**CURRICULUM PLAN 2021-22 (ODD Semesters: III, V)**

Semester-V (semester system)

B. Sc. Life Science 3rd year

Core Paper: Cell and molecular biology

Dr. Naghma Praween

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| Name of Paper & Code | Allocation of Lectures | Month wise schedule followed by the Department | Tutorial/Assignment etc. | | Suggested readings |
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| **Cell and Molecular Biology**  **Discipline Specific Elective - (DSE)**  **Practical** :  1. To study prokaryotic cells (bacteria), viruses, eukaryotic cells with the help of light and electron micrographs.  2.Study of the photomicrographs or cell organdies  3. To study the structure of plant cell through temporary mounts.  4. To study the structure of animal cells by temporary mounts-squamous epithelial cell and nerve cell.  5. Preparation of temporary mounts of striated muscle fiber  6. To prepare temporary stained preparation of mitochondria from striated muscle cells /cheek epithelial cells using vital stain Janus green.  7. Study of mitosis and meiosis (temporary mounts and permanent slides).  8. Study the effect of temperature, organic solvent on semi permeable membrane.  9. Demonstration of dialysis of starch and simple sugar.  10. Study of plasmolysis and deplasmolysis on Rhoeo leaf.  11. Measure the cell size (either length or breadth/diameter) by micrometry.  12. Study the structure of nuclear pore complex by photograph (from Gerald Karp) Study of special chromosomes (polytene&lampbrush) either by slides or photographs.  13. Study DNA packaging by micrographs.  14. Preparation of the karyotype and ideogram from given photograph of somatic metaphase chromosome |  | August  August  August    August    September  September  September  October  October |  | | Laboratory Manual of Cell Biology  Rina Majumdar  And  Rama Sisodia      Laboratory Manual of Cell Biology  Rina Majumdar  And  Rama Sisodia |
| . **Skill Enhancement Course**  **Ethnobotany (SEC)**  **B.Sc life Science 3rd YEAR**  **Unit 1: Ethnobotany**  Introduction, concept, scope and objectives; Ethnobotany as an interdisciplinary science.The relevance of ethnobotany in the present context; Major and minor ethnic groups or Tribals of India,and their life styles. Plants used by the tribals: a) Food plants, b) intoxicants and beverages and c) Resins and oils and miscellaneous uses.    **Unit 2: Methodology of Ethnobotanical studies**  a) Field work b) Herbarium c) Ancient Literature d) Archaeological findings e) temples and sacred places  . | 6Lectures  6 lectures | Mid August-Mid September 2021 | Assignment | | Methods and Approaches in Ethnobotany  S.K.Jain.  Vartika Jain    Methods and Approaches in Ethnobotany  S.K.Jain.  Vartika Jain |
| **Unit 3: Role of Ethnobotany in Modern Medicine**  Role of ethnobotany in modern Medicine (10 lectures) Medicoethnobotanical sources in India;Significance of the following plants in ethno botanical practices (along with their habitat and morphology) a) Azadiracthaindica b) Ocimum sanctum c) Vitexnegundo d) Gloriosasuperba e) Tribulusterrestris f) Pongamiapinnata g) Cassia auriculata h) Indigoferatinctoria  **Unit 4:**  Role of ethnobotany in modern medicine with special example of Rauvolfiasepentina, Trichopuszeylanicus, Artemisia,Withania.Role of ethnic groups in conservation of plant genetic resources.Endangered taxa and forest management (participatory forest management).  **Unit 5** Ethnobotany and legal aspects Ethnobotany as a tool to protect interests of ethnic groups.Sharing of wealth concept with few examples from India; Biopiracy.  **Unit 6:** Intellectual Property Rights and Traditional Knowledge    . | (10 lectures)    (8 lectures) | Mid September to Mid October 2020  Mid September to Mid October 2021  Mid October to November 2021  November 2021  August  September |  | | Jain, S.K. (1995). Manual of Ethnobotany. Jodhpur, Rajasthan: Scientific Publishers.  Methods and Approaches in Ethnobotany  S.K.Jain.  Vartika Jain |
| **PRACTICALS: Plant Anatomy and Embryology, B.Sc life Science 2nd year** | | | | | |
| **Embryology Practical:**  7. Structure of anther (young and mature).  8. Types of ovules: anatropous, orthotropous, circinotropous, amphitropous/ campylotropous.  9. Female gametophyte: Polygonum (monosporic) type of Embryo sac (Permanent slides/photographs).  10. Pollination types and seed dispersal mechanisms (including appendages, aril,caruncle) Photographs/specimens).  11. Dissection of embryo/endosperm from developing seeds.  12. Calculation of percentage of germinated pollen in a given medium | | | | **August 2021**  **August2021**  **August 2021**  **September 2021**  **September 2021**  **October 2021**  **October 2021** | |