KADI SARVA VISHWA VIDYALAYA,

GANDHINAGAR

B.Sc. Curriculum as Per NEP

Botany Courses for Semester 2

W.E.F. June 2023

KADI SARVA VISHWA VIDYALAYA

Minor Course –Semester 2

BTE209-1C-Basics of Botany-II

LEARNINGOUTCOMES:

- Knowledge regarding genetics, Mendel's laws and gene interactions.
- To understand life cycles of cryptogamic plants i.e. bryophytes and pteridophytes.
- To study the external structure of plant body i.e. (morphology of leaf).

TEACHINGANDEVALUATIONSCHEME:

Subject Code	Subject Title	Teaching Scheme		Credits	Examination Scheme			Total Marks
						Max Marks		
		Theory Per Week	Practical Per week		Hrs.	CCE	SEE	
BTE209-1C	Basics of Botany-II	2	4	4	2.5	50	50	100

Unit-1: Genetics and Morphology **TeachingHours:15**

- **Genetics**: Introduction to genetics, Mendel's work and its results
- Mendel's Experiments:
  - Law of Dominance and Law of Segregation
    - Monohybridization and its experiment,
    - Monohybrid ratio (3:1, 1:2:1)
  - Law of independent Assortment
    - Dihybridization and its experiment
    - Dihybrid ratio (9:3:3:1)
  - Back cross and Test cross
  - Gene Interactions: Incomplete Dominance and Co- dominance
- **Leaf**:
  - Phyllotaxy,
  - Stipules: Types and Modifications,
  - Venation,
  - Incision,
  - Simple and Compound leaves

Unit-2: Biology of Cryptogams (Bryophytes &Pteridophytes) **Teaching Hours:15**

- Salient features of Bryophytes
  - Life history of *Marchantia* with reference to: Systematic position (Rothmaler and Proskaur) with reasons,
  - Habit and Habitat,
  - External and Internal structure of vegetative and reproductive organs,
  - Fertilization,

- External and Internal structure of mature Sporophyte,
- Germination of Spores

➢ Salient features of Pteridophytes

- Life history of *Nephrolepis* with reference to: Systematic position (Smith) with reasons,
- Habit and Habitat,
- External structure of vegetative organs,
- External and Internal structure of fertile (reproductive) leaflet,
- Structure of mature Gametophyte along with sex organs and Fertilization.

PracticalsTeachingHours:30

1. To study Mendelian Genetics through Examples:
   - Monohybrid ratio (3:1/1:2:1),
   - Dihybrid ratio (9:3:3:1)
   - Back cross and Test cross
2. To study the Life history of Marchantia through:
   - Specimen – Vegetative Thallus and thallus with Gemma cup
   - Mountings – Thallus and Reproductive organs
   - Permanent Slides – Thallus, Gemma cup, Antheridia, Archegonia, Sporophyte
3. To study the Life history of Nephrolepis through:
   - Specimen – Sporophytic plant (with Vegetative and Fertile leaflets)
   - Mountings – Hydathode, T.S. of leaflet passing through sori, Sporangia, Spores
   - Permanent Slides – T.S. of leaflet passing through sori, Prothallus: young and mature with Antheridia, Archegonia and Sporophyte
4. To study Leaf Phyllotaxy:
   - Alternate: Distichous – Polyalthia; Tristichous – Cyperus; Pentastichous Shoe flower,
   - Opposite: Superposed – Quisqualis; Decussate – Calotropis;
   - Verticillate (Whorled) – Nerium / Alstonia,
   - Mosaic – Acalypha
5. To study Leaf Stipules:
   - Free lateral – Shoe flower; Adnate – Rosa;
   - Interpetiolar – Ixora; Intrapetiolar –Gardenia;
   - Ochreate – Polygonum; Foliaceous – Pisum;
   - Spinous – Zizyphus, Acacia; Tendillar – Smilax;
   - Convolute (scaly) – Ficus
6. To study Leaf Venation:
   - Reticulate: Pinnate (Unicostate) – Ficus; Palmate (Multicostate) convergent – Zizyphus; Palmate (Multicostate) divergent – Ricinus
   - Parallel: Pinnate (Unicostate) – Canna; Palmate (Multicostate) convergent – Maize; Palmate (Multicostate) divergent – Fan palm
7. To study Leaf Incision:
   - Pinnatifid – Chrysanthemum; Pinnatipartite – Argemone; Pinnatisect – Marigold
   - Palmatifid – Cotton; Palmatipartite – Ricinus; Palmatisect – Ipomoea palmate
8. To study simple and compound Leaf

- Simple leaf: Shoe flower
- Compound leaves:
  - Pinnate: Unipinnate – Paripinnate – Cassia; Imparipinnate – Rosa; Bipinnate – Caesalpinia; Tripinnate – Moringa; Decompound – Coriander.
  - Palmate: Unifolioate – Citrus; Bifoliate – Hardwickiabinnata; Trifoliate – Aegle;
  - Quadrifoliate – Paris quadrifolia,
  - Multifoliate (Digitate) – Bombax.

*__CCE__: Continuous and Comprehensive Evaluation: It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests.
__*SEE:__ Semester End Evaluation

Reference Books:

1. College Botany Vol-1 Authors- Das, Dutta and Ganguli
2. College Botany Vol-1I Authors- Ganguli and Kar
3. Botany for degree students Bryophyte Author- P. C. Vashishta
4. Botany for degree students Pteridophytes Author- P. C. Vashishta
5. Economic Botany Author- B. P. Pandey
6. Taxonomy of Angiosperm Author- B. P. Pandey
7. Genetics Author- P. K. Gupta

KADI SARVA VISHWA VIDYALAYA

Multidisciplinary Course –Semester 2

MDC217-1C- Fundamentals of Botany II

LEARNINGOUTCOMES:

- Knowledge regarding genetics, Mendel's laws and gene interactions.
- To understand life cycles of cryptogamic plants i.e. bryophytes and pteridophytes.
- To study the external structure of plant body i.e. (morphology of leaf).

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- **Leaf**:
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  - Stipules: Types and Modifications,
  - Venation,
  - Incision,
  - Simple and Compound leaves

Unit-2: Biology of Cryptogams (Bryophytes & Pteridophytes) **Teaching Hours:15**

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  - Life history of *Marchantia* with reference to: Systematic position (Rothmaler and Proskaur) with reasons,
  - Habit and Habitat,
  - External and Internal structure of vegetative and reproductive organs,
  - Fertilization,
  - External and Internal structure of mature Sporophyte,

- Germination of Spores

➢ Salient features of Pteridophytes
- Life history of *Nephrolepis* with reference to: Systematic position (Smith) with reasons,
- Habit and Habitat,
- External structure of vegetative organs,
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Practical **Teaching Hours:30**

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   - Simple leaf: Shoe flower

- Compound leaves:
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