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| **CLASS : X****SUBJECT : BIOLOGY****ANNUAL PEDAGOGICAL PLANS** |
| Chapter  | Learning objectives | Methodology | Activities | Learning outcomes |
| Life processes | Students shall be able to-* Identify the vital life processes
* Differentiate auto and heterotrophic nutrition
* Explain human nutrition
* Explain the mechanism of respiration, transportation and excretion wrt to humans and plants.
 | Lecture, stimulatory questioning, drawing diagrams and labeling, textual questions, content mapping, flow charts | * Experiential learning – hands on learning of measuring the pulse rate and blood pressure
* Lab activity –
1. To prepare a slide of leaf peel to observe open and closed stomata.
2. To study that CO2 is evolved during respiration.
* PPTs on digestive, respiratory, circulatory and excretory systems
* AV on nutrition in amoeba.
 | * Students are able to develop a basic understanding of basic life processes.
* They are able to show an interest in the working of heart, lungs and kidneys.
* They are able to appreciate the interlinking of various life processes.
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| Control and coordination  | Students shall be able to-* Explain parts of human nervous system.
* Discuss the action caused by nervous system.
* Describe all aspects of reflex action.
* Recall coordination in plants.
* Discuss various tropic movements in plants.
* Locate the major endocrine glands in human body, hormones secreted by them and their functions.
 | Lecture, stimulatory questioning, drawing diagrams and labeling, textual questions, content mapping, flow charts, group discussion, AV aids | * Experiential learning – studying the nastic movements in touch me not plant, growth of tendrils and bending of shoot towards light.
* Preparing PPT on parts and functions of human brain.
* Lab activity – to observe hydrotropism in roots.
* AV on reflex action.
* Flash card activity on reflex action.
 | * Students are able to comprehend the functions of major parts of brain.
* They are able to understand the role of reflex action in prevention from dangerous situations.
* They also realize the parallel role of hormonal coordination alongside nervous control.
* They get to know about disorders caused by inefficient working of endocrine glands.
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| How do organisms reproduce? | Students shall be able to-* Explain the need for reproduction.
* Understand the importance of DNA copying during cell division.
* Correlate variations with speciation.
* Learn the differences between asexual and sexual modes of reproduction.
* Describe the various modes of asexual reproduction.
* Explain reproduction in flowering plants and human beings.
* Understand the concept of reproductive and child health.
 | Lecture, stimulatory questioning, drawing diagrams and labeling, textual questions, content mapping, flow charts, group discussion, tables of classification, AV aids | * Lab activity – study of binary fission in Amoeba, budding in Yeast and Hydra through permanent slides and visuals.
* Experiential learning – hands on experience by growing money plant, Bryophyllum and cuttings of rose plant.
* AV on regeneration in Planaria.
* AV on means of natural and artificial propagation.
* Chart on definition, causes of declining sex ration and measures to improve the sex ratio.
 | * Students are able to to explain major differences between asexual and sexual reproduction.
* They are able to describe asexual means of reproduction.
* They are able to understand the term double fertilization in angiosperms.
* They are able to appreciate the process of human reproduction.
* They get an insight about STD, contraceptive methods, declining sex ratio, poverty and population explosion.
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| Heredity and evolution | Students shall be able to-* Understand and explain the terms inheritance, heredity, genes, alleles, phenotype, genotype etc.
* Highlight the laws of inheritance proposed by Mendel on the basis of monohybrid and dihybrid crosses conducted on pea plant.
* Learn about the concept of evolution.
* Comprehend the idea and factors leading to evolution.
* Appreciate the evidences in favor of evolution.
 | Lecture, stimulatory questioning, drawing diagrams and labeling, textual questions, content mapping, flow charts, group discussion, Punnett squares for Mendel’s crosses. | * Practice of Mendel’s crosses.
* Showing different types of relatives of wild cabbages selected artificially
* Conducting a survey in class, family and locality on common traits like free or attached ear lobes and tongue rolling.
* Activity on natural selection.
 | * The students are able to appreciate the importance of genetics.
* They are able to relate speciation with evolution and classification with evolution.
* They are also able to learn how to find an age of fossil by carbon-dating method.
* They are also able to show an interest in human evolution.
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| Our environment | Students shall be able to-* Classify the types of ecosystems.
* Define the terms food chain, food web and trophic levels.
* Discuss and draw food chains and food pyramids.
* Relate the effects of ozone depletion with environment.
 | Lecture, stimulatory questioning, textual questions, content mapping, flow charts, group discussion. | * Constructing 3D model of food pyramids
* Awareness campaign in school about segregation of wastes, no use of plastic, and three R’s of waste.
 | * The students are able to understand the phenomena of Biomagnification as an important aspect of food chain.
* They are able to realize their role in garbage disposal and segregation of wastes
* They are able to learn the importance of sustainable management and conservation of environment.
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| Management of natural resources | Students shall be able to-* Explain the necessity of resources and their conservation.
* Describe the need of forests and contribution of local people towards its conservation.
* Express the importance and problems posed by construction of dams.
* Appreciate the importance of rain water harvesting and advantages of ground water.
 | Lecture, stimulatory questioning, textual questions, content mapping, flow charts, group discussion | * Interdisciplinary activity (biology and Geography) - Chart showing use, abuse and sustainable management of resources.
 | * The students are able to value the free availability of natural resources and avoiding its wastage.
* They are able to understand their role in sustainable management of resources.
* They are able to appreciate the various measures taken to improve the quantity and quality of natural resources.
* They learn to play their bit as a global citizen.
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