साप्ताहिक विच्छेदित पाठ्यक्रम

मई 2024-मार्च 2025

कक्षा-12

विज्ञान संकाय

एकीकृत शैक्षणिक कैलेंडर 2024 के साथ समन्वित

सम्बंधित दस्तावेज एवं शैक्षणिक सामग्री के लिए QR कोड को SCAN करें।

झारखण्ड शैक्षिक अनुसंधान एवं प्रशिक्षण परिषद्, राँची
Jharkhand Council of Educational Research and Training, Ranchi

साप्ताहिक विच्छेदित पाठ्यक्रम

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झारखण्ड शैक्षिक अनुसंधान एवं प्रशिक्षण परिषद्, राँची
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BIOLOGY

✸ It is mandatory to conduct practical classes of related lessons simultaneously as per the syllabus.

Month	Week	Chapters	Subtopics	Practicals
May (17 days) & June (16 days	May 1st, 2nd, 3rd, 4th & 5th (17 days)	1. Sexual Reproduction in flowering plants	Panchanan Maheshwari Introduction 1.1 Flower- A Fascinating organ of Angiosperms 1.2 Pre-Fertilisation: Structures and Events	1. Study of the reproductive parts of different flowers. 2. Study of flowers adapted to pollination by different agencies (wind, insect). 3. Study of per cent pollen germination on a slide. 4. Study pollen tube growth on the stigma.
			1.2.1 Stamen, Microsporangium and Pollengrains	
			1.2.2 The Pistil, Megasporangium (Ovule) and Embryo Sac	
			1.2.3 Pollination	
			1.3 Double Fertilisation	
	June 1st, 2nd & 3rd (6 days)	1. Sexual Reproduction in flowering plants	1.4 Post Fertilisation: Structures and Events 1.4.1 Endosperm	5. Study fruits and seeds of any common fruit (e.g. legume) at different stages of development.
			1.4.2 Embryo	
			1.4.3 Seed 1.5 Apomixis and Polyembryony summary,Exercise & revision	
	June 4th & 5th (10 days)	2. Human Reproduction	Introduction 2.1 The Male Reproduction System	6. Study and identify stages of gamete development in t.s.testis and t.s. ovary. 7. Study mitosis in onion root tips (preparation). 8. Study meiosis in onion bud cells and grasshopper testis (permanent slides).
			2.2 The Female Reproductive System	
			2.3 Gametogenesis	
July	1st (6 day)	2. Human Reproduction	2.4 Menstrual Cycle	
	2nd (6 days)	2. Human Reproduction	2.5 Fertilisation and Implantation	9. Study of t.s. of blastula through permanent slide.
			2.6 Pregnancy and Embryonic Development	
		3. Reproductive health	2.7 Parturition and Lactation	
			summary,Exercise & revision	
July (25 days)	3rd (4 days)	3. Reproductive health	Introduction 3.1 Reproductive Health-Problems and Strategies 3.2 Population Stabilisation and Birth Control	
		3. Reproductive health	3.3 Medical Termiantion of Pregnancy (MTP)	
	4th (6 days)	3. Reproductive health	3.4 Sexually Transmitted Infections (STI)	
			3.5 Infertility	
			summary,Exercise & revision	
		4. Principles of Inheritance and Variation	James Watson and Francis Crick Introduction 4.1 Mendel's Law of Inheritance 4.2 Inheritance of one gene	10. Study Mendelian inheritance using seeds of different colours/size of any plant.
	5th (3 days)	4. Principles of Inheritance and Variation	4.2.1 Law of Dominance 4.2.2 Law of Segregation	

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Month	Week	Chapters	Subtopics	Practicals
August (24 days)	1st (3 days)	4. Principles of Inheritance and Variation	4.2.2.1 Incomplete Dominance 4.2.2.2 Co dominance	12. Exercise on controlled pollination – emasculation, tagging and bagging.
			4.3 Inheritance of two Genes 4.3.1 Law of Independent Assortment	
			4.3.2 Chromosomal Theory of Inheritance	
			4.3.3 Linkage and Recombination	
			4.4 Polygenic Inheritance 4.5 Pleiotropy 4.6 Sex Determination	
	2nd (6 days)	4. Principles of Inheritance and Variation	4.6.1 Sex determination in Humans 4.6.2 Sex Determination in Honey bee	11. Prepare pedigree charts for genetic traits such as rolling of tongue, blood groups, widows's peak, colourblindness.
			4.7 Mutation	
			4.8 Genetic Disorders 4.8.1 Pedigree Analysis	
			4.8.2 Mendelian disorders	
	3rd (5 days)	4. Principles of Inheritance and Variation	4.8.3 Chromosomal Disorders	
			Summary, Exercise and Revision	
August	4th (5 days)	5. Molecular Basis of Inheritance	Introduction 5.1 The DNA	13. Stain tissue section for nucleic acids (aceto carmine stain).
			5.1.1 Structure of Polynucleotide chain	
			5.1.2 Packaging of DNA helix	
			5.2 The Search for Genetic Material Transforming Principle Biochemical Characterisation of Transforming Principle	
	5th (5 days)	5. Molecular Basis of Inheritance	5.2.1 The Genetic Material is DNA 5.2.2 Properties of Genetic Material (DNA Versus RNA)	
			5.3 RNA world	
			5.4 Replication	
			5.4.1 The Experimental proof	
			5.4.2 The Machinery and the Enzymes	
September (20 days)	1st (0 days) 2nd (5 days)	5. Molecular Basis of Inheritance	5.5 Transcription	
			5.5.1 Transcription Unit	
			5.5.2 Transcription Unit and the Gene	
			5.5.3 Types of RNA and the process of Transcription	
			5.6 Genetic Code	
		5. Molecular Basis of Inheritance	5.6.1 Mutations and Genetic Code	
			5.6.2 t RNA - The Adapter Molecule	
			5.7 Translation	
			5.8 Regulation of Gene Expression	
			5.8.1 The Lac Operon	
		5. Molecular Basis of Inheritance	5.9 Human Genome Project	
			5.9.1 Salient Features of Human Genome	

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Month	Week	Chapters	Subtopics	Practicals
Setember	3rd (5 days)	5. Molecular Basis of Inheritance	5.10 DNA Fingerprinting	
			summary,Exercise & revision	
		6. Evolution	Introduction	
			6.1 Origin of Life	
			6.2 Evolution of Life forms- A Theory	
			6.3 What are the evidences for Evolution?	
	4th (3 days)	6. Evolution	6.4 What is Adaptive Radiation?	23. Study analogous and homologous organs in various plants and animals.
			6.5 Biological Evolution	
			6.6 Mechanism of Evolution	
			6.7 Hardy -Weinberg Principle	
	5th (6 days) & 6th (1 day)	6. Evolution	6.8 A Brief Account of Evolution	
			6.9 Origin and Evolution of Man	
October (21 days)	1st (3 days)	6. Evolution	summary,Exercise & revision	
		7. Human Health and Diseases	M.S.Swaminathan	14. To identify common disease causing organism like Ascaris, Entamoeba, Plasmodium, ring worm. Comment on the symptoms of the diseases that they cause.
			Introduction	
			7.1 Common diseases in Humans	
October	2nd (3 days)	7. Human Health and Diseases	7.2 Immunity	
			7.2.1 Innate Immunity	
			7.2.2 Acquired Immunity	
			7.2.3 Active and Passive Immunity	
			7.2.4 Vaccination and Immunisation	
			7.2.5 Allergies	
			7.2.6 Autoimmunity	
			7.2.7 Immune Systems in the body	
			7.3 AIDS	
			7.4 Cancer	
	3rd (6 days)	7. Human Health and Diseases	7.5 Drugs and Alcohol Abuse	
			7.5.1 Adolescence and Drug/ Alcohol Abuse	
			7.5.2 Addiction and Dependence	
October	4th (6 days)	7. Human Health and Diseases	7.5.3 Effects of Drug/Alcohol Abuse	
			7.5.4 Prevention and Control	
			summary,Exercise & revision	
		8. Microbes in Human Welfare	Introduction	
			8.1 Microbes in Household Products	
			8.2 Microbes in Industrial products	
	5th (3 days)	8. Microbes in Human Welfare	8.2.1 Fermented Beverages	
			8.2.2 Antibiotics	
			8.2.3 Chemicals, Enzymes and their Bioactive molecules	

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Month	Week	Chapters	Subtopics	Practicals
November (21 days)	1st (1 day) & 2nd (4 days)	8. Microbes in Human Welfare	8.3 Microbes in Sewage Treatment	
			8.4 Microbes in Production of Biogas	
			8.5 Microbes as Biocontrol Agents	
			8.6 Microbes as Biofertilisers	
	3rd (5 days)	8. Microbes in Human Welfare	summary,Exercise & revision	
		9. Biotechnology - Principles and Processes	9.1 Principles of Biotechnology	Make a model of DNA. Observe the quality and shelf life etc of fruits/ seeds available in the market.
			9.2 Tools Of Recombinant Dna Technology	
			9.2.1 Restriction Enzymes	
			9.2.2 Cloning Vectors	
			9.2.3 Competent Host (For Transformation with Recombinant DNA)	
	4th (6 days)		9.3 Processes Of Recombinant DNA Technology 9.3.1 Isolation of the Genetic Material (DNA)	
November			9.3.2 Cutting of DNA at Specific Locations	
			9.3.3 Amplification of Gene of Interest using PCR	
	5th (5 days)	9. Biotechnology - Principles and Processes	9.3.4 Insertion of Recombinant DNA into the Host Cell/ Organism	
			9.3.5 Obtaining the Foreign Gene Product	
			9.3.6 Downstream Processing	
December (19 days)	1st (0 days) & 2nd (6 days)	10. Biotechnology And Its Applications	Introduction	
			10.1 Biotechnological Applications In Agriculture	
		10. Biotechnology And Its Applications	10.2 Biotechnological Applications In Medicine	
			10.2.1 Genetically Engineered Insulin	
			10.2.2 Gene Therapy	
			10.2.3 Molecular Diagnosis	
			10.3 Transgenic Animals	
			10.4 Ethical Issues	
			summary, Exercise & revision	
	3rd (6 days)	11. Organisms And Populations	11.1 Populations	21. Study of plant population density by quadrat method. 22. Study of plant population frequency by quadrat method.
			11.1.1 Population Attributes	
			11.1.2 Population Growth	
			11.1.3 Life History Variation	
			11.1.4 Population Interactions	
			summary, Exercise & revision	

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Month	Week	Chapters	Subtopics	Practicals
December	4th (5 days), 5th (2 days) & 6th (0 days)	12.Ecosystem	12.1 Ecosystem–Structure and Function 12.2. Productivity 12.3 Decomposition 12.4 Energy Flow 12.5 Ecological Pyramids summary,Exercise & revision	15. Collect and study soil from different sites and study them for texture and moisture content. 16. Study the pH and water holding capacity of soil. Correlate with the kinds of plants found in them. 17. Study plants and animals found in dry conditions. Comment upon on their adaptations/ ecosystems. 18. Study plants and animals of aquatic conditions. Comment upon on their adaptations/ ecosystems. 19. Collect water from different water bodies around you and study them for pH, clarity and presence of any living organisms. 20. Study the amount of suspended particulate matter in air at the two widely different sites.
January (6 days)	1st (0 day) & 2nd (6 days)	13.Biodiversity & Conservation	13.1 Biodiversity 13.1.1 How Many Species are there on Earth and How Many in India? 13.1.2 Patterns of Biodiversity 13.1.3 The importance of Species Diversity to the Ecosystem 13.1.4 Loss of Biodiversity 13.2 BIODIVERSITY CONSERVATION 13.2.2 How do we conserve Biodiversity? summary,Exercise & revision ✸ **(PROJECT REPORT Students are also expected to carry out one investigatory project that would engage them for about a week in actual experimentation. They would be expected to submit a project report of the same that would include a presentation of the results obtained in their investigat)**	
January (3rd, 4th & 5th) (13 days), February (20 days) March (21 days) (till board examination)			Revision & Test	
Total Working Days - 224 Days (Tentative)				