

**SHRI GOVIND GURU UNIVERSITY**  
**Syllabus on the bases of New Education Policy (NEP)**  
**B.Sc. Semester – I**  
**Minor Course - BOTANY**  
**BS23MN1BO1 : Algae, Fungi and Plant Anatomy**

**UNIT: 1. ALGAE**

- Introduction & General Characteristics
- Classification system of Smith G.M. (included types up to family)
- Economic importance of Algae
- General characters of Cyanophyta, Chlorophyta and Phaeophyta
- Life history of *Oscillatoria* with reference to:
  - Systematic position with reasons up to family
  - Habit and Habitat, Vegetative structure and Reproduction
- Life history of *Spirogyra* with reference to:
  - Systematic position with reasons up to family
  - Habit and Habitat, Vegetative structure and Reproduction
- Life history of *Ectocarpus* with reference to:
  - Systematic position with reasons up to family
  - Habit and Habitat, Vegetative structure and Reproduction

**UNIT:2. FUNGI**

- Introduction & General Characteristics
- Classification (G.C. Ainsworth); Thallus Organization; Cell Structure;
- Economic importance of Fungi
- Life history of *Mucor* with reference to,
  - Systematic position with reasons up to family
  - Habit and Habitat, Vegetative structure and Reproduction.
- Life history of *Puccinia* with reference to,
  - Systematic position with reasons up to family
  - Habit and Habitat, Vegetative structure and Reproduction.

### **UNIT: 3. PLANT ANATOMY**

- Meristems - Characteristics of Meristems; Classification of Meristem
- Theories of Apical organization- Shoot Apex & Root Apex
- Simple and Complex Tissue system
- Dermal Tissue System
- Epidermal outgrowths (Types of Epidermis, Epidermal Hairs & glands, Monocot and Dicot stomata)
- Nodal Anatomy

#### **Suggested Readings**

1. College Botany Vol. I & II Das, Datta, Gangulee and Kar, New Centralbook Agency.
2. Smith, G.M. 1972. *Cryptogamic Botany* Vol. 1 & 2. Tata McGraw Hill PublishingCo. Ltd. New Delhi.
3. A Textbook of Botany vol. 1 & 2 S.N. Pandey, P.S. Trivedi and S.P.Mishra., Vikas Publication House Pvt. Ltd.
4. Algae, Fungi by Vasishta., S. Chand Pub., New Delhi.
5. Mondal, A.K. Advance Plant Taxonomy, New Central Book Agency (P) Ltd.
6. Gangulee, H.C., Das, K.S. and Datta, C. College Botany Vol. I, II & III. Publisher Central Educational Enterprises(P) Ltd., Kolkata.
7. Bendre Ashok and Kumar Ashok. A Texbook of Practical Botany vol. I & II. Rastogi Publication Meerut.

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**Practical (Based on Paper-Algae, Fungi and Plant Anatomy)**

1. *Oscillatoria*: Mounting and Permanent Slide of Thallus
2. *Spirogyra*: Mounting and P.S. of Thallus and Conjugation types
3. *Ectocarpus*: Mountings - Thallus and Reproductive structure; Permanent Slides of – Thallus, Unilocular and plurilocular sporangia.
4. *Mucor*: Mounting: Reproductive structure- Sporangia; P.S.: Sporangia and Zygospore
5. *Puccinia*: – Herbarium specimens of Black Stem Rust of Wheat and infected Barberry leaves; Mounting – Uredospore and Telutospore; Permanent slides of Uredospore, Telutospore, Pycnidiospores and Aecidiospores,
6. Study of simple tissue (parenchyma, collenchyma, sclerenchyma) and complex tissue through P.S.
7. Study of complex tissue and its component from L.S. of plant material.
8. Study of Dermal tissue system through permanent Slides:
  - (a) Types of epidermis- Uniseriate: Cucurbita/ Sunflower stem T.S.;
  - Multiseriate: *Nerium/ Ficus* leaf T.S. OR Orchid root T.S.
  - (b) Epidermal outgrowths: Through P.S.
    - Stellate hairs: *Gossypium/ Abutilon* leaf
    - Branched hairs: *Tectona/ Ashwaghandha* leaf
    - Stinging hairs: *Mucuna/ Urtica* leaf
    - Peltate hairs: *Fern* rachis (Ramenta)
    - Peltate glands: *Avicinnia/ Ipomea biloba* leaf
    - Glandular hairs: *Martynia/ Jetropa* leaf
    - Stomata: Monocot, Dicot leaf
9. Study of Nodal anatomy from given plant material.
  - (a) *Clerodendron*
  - (b) *Nerium*
  - (c) *Polyalthia*