berk et al 1995. 3rd edition. Molecular cell biology.

SEMESTER V Skill Based Subject - 3

BASICS OF PATENT AND BIOETHICS

UNIT – I:

Patent – Definition, types of patent, issues related to patent, granting process of patent, rights provided by patent, patent protection.

UNIT –II:

Introduction to Intellectual Property Rights (IPR) – overview of IPR – meaning and types.

Copy right – introduction, area covered by copy right, types of rights, need of protection of copy right.

Trademarks – introduction, kinds, types and function.

UNIT –III:

Definition of Ethics and Bioethics, ethics in bioscience (positive and negative effects with classical examples – slow ripening fruits and controlled ripening).

Awareness education on genetically engineered organisms.

UNIT –IV:

Containment levels – definition and types, their impact on environment – recommended biosafety levels for infectious agents, animal facilities.

Need for a good laboratory practice –aspiration and responsibility.

UNIT –V:

Ethics in clinical trials and good clinical practices (GCP) – definition of clinical trials and GCP, general information about clinical trials, need to conduct clinical trials , phases of clinical trials, institutional setups for conducting clinical trials and ethics associated with it.

REFERENCES

1. Copy right, Patent Trademark and related state, Doctrines cases and materials on the law of intellectual property, 7th edition, Anthony W. Rodger, Foundation press.
2. Intellectual Property Rights – Padmanabhan . A First edition 2012 Publisher Lexis, Nexius – NewDelhi – 1.
3. Bioethics and Biosafety by R Rallapalli and Geetha Bali, APH Publication, 2007.
4. Biological safety principles and practices by Fleming, D.A., Hunt, D.L., 2000. ASM Press.