KADI SARVA VISHWAVIDYALAYA, GANDHINAGAR

B.Sc. As Per NEP

Botany Courses for Semester 1

W.E.F. June 2023

KADI SARVA VISHWAVIDYALAYA

Minor Course- Semester 1

BTE204-1C - BASICS OF BOTANY

LEARNING OUTCOMES:

- Gain knowledge of type of cells, structure and function of eukaryotic cells.
- Understand Life cycles of Cryptogamic plants i.e. Algae and Fungi
- Understand internal structure of Phanerogamic plants, general characteristics and functions of various kinds of plant tissues.

TEACHING AND EVALUATION SCHEME:

Subject Code	Subject Title	Teaching Scheme		Credits	Examination Scheme			Total Marks
						Max Marks		
		Theory Per Week	Practical Per week		Hrs.	Mid Term	End Term	
BTE204-1C	Basics of Botany	2	4	4	2.5	50	50	100

Teaching Hours: 15

Unit-1 : Cell Biology and Anatomy

- The Cell theory, Types of cells on the basis of Nucleus (Akaryota, Prokaryota &Eukaryota).
- Comparison of ultra-structure of typical Prokaryotic & Eukaryotic cell as well as Plant cell and Animal cell.
- Structure & function of Plasmodesmata.
- Kinds of plant tissues:
  - Meristematic tissues: Definition, General characteristics and types with functions (Apical meristems , Intercalary meristems , Lateral meristems)
  - Simple tissues: Definition, General characteristics and types with functions (Parenchyma, Collenchyma and Sclerenchyma fibres).
  - Complex tissues: Definition, General characteristics and types with functions (Xylem, Phloem).
  - Epidermal tissues: Definition, General characteristics and types (Epidermis, Stomata, Trichomes, Motor cells, Cystolith, Sphaeroraphides, Velamen tissues, Periderm and Lenticel)

Teaching Hours: 15

Unit-2 Biology of Cryptogams (Algae & Fungi)

- General characters of Algae, Economic importance of Algae (as food, fodder andfertilizer)
- Life history of *Spirogyra* with reference to Systematic position with reasons (according to Smith), Habit, Habitat, Vegetative structure and Reproduction.
- General characters of Fungi, Economic importance of Fungi (as food and medicine).
- Life history of *Mucor* with referenceto Systematic position with reasons (according to Ainsworth), Habit, Habitat, Vegetative structure and Reproduction.

Practical's: **Teaching Hours: 30**

1. To study the various shape of eukaryotic cells through permanent / temporary slides: Amoeba, Paramecium, Human RBC, Nerve cell, Spirogyra and Onion leaf scale.
2. To study the various types of cells on the basis of Nucleus through micrographs / charts: Akaryota - Bacteriophage, Prokaryota - Cyanophycean cell & Eukaryota - Animal & Plant cell.
3. To study the Structure of Plasmodesmata through permanent / temporary slide from Date Palmseed.
4. To study the Life history of *Spirogyra* through:
   Mountings - Thallus and Reproductive structure
   Permanent Slides of - Thallus and Reproductive structure
5. To study the Life history of *Mucor* through:
   Specimen - Bread / Roti with *Mucor*
   Mountings - Mycelium and Asexual and sexual Reproductive structures
   Permanent Slides of – Mycelium, Asexual and sexual Reproductive structures
6. To study the various types of Simple (parenchyma, collenchyma and sclerenchyma) and Complex tissues (thickenings in vessels / tracheids and sieve tube) from Sunflower and *Cucurbita* stems (T.S. and L.S.) through fresh and permanent preparations.
7. To study the Epidermal tissue system through permanent / temporary slides:
   - Uniseriate epidermis(Sunflower leaf) and Multiseriate epidermis(Banyan / *Nerium* leaf).
   - Stomata structure (Dicot- *Hibiscus* & Monocot-Maize).
   - Trichomes [Unicellular-stellate (*Abutilon*); Multicellular-unbranched (*Tridax*) & branched (*Withania*); Glandular (*Datura*).
   - Motor cells in Maize leaf.
   - Cystolith in Banyan leaf.
   - Sphaeroraphides in *Nerium* leaf.
   - Velamen tissue in aerial root of Orchid.
   - Permanent slides of Periderm and Lenticel structure- *Tinospora*

KADI SARVA VISHWAVIDYALAYA

Multidisciplinary Course- Semester 1

MDC212-1C - FUNDAMENTALS OF BOTANY

LEARNING OUTCOMES:

- Gain knowledge of type of cells, structure and function of eukaryotic cells.
- Understand Life cycles of Cryptogamic plants i.e. Algae and Fungi
- Understand internal structure of Phanerogamic plants, general characteristics and functions of various kinds of plant tissues.

TEACHING AND EVALUATION SCHEME:

Subject Code	Subject Title	Teaching Scheme		Credits	Examination Scheme			Total Marks
						Max Marks		
		Theory Per Week	Practical Per week		Hrs.	Mid Term	End Term	
MDC212-1C	Basics of Botany	2	4	4	2.5	50	50	100

Teaching Hours: 15

Unit-1 : Cell Biology and Anatomy

- The Cell theory, Size, Shape and structure of Eukaryotic cells (Plant cell andAnimal cell).
- Structure & function of Plasmodesmata.
- Ultra-structure of Nucleus and chromosome, Chromosome shape depends upon the position of centromere.
- Kinds of plant tissues:
  - Meristematic tissues: Definition, General characteristics and types with functions (Apical meristems , Intercalary meristems , Lateral meristems)
  - Simple tissues: Definition, General characteristics and types with functions (Parenchyma, Collenchyma and Sclerenchyma fibres).
  - Complex tissues: Definition, General characteristics and types with functions (Xylem, Phloem).
  - Epidermal tissues: Definition, General characteristics and types (Epidermis, Stomata, Trichomes, Motor cells, Cystolith, Sphaeroraphides, Velamen tissues, Periderm and Lenticel)

Teaching Hours: 15

Unit-2 Biology of Cryptogams (Algae & Fungi)

- General characters of Algae, Economic importance of Algae (as food, fodder andfertilizer)
- Life history of *Spirogyra* with reference to Systematic position with reasons (according to Smith), Habit, Habitat, Vegetative structure and Reproduction.
- General characters of Fungi, Economic importance of Fungi (as food and medicine).
- Life history of *Mucor* with referenceto Systematic position with reasons (according to Ainsworth), Habit, Habitat, Vegetative structure and Reproduction.

Practical's: **Teaching Hours: 30**

1. To study the various shape of eukaryotic cells through permanent / temporary slides: Amoeba, Paramecium, Human RBC, Nerve cell, Spirogyra and Onion leaf scale.
2. To study the Structure of Plasmodesmata through permanent / temporary slide from Date Palmseed.
3. To study the ultra structure of Nucleus and Chromosomes through micrographs (SEM, TEM) /charts.
4. To study the Life history of *Spirogyra* through:
   Mountings - Thallus and Reproductive structure
   Permanent Slides of - Thallus and Reproductive structure
5. To study the Life history of *Mucor* through:
   Specimen - Bread / Roti with *Mucor*
   Mountings - Mycelium and Asexual and sexual Reproductive structures
   Permanent Slides of – Mycelium, Asexual and sexual Reproductive structures
6. To study the various types of Simple (parenchyma, collenchyma and sclerenchyma) and Complex tissues (thickenings in vessels / tracheids and sieve tube) from Sunflower and *Cucurbita* stems (T.S. and L.S.) through fresh and permanent preparations.
7. To study the Epidermal tissue system through permanent / temporary slides:
   - Uniseriate epidermis(Sunflower leaf) and Multiseriate epidermis (Banyan / *Nerium* leaf).
   - Stomata structure (Dicot- *Hibiscus* & Monocot-Maize).
   - Trichomes [Unicellular-stellate (*Abutilon*); Multicellular-unbranched (*Tridax*) & branched (*Withania*); Glandular (*Datura*).
   - Motor cells in Maize leaf.
   - Cystolith in Banyan leaf.
   - Sphaeroraphides in *Nerium* leaf.
   - Velamen tissue in aerial root of Orchid.
   - Permanent slides of Periderm and Lenticel structure- *Tinospora*