BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI – 620 024.

M.Sc. Biochemistry Course Structure under CBCS

(For the candidates admitted from the academic year 2016-2017 onwards)

Semester	Course	Course Title	Ins. Hrs / Week	Credit	Exam Hrs	Marks		Total
						Int.	Extn.	
I	Core Course – I (CC)	Chemistry of Biomolecules	6	4	3	25	75	100
	Core Course – II (CC)	Analytical Techniques	6	4	3	25	75	100
	Core Course – III (CC)	Enzymes and Enzyme Technology	5	4	3	25	75	100
	Core Course – IV (CC)	Cell Biology and Physiology	5	4	3	25	75	100
	Core Practical- I (CP)	Practical – I (Biochemical Techniques and Enzymology)	8	4	3	40	60	100
	Total		**30**	**20**				**500**
II	Core Course – V (CC)	Metabolism and Regulation	6	5	3	25	75	100
	Core Course – VI (CC)	Molecular Biology	6	5	3	25	75	100
	Core Practical - II (CP)	Practical – II (Molecular and Microbial Techniques)	8	4	3	40	60	100
	Elective – I (EC)	Biostatistics	5	5	3	25	75	100
	Elective – II (EC)	Microbiology	5	5	3	25	75	100
	Total		**30**	**24**				**500**
III	Core Course – VII (CC)	Immunology	6	5	3	25	75	100
	Core Course – VIII (CC)	Clinical Biochemistry	6	5	3	25	75	100
	Core Practical - III (CP)	Practical – III (Clinical Biochemistry)	8	4	3	40	60	100
	Elective – III	Genetic Engineering	5	5	3	25	75	100
	Elective – IV	Developmental Biology	5	5	3	25	75	100
	Total		**30**	**24**				**500**
IV	Core Course –IX (CC)	Endocrinology	5	5	3	25	75	100
	Core Course – X (CC)	Bioinformatics	5	5	3	25	75	100
	Core Practical- IV (CP)	Practical – IV (Phytochemistry, Soil Analysis and Immunological Techniques)	8	4	3	40	60	100
	Elective – V	Ecology and Environmental Sciences	5	4	3	25	75	100
	Project Work	Dissertation=80 Marks [2 reviews –20+20=40 marks Report Valuation = 40 marks] Viva = 20 Marks	7	4	-	-	-	100
	Total		**30**	**22**				**500**
Grand Total			**120**	**90**				**2000**

Core Paper	-	10
Core Practical	-	4
Elective	-	5

Note:

1. Theory	Internal	25 marks	External	75 marks
2. Practical	"	40 marks	"	60 marks

3. Separate passing minimum is prescribed for Internal and External

a) The passing minimum for CIA shall be 40% out of 25 marks (i.e. 10 marks)
b) The passing minimum for University Examinations shall be 40% out of 75 marks (i.e. 30 marks)
c) The passing minimum not less than 50% in the aggregate.

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ELECTIVE IV

DEVELOPMENTAL BIOLOGY

Objectives:

1. To study the cellular basis of development.
2. To elucidate the early development process of humans.

Unit I

Basic concepts: General concept of organisms development: Potency, commitment, specification, induction, competence, determination & differentiation; morphogenetic gradients; cell fate & cell lineages; genomic equivalence and cytoplasmic determinants; imprinting. General principles of cell-cell communication in development: cell adhesion and roles of different adhesion molecules, gap junctions, extracellular matrix, integrins, paracrine factors.

Unit II

Fertilization, development and sex determination in humans: Gametogenesis - Sperm & Egg formation; ultra structure of sperm and ovum, egg types, egg membrane. Fertilization, cleavage, Morula, Implantation, blastulation, gastrulation, formation of germ layers, axis formation - anterior and posterior. Sex determination - chromosomes and environment.

Unit III

Morphogenesis and organogenesis in animals: Cell aggregation and differentiation in Dictyostelium; axes and pattern formation in Drosophila, amphibia and chick; organogenesis – vulva formation in Caenorhabditis elegans; eye lens induction, limb development and regeneration in vertebrates; differentiation of neurons, post embryonic development-larval formation, metamorphosis; environmental regulation of normal development; sex determination.

Unit IV

Morphogenesis and organogenesis in plants: Organization of shoot and root apical meristem; shoot and root development; leaf development and phyllotaxy; transition to flowering, floral meristems and floral development in Arabidopsis and Antirrhinum.

Unit V

Implications of developmental biology: Medical implications of developmental biology - genetic disorders in human development, environmental assaults on human development, Future therapies, Environmental regulation of animal development - Environment as a part of normal development,Polyphenisms, plasticity and Learning.

Reference Books

1. Developmental Biology, (Ed: 9) - Gilbert S.F. Sinauer Associates Inc. Massachusetts, USA, 2010.
2. Developmental Biology, TMH Edition, Berrill N.J, 1974.
3. Animal Regeneration- Diwan A.P., Dhakad N.K., Anmol Publications Ltd, India, 1996.
4. Developmental Biology- Browder L.W., Erickson C.A., and Jeffery W.R, Saunder College Publishing House, Philadelphia, USA, 1991.
5. Genetics, 3rd edition- Strickberger, Prentice Hall of India, 2002.
6. Genes VII- Benjamin Lewin, Oxford University Press, 2000.
7. Genetics- Sarin C, Tata McGraw–Hill Publishing Co., Ltd., New Delhi, 1990.
8. Genetics- Gupta PK, Rastogi Publications, Meerut, India, 1996.
9. Molecular Biology of the Cell, (Ed: 3) - Alberts B, Garland Science, USA, 2002.
10. Evolutionary Developmental Biology (2nd edition) - Brian K. Hall, Kluwer Academic Publishers, 1999.

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