Semester	Subject	Categor	Lecture		Theory		Practical		Credi
	code	У	Tota	Hrs/	Tota	Hrs	Tot	Hrs/	t
			l hrs	wee	1 hrs	1	al	wee	
				k		wee	hrs	k	
						k			
V		Elective	45	3	45	3	-	-	3

ELECTIVE II - PRINCIPLES OF BIOLOGY

COURSE OBJECTIVES

To enable the students to understand the basics of biology and its principle

COURSE OUTCOMES

On the successful completion of the course, students will be able to understand the basics of various branches of biology related to human development and acquire sound knowledge on evolution and environmental biology.

CO	CO Statement	Knowledge Level	
Number		(K1-K4)	
CO1	To remember the process involved in cell	K1	
	signaling and its structural organization		
CO2	To understand about the steps involved in	K2	
	the developmental biology		
CO3	To understand the basic concepts of	K2	
	physiology and its regulation		
CO4	To understand about the origin of life in	K2	
	earth and theories behind evolution.		
CO5	To understand about population ecology,	K2	
	food chain and environmental biology		

MAPPING WITH PROGRAMME OUTCOMES:

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	М	М	М	M	М	М
CO2	М	М	М	S	М	М
CO3	М	М	М	М	М	М
CO4	М	М	М	М	М	М
CO5	М	М	М	S	S	S
S- Strong;		M.	· Medium;]	L- Low

Unit I: Cellular Organization & Cell signaling

Cell membrane – Chemical composition & its functions, Cell signaling – Hormones and their receptors – Intracellular Receptor & Cell surface receptor, Cell Communication – General Principles – Cell adhesion and roles of different adhesion molecules (integrins – Selectins) – gap junctions – extracellular Matrix.

Unit II: Developmental Biology

Gametogenesis, fertilization and Early development: Production of gametes, Cell Surface molecules in sperm-egg recognition in animals; embryo sac development and double fertilization in plants; Zygote formation, cleavage, blastula formation, gastrulation and formation of germ layers in animals; embryogenesis.

Unit III: Physiology

Physiology: Response to stress; Active transport across the membranes; Plant and animal hormones; Nutrition; Reproduction in Plants, Microbes and animals.

9 hrs

9 hrs

9 hrs

Evolutionary Biology: Origin of life (including aspects of prebiotic environment and molecular evolution); Lamarck; Darwin - Concepts of variation, adaptation, struggle, fitness and natural selection.

Unit V: Environmental Biology

9 hrs

Environmental Biology: Concept and dynamics of ecosystem, Components, food chain, energy flow and productivity; Types of ecosystems, Population ecology and biological control.

DISTRIBUTION OF MARKS: Theory - 100% and Problems - Nil

TEACHING METHODOLOGY:

- * Lectures
- Power point presentation
- * Charts
- * Models
- ***** Group discussion
- Group assignments

TEXT BOOKS:

S.N	Authors	Title	Publishers	Year of		
ο				Publicatio		
				n		
1.	Maloy SR, Cronan JR	Microbial	Narosa	2008		
	, JE. Friedfelder	Genetics	Publications			
2	Lodish H,Baltimore	Molecular Cell	New York	2000		
	O,Berk A,Zipursky S	Biology	W.H.Freeman			
	L,Matsudaira P,					
	Darnell L					
REFERENCE BOOKS:						

S.N	Authors	Title	Publishers	Year of

ο				Publicatio
				n
1.	Vijaya Ramesh	Environmental	MJP Publishers	2019
	K	Microbiology		
2.	Benjamin Lewin	Genes VIII	Pearson Prentice	2004
			Hall, USA	
3.	Mitcheli Reed	Environmental	John Wiley &	1992
		Microbiology	Sons, New York.	
4.	Lewin	Genes VII	Oxford University	2000
			Press	
5.	Brown. T.A	Essentials of	Freeman	2003
		Molecular Biology	Publishing House	

WEB REFERENCES

http://www.molgen.mpg.de/

http://www.cellbio.com/

http://restools.sdsc.edu/

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- 2. Dr. S.Ramya Assistant Professor