

ST. ALOYSIUS COLLEGE(AUTONOMOUS), JABALPUR

Reaccredited 'A+ 'Grade by NAAC(CGPA:3.68/4.00)
College with Potential for Excellence by UGC
DST-FIST Supported & STAR College Scheme by DBT

Faculty of Science

Bachelor of Science (B.Sc.)

SUBJECT: ZOOLOGY

B.Sc. VI Semester Paper-DSE

aper-DSI

Genetics

Course Outcomes

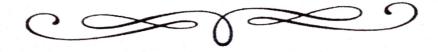
CO. No.	Course Outcomes	Cognitive Level
CO 1	Gain knowledge of basic principles of inheritance and variations, DNA, RNA and their function.	U
CO 2	Deeper understanding of linkage, Sex determination, Chromosomes,	U
CO 3	Mutations and mutagens. Gain knowledge of human karyotype, Genome project, Inheritance of blood	U
CO 4	group and genetic diseases in human Demonstrate gene therapy, PCR, DNA fingerprinting techniques and their	Apply
CO 5	application Find Job Opportunities in Hospitals, Pharmaceutical Companies and other health services, Forensic Science Research Associates, Genetic Counselor, Clinical Research Associate, Animal Breeder, Genetic Laboratory Technicia	С

Credit and Marking Scheme

	0200			
		Marks		Total Marks
	Credits	Internal	External	Total Walks
	2	40	60	100
Theory	3	40	60	100
Practical	l	40		
Total	4		200	

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Evaluation Scheme

Evaluation Scheme					
		Marks External			
	Internal	1 External Exams			
Theory	3 Internal Exams of each 20	(At the End of Semester)			
	Marks	(At the Bits			
	(During the Semester)				
	(Best 2 will be taken)	1 External Exams			
Practical	3 Internal Exams	(At the End of Semester)			
	(During the Semester)	(At the End of Semes)			
	(Best 2 will be taken)				

Content of the Course

Theory

No. of Lectures (in hours per week): 2 Hrs. per week

Maximum Marks: 60 Total No. of Lectures: 60 Hrs.

Units	Topics	No. of Lectures			
I	Overview of Genetics- Introduction and Historical background of genetics, Definition, Scope and Importance of Genetics, Chromosomes: Transmitters of Heredity, Structure and Organization of Chromosomes, Types of Chromosomes, Chemical composition of chromosomes, Nucleocytoplasmic Interaction Mendel's laws of Heredity, Variations: Types and genetic basis of Variations on				
II	Gene and Genetic MaterialChemistry of Gene - Nucleic acids and their structure, Concept of DNA replication, Nucleosome (Solenoid Model), Types of genes: Split genes, Overlapping genes and Pseudogenes, Genetic code	10			
III	Genelinkage and recombination-Sex-determination, Sex-linked Inheritance, Structural changes in chromosomes: Deficiency, Duplication, Translocation and Inversion, Numerical changes in chromosomes: Aneuploidy, Polyploidy, Mutation: Types of mutations and mutagens	10			
IV	Human Genetics& Genetic Engineering-Human chromosomes: Human Karyotype and Human Genome Project, Common genetic disorders, Multiple factors and blood groups, Twins: Fraternal, Maternal and Siamese twins, Transgenic and knockout animals and their applications, Gene Therapy:-Germline, and Somatic cell gene therapy. Recombinant DNA technology, Gene cloning, Gene library, PCR and Hybridization techniques, DNA finger	15			
	printing	>/			



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References

Text Books:

- Reference Books:
- "Computer system Architecture and Organization" by Patterson, McGraw Hill
- "Computer system Architecture & Organization" S.P.S. Saini, S. K. Katheria, Published by Katharia and Sons

Web Links:

List of Practical

PART-I (Computer Fundamentals)

1. Various parts of a computer.

- 2. Identify various parts inside the CPU like motherboard, SMPS, Ports, Buses, IC chip, Processor, HDD, RAM.
- 3. Identify various I/O devices

PART-II (Digital Electronics)

- 1. To study basic gates (AND, OR, NOT) and verify their truth tables.
- 2. To study and verify NAND as Universal gate using IC 7400.
- 3. To realize basic gate AND from Universal gate NAND.
- 4. To realize basic gate OR from Universal gate NAND.
- 5. To realize basic gate NOT from Universal gate NAND.
- 6. To study and verify NOR as Universal gate
- To realize basic gate AND from Universal gate NOR.
- 8. To realize basic gate OR from Universal gate NOR.
- 9. To realize basic gate NOT from Universal gate NOR.
- 10. Verification and Interpretation of truth table for XOR gate.
- 11. To study Half Adder using basic gates and verify its truth table.
- 12. To study Full Adder using basic gates and verify its truth table.
- To design and construct RS flip Flop using gates and verifies the truth table.
- 14. To design and construct JK Flip Flop using gates and verifies the truth table.
- 15. To verify De-Morgan's First Law Theorem.
- 16. To verify De-Morgan's Second Law Theorem.

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