

COURSE FOR B.Sc. FYUGP SEMESTER-III
DEPARTMENT OF ZOOLOGY, MANGALDAI COLLEGE
SESSION : 2024-25

MAJOR 1

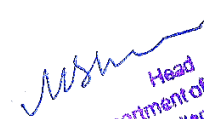
PRINCIPLES OF GENETICS

CREDIT: 3

CODE: ZOO-2011

**Total
Hrs: 45**

TOPIC NO.	THEORY	Alloted Teacher	Hours
Unit 1	Principles of inheritance, Incomplete dominance and co-dominance; Multiple alleles; Lethal alleles, penetrance and expressivity; Epistasis; Pleiotropy	TB	15
	Sex- linked, sex-influenced and sex-limited characters inheritance Concept of gene	SJ	
	Linkage and crossing over, Cytological basis of crossing over, Recombination frequency as a measure of linkage intensity; Two factor and three factor crosses; Linkage map, Coefficient of coincidence and Interference; Gene mapping by Somatic cell hybridization.	QS	
Unit 2	Gene mutations; Chromosomal aberrations – Deletion, duplication, inversion, translocation, aneuploidy & polyploidy; Induced versus spontaneous mutations; Backward and forward mutations; Suppressor mutations; Molecular basis of mutations in relation to UV light and chemical mutagens; Detection of mutations in <i>Drosophila</i> : CLB methods, attached X method.	TB	20
Unit 3:	Basis of sex determination: Genetic and environmental; Sex determination in <i>Drosophila</i> and human; Mechanism of dosage compensation. Comparison of nuclear and extra nuclear inheritance	SJ	10
	Organelle inheritance: Antibiotic resistance in <i>Chlamydomonas</i> , Mitochondrial mutations in <i>Saccharomyces</i> and human disorders, Infective heredity in <i>Paramecium</i> . Maternal effects: Shell coiling in <i>Limnaea</i> , pigmentations in <i>Ephesia</i>	KD	
	Polygenic inheritance and Transgressive variation	QS	


Head
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Mangaldai College, Mangaldai
Darrang, Assam

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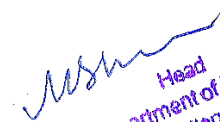
PRINCIPLES OF GENETICS

CREDIT: 1

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**Total
Hrs: 30**

TOPIC NO.	PRACTICAL	Alloted Teacher
1	To study Mendelian laws and gene interactions and their verification by Chi-square analyses using seeds/beads/ <i>Drosophila</i> .	TB
2	Study of linkage maps based on data from <i>Drosophila</i> crosses.	TB
3	Identification of various mutant types of <i>Drosophila</i> (through culture/photomicrograph).	KD
4	Study of human karyotype (normal and abnormal) using photomicrograph.	KD
5	Preparation of polytene chromosomes from <i>Chironomus/Drosophila</i> larvae.	QS
6	Preparation of metaphase chromosome from fish / mammal.	QS


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