

- [www.slideshare.net/harikafle944/introduction-to-public-health-63662456](http://www.slideshare.net/harikafle944/introduction-to-public-health-63662456)
- [www.slideshare.net/nirmalkandel/epidemiology-and-health-systems-43067548](http://www.slideshare.net/nirmalkandel/epidemiology-and-health-systems-43067548)
- [www.gmpsop.com/articles/typical-documentation-and-records-produced-in-a-quality-control-laboratory.html](http://www.gmpsop.com/articles/typical-documentation-and-records-produced-in-a-quality-control-laboratory.html)

### SYLLABUS DESIGNER

- Dr. V. Prabha, Head & Assistant Professor of Bio-Chemistry
- Mrs. G. Nithya, Assistant Professor of Bio-Chemistry

### MOLECULAR GENETICS

Sem	Subject Code	Category	Lecture		Theory		Practical		Credit
			Per week	Per sem.	Per week	Per sem.	Per week	Per sem.	
IV	21CPBC4A	Core	6	90	6	90	-	-	6

### COURSE OBJECTIVE:

To develop an understanding of the fundamentals of inheritance in cells and also molecular mechanism by which the genes control the growth and development and also enhance the knowledge on issues associated with recent research in genetics

### COURSE OUTCOMES:

On the successful completion of the course, students will be able to -

CO. Number	CO statement	Knowledge level (K1-K4)
<b>CO1</b>	Understand Mendel's particulate mechanism differed from the blending theory of inheritance.	<b>K2</b>
<b>CO2</b>	Provide an understanding of producing genetic diversity in bacterial populations.	<b>K4</b>
<b>CO3</b>	Understand consequences of gene linkage that allows geneticists to map the relative order of genes on a chromosome.	<b>K4</b>
<b>CO4</b>	Provide an understanding of animal embryonic development from egg into an adult.	<b>K2</b>
<b>CO5</b>	Provide an understanding of the differential diagnosis and approaches will necessary to fully understand genetic disorders.	<b>K3</b>

\*CO – course Outcomes

Knowledge Level: K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze.

**MAPPING WITH PROGRAMME OUTCOMES:**

<b>COS</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>
<b>CO1</b>	S	M	S	M	S	M
<b>CO2</b>	S	S	M	M	S	M
<b>CO3</b>	M	S	M	S	M	S
<b>CO4</b>	S	M	S	M	M	M
<b>CO5</b>	M	S	S	M	S	S

(S- Strong; M-Medium; L- Low)

**Total Hours: 90**

**UNIT I****Mendel's law of genetics**

**20 Hours**

Mendelian laws of genetics, terminology- back/ test cross, Mendel's laws are not universal- modifications- complete and incomplete dominance, codominance-lethal factor, Non-allelic gene transactions- complementary genes, supplementary genes, inhibitory genes, epistasis, biochemical aspects of duplicating genes – pleiotrophism.

**UNIT II****Recombination and Gene transfer**

**15 Hours**

Para sexual process in bacteria, significance, transformation, transduction, transfection, and conjugal gene transfer – the phenomena, mechanism and applications, kinetics of mating and transfer, recombination – models and mechanisms.

**UNIT III****Organisation of chromosomes.**

**20 Hours**

Gene linkage and chromosome mapping, crossing over, three point cross, tetrad analysis, complementation, organization of chromosomes, specialized chromosomes, chromosome abnormalities, sex-linked heredity and quantitative inheritance.

**UNIT IV****Developmental genetics**

**20 Hours**

Mammalian developmental genetics- expression of genes during embryonic development – drosophila model, cell type and antero-posterior specification during embryogenesis, overview of mammalian cell cycles- phases, regulation and checkpoints.

## **UNIT V**

### **Diagnosis of Genetic defects**

**15 Hours**

Genetic counseling – possible approaches for tackling genetic disorders, positive and negative eugenics, antenatal diagnosis, population genetics, Hardy Weinberg law, paternity testing.

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

### **TEACHING METHODOLOGY:**

- Black Board
- Power Point Presentations
- Assignments
- Models

### **TEXT BOOKS:**

<b>S. NO</b>	<b>AUTHORS</b>	<b>TITLE</b>	<b>PUBLISHERS</b>	<b>YEAR OF PUBLICATION</b>
1	Benjamin Pierce	Genetics -A conceptual approach	W H Freeman & Co	2003

### **REFERENCE BOOKS:**

<b>S.NO</b>	<b>AUTHORS</b>	<b>TITLE</b>	<b>PUBLISHERS</b>	<b>YEAR OF PUBLICATION</b>
1.	Harvey Lodish	Molecular cell biology	Freeman	2007
2.	Robert F .Weaver	Genetics	Brown (William)co, U.S	1994
3.	P.S.Verma	Genetics	S. Chand publisher	2010
4.	James D. Watson	Molecular Biology of the Gene	Pearson Education, Seventh edition	2017

5.	Benjamin Lewin	Genes VIII	Penguin books ltd	2004
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#### WEB SOURCES:

- <https://wikispaces.psu.edu/ChromosomebehaviorandGeneLinkage>
- <https://en.wikipedia.org/wiki/Geneticcounseling>

#### SYLLABUS DESIGNER:

- Dr.V. Prabha, Head & Assistant Professor of Bio-Chemistry
- Ms.T. Nalini, Assistant Professor of Bio-Chemistry

### BIOTECHNOLOGY AND BIOINFORMATICS

Sem	Subject Code	Category	Lecture		Theory		Practical		Credit
			Per week	Per sem.	Per week	Per sem.	Per week	Per sem.	
IV	21CPBC4B	Core	3	45	3	45	-	-	3

#### COURSE OBJECTIVE:

To provide a holistic view of biotechnology from basics to advanced applications, also make them aware the application of various computational tools in Bioinformatics and related subjects.

#### COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K <sub>1</sub> – K <sub>4</sub> )
CO1	Understood the relationship between genetic engineering.	K1
CO2	Students will acquire knowledge on the animal and plant biotechnology	K2
CO3	To understand about the fundamentals of bioinformatics	K2
CO4	Learnt the concepts of similarity search and sequence alignment and its software tools.	K3