B.Sc. Semester – I

Major Course 1- BOTANY (Theory)

BS23MJ1BO1 Algae, Fungi and Plant Anatomy

UNIT: 1. ALGAE

- General characteristics of algae, occurrence, and range of thallus organization (included types in syllabus)
- Classification system of Smith G.M. (included types up to family).
- Economic importance of Algae
- General characters of Cyanophyta and Chlorophyta.
- Life history of *Nostoc* with reference to:
    - Systematic position with reasons up to family
    - Habit and Habitat, Vegetative structure and Reproduction
- Life history of *Oedogonium* with reference to:
    - Systematic position with reasons up to family
    - Habit and Habitat, Vegetative structure and Reproduction
- General characters of Phaeophyta and Rhodophyta.
- Life history of *Ectocarpus* with reference to:
    - Systematic position with reasons up to family
    - Habit and Habitat, Vegetative structure and Reproduction
- Life history of *Batrachospermum* with reference to:
    - Systematic position with reasons up to family
    - Habit and Habitat, Vegetative structure and Reproduction.

UNIT: 2. FUNGI

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

- Life history of *Albugo* 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, Epidarmal Hairs & glands, Monocot and Dicot stomata)
- Nodal Anatomy

UNIT:4. PLANT ANATOMY

- The Cambium- Types & Functions
- Normal Secondary Growth in Sunflower Root and Stem
- Anomalous Secondary Growth in- *Salvadora* stem; *Dracenea* Stem
- Abnormal secondary growth in fleshy Root- Radish & Beet

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. Bendre Ashok and Kumar Ashok. A Texbook of Practical Botany vol. I & II. Rastogi Publication Meerut.
6. Bendre Ashok and Kumar Ashok. A Textbook of Practical Botany vol. I & II. Rastogi Publication Meerut.
7. Mauseth, JD, 1988. Plant Anatomy. The Benjamin/ Cummings Publishers, USA.
8. Eames, AJ and Mac Daniels, LH. 1981. An Introduction to Plant Anatomy, Tata McGraw HillPublishing Co. Ltd., NewDelhi.

B.Sc. Semester - I

Major Course-2 - BOTANY

Practical Paper
BS23MJ1BO2 : Algae, Fungi and Plant Anatomy)

1. *Nostoc*: Mounting and Permanent Slide Permanent Slides of Colony

2. *Oedogonoium*: Mounting - Vegetative thallus and Macrandrous and Nanedrous species. Permanent slides of sexual reproduction, cap cell.

3. *Ectocarpus*: Mountings - Thallus and Reproductive structure; Permanent Slides of – Thallus, Unilocular and plurilocular sporangia.

4. *Batrachospermum:* Mounting - vegetative thallus, Cystocarp; Permanent slides of antheridia, archegonia and cystocarp.

5. *Mucor*: Mounting - Reproductive structure- Sporangia; Permanent slides of Sporangia and Zygospore

6. *Albugo*: Mounting – Reproductive structures; Permanent slides of Vegetative structure and Reproductive structures.

7. *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,

8. Study of simple tissue (parenchyma, collenchyma, sclerenchyma) and complex tissue through P.S.

9. 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

leafStinging hairs: *Mucuna*/ *Urtica* leaf

Peltate hairs: *Fern* rachis (Ramenta)

Peltate glands: *Avicinnia*/ *Ipomea biloba* leaf

Glandular hairs: *Martynia*/ *Jetropa* leaf

Stomata: Monocot, Dicot leaf

10. Study of Nodal anatomy from given plant material.

(a) *Clerodendron* (b) *Nerium* (c) *Polyalthia*

11. Study of Normal secondary growth in Sunflower Root and Stem using double staining (Fast green and Safranin only) temporary preparation technique.

12. Study of Anomalous secondary growth in *Salvadora* stem using double staining (Fast green and Safranin only) temporary preparation technique.

13. Study of Anomalous secondary growth in *Dracaena* stem using double staining (Fast green and Safranin only) temporary preparation technique.

14. Study of Abnormal secondary growth in fleshy Root- Radish using double staining (Fast green and Safranin only) temporary preparation technique.

15. Study of Abnormal secondary growth in fleshy Root- Beet using double staining (Fast green and Safranin only) temporary preparation technique.

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.

SHRI GOVIND GURU UNIVERSITY

Syllabus on the bases of New Education Policy (NEP)

Minor Course - BOTANY

B.Sc. Semester - I

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*

SHRI GOVIND GURU UNIVERSITY

Syllabus on the bases of New Education Policy (NEP)

B.Sc. Semester – I

Multi-Disciplinary Course - BOTANY

BS23MD1BO1 : Plant Resources and Utilization

UNIT: 1. Cultivated Plants and Their Utilization

Introduction and Origin of Cultivated Plants, Importance of Plant Resources; Vavilov's concept for the Origin of cultivated plants.

General account, methods of cultivation, climate and uses of the following plants:

- Cereals: Maize and Rice
- Millets: Jowar and Bajra.
- Pulses: Tur and Gram
- Oil seeds: Ground nut and Castor
- Fiber yielding: Cotton, Jute and Coir

UNIT: 2. Medicinal Plants and Their Utilization

Identification, Local and Botanical Name, Family, Useful Parts, Chemical constituents and utilization of following medicinal plants:

- Harde (*Terminalia chebula*)
- Behda (*Terminalia bellirica*)
- Amla (*Phyllanthus emblica*)
- Tulsi (*Ocimum sanctum*)
- Ardushi (*Adhatoda vasica*)
- Aadu (*Zingiber officinale*)
- Haldar (*Curcuma longa*)
- Galo (*Tinospora cordifolia*)
- Isaphgul *(Plantago ovata)*

UNIT: 3. Economic Plant and Their Utilization

Types of Beverages (Alcoholic and Non-Alcoholic) with examples, Tea and coffee (Morphology, Chemistry, Processing and Economic Importance)

A concise account of Tobacco **(**Morphology, species – *Nicotiana tabacum*), Processing, Products, Economic Importance and Health Hazards)

Brief account and economic importance of the Natural Rubber: *Hevea brasiliensis*

General account of selected regional (Gujarat) Timber & Fire wood plant species:

Timber plant species:

Tectona grandis, Dalbergia sisoo, Azadirachta indica, Madhuca indica.

Fire wood plant species:

Holoptelia integrefolia, Zyziphus jujuba, Acacia nilotica, Salvadora persica

Suggested Readings

1. Sen, S. 1992. *Economic Botany*, New Central Book Agency, Calcutta.
2. Verma, V. 1974. *A Textbook of Economic Botany*, Emcay Publication, New Delhi.
3. Kochhar, S.L. (2016). Economic Botany – A Comprehensive Study, 5th Edition. New Delhi, India: Cambridge University Press.
4. Hiil, A. 1976. *Economic Botany*, Tata Mc Graw Hill Publishing Co., Ltd., New Delhi.
5. Bendre, A., Kumar, A. *Economic Botany*, Rastogi Publication, New Delhi.
6. Wickens, G.E. (2001). Economic Botany: Principles & Practices. The Netherlands: Kluwer Academic Publishers.
7. Singh, V, Pande, P C and Jain, DK (2009). A Text Book of Economic Botany. Rastogi Publications, Uttar Pradesh.
8. Trivedi, PC (2006). Medicinal Plants: Ethnobotanical Approach. Agrobios, India.
9. Fuller, KW and Gallon, JA (1985). Plant Products and New Technology. Clarendon Press, Oxford, New York.
10. Wickens, G.E. (2001). Economic Botany: Principles & Practices. The Netherlands: Kluwer Academic Publishers.
11. Berg L, (2008). Introductory Botany: Plants, People, and The Environment, Thomson Brooks/Cole

SHRI GOVIND GURU UNIVERSITY

Syllabus on the bases of New Education Policy (NEP)

Multi-Disciplinary Course - BOTANY

B.Sc. Semester - I

Practical (Based on Paper-Plant Resources and Utilization)

1. Identification, Local and Botanical Name, Family, Useful Parts and utilization of following plants:

- Cereals: Maize and Rice
- Millets: Jowar and Bajra.
- Pulses: Tur and Gram
- Oil seeds: Ground nut and Castor
- Fiber yielding: Cotton, Jute and Coir

2. Identification, Local and Botanical Name, Family, Useful Parts, Chemical constituents and utilization of following medicinal plants:

- Harde (*Terminalia chebula*)
- Behda(*Terminalia bellirica*)
- Amla (*Phyllanthus emblica*)
- Tulsi (*Ocimum sanctum*)
- Ardushi (*Adhatoda vasica*)
- Aadu (*Zingiber officinale*)
- Haldar (*Curcuma longa*)
- Galo (*Tinospora cordifolia*)
- Isaphgul *(Plantago ovata)*

3. Identification, Local and Botanical Name, Family, Useful Parts and utilization of following plants:

- Timber plant species:

Tectona grandis, Dalbergia sisoo, Azadirachta indica, Madhuca indica.

- Fire wood plant species:

Holoptelia integrefolia, Zyziphus jujuba, Acacia nilotica, Salvadora persica

4. Identification, Local and Botanical Name, Family, Useful Parts and economic importance of Beverages (Tea and coffee).

5. Identification, Local and Botanical Name, Family, Useful Parts and economic importance of Tobacco and Natural Rubber.

6. Project.

SHRIGOVINDGURU UNIVERSITY

Syllabus on the bases of New Education Policy(NEP)

As Proposed by University Grant Commission

For

B.Sc. Semester -II

Major Course-1-(BOTANY)

BS23MJ2BO1

Paper–I:Bryophytes,Pteridophytes,CellBiologyandBiomolecules

IN FORCE FROM JUNE 2023

SHRIGOVINDGURUUNIVERSITY

Syllabus on the bases of New Education Policy(NEP)

B.Sc. Semester – II BS23MJ2BO1

Major Course-1 -BOTANY

Paper–I: Bryophytes, Pteridophytes ,CellBiology and Biomolecules

UNIT:1. BRYOPHYTES

- Introduction & General Characteristics
- Classification according to Rothmaler and Proskauer
- Systematic Position; Adaptationtol and habit, Thallus (External &Internal) organization; Reproduction (excluding development) and life cycle of the
  - *Riccia*
- Systematic Position; Adaptationtol and habit, Thallus (External &I nternal) organization; Reproduction (excluding development) and life cycle of the
  - *Funaria*
- Systematic Position; Adaptationto landhabit,Thallus(External &Internal) organization; Reproduction (excluding development) and life cycle of the
  - *Marchantia*
- Ecological aspects of Bryophytes
- Economic importance of Bryophytes

UNIT:2.PTERIDOPHYTES

- Introduction & General Characteristics
- Systematic Position; Morphology, Anatomy and Reproduction (excluding development) and life cycle of the *Nephrolepis*
- Systematic Position; Morphology, Anatomy and Reproduction (excluding development) and life cycle of the *Selaginella*
- Systematic Position; Morphology, Anatomy and Reproduction (excluding development) and life cycle of the *Equisetum*
- Ecological aspects of Pteridophytes
- Economic importance of Pteridophytes
- Heterospory and seedhabit

UNIT:3. CELLBIOLOGY

- Ultra-structure of plantcell
- Structure & functions of following cellorganelles;

  Cell wall, Endoplasmic reticulum,

  Ribosome, Chloroplast, Mitochondria,

  Nucleus, Lysosome, Dictyosome.
- Cellcycle and celldivision- Mitosis &Meiosis, itssignificance.
- Chromosome: Morphology and Structure

  Structureof Polyteneand Lampbrush chromosome.

UNIT:4.BIOMOLECULES

- Carbohydrates:
  - Definition, classification and significance.
  - Structure and functions of Monosaccharides(trioses, pentoses and hexoses).Structure and functions of Disaccharides (maltose and sucrose).
  - Structure and functions of Polysaccharides(cellulose).
- Lipids:
  - Definition, classification and significance
  - Structure and functions of Fattyacids: Saturated and unsaturated
  - Essential fattyacids
  - Simple and Conjugated Lipids: Structure and functions of Triglycerides and waxes. Conjugated lipids with examples.
- Structure of Nucleic acids-DNA(Watson & Crick)&Types of structures of RNA (mRNA, rRNA, tRNA), DNA replication.

Suggested Readings

1. Smith, G.M. 1972. *Cryptogamic Botany*Vol. 1 &2.Tata McGraw HillPublishingCo. Ltd. New Delhi.
2. CollegeBotanyVol.I &IIDas,Datta,GanguleeandKar,NewCentralbookAgency.
3. Algae,Fungi, Bryophytes, PteridophytebyVasishta.,S.ChandPub., NewDelhi.
4. Parihar,N.S.(1991).AnintroductiontoEmbryophyta:Vol.I.Bryophyta.Central Book Depot. Allahabad.
5. Vashistha,P.C.,Sinha,A.K.,Kumar,A.(2010).Pteridophyta.S.Chand.Delhi,India.
6. Bendre Ashok and Kumar Ashok. A TexbookofPracticalBotanyvol. I & II. Rastogi Publication Meerut.
7. Nelson,DL.andMichael,M.Cox,2008,LehningerPrinciplesof Biochemistry,5th Edition, WH Freeman and Company, New York, NY.
8. Campbell,M.K.(2012).Biochemistry,7thed.,Published byCengageLearning.
9. Tymoczko, J.L., Berg, J.M. and Stryer, L. (2012). Biochemistry: A short course, 2nd ed., W.H.Freeman.
10. Karp,G. (2010).CellBiology,JohnWiley&Sons,U.S.A.6thedition.

SHRIGOVINDGURU UNIVERSITY

Syllabus on the bases of New Education Policy(NEP)

As Proposed by University Grant Commission

For

B.Sc. Semester -II

BS23MJ2BO2
Major Course-2 (BOTANY)

Paper – II: Practical (Bryophytes, Pteridophytes, Cell Biology and Biomolecules)

IN FORCE FROM JUNE 2023

SHRIGOVINDGURUUNIVERSITY

Syllabus on the bases of New Education Policy(NEP)

B.Sc. Semester - II BS23MJ2BO1

Major Course-BOTANY

Paper –II(Practical)

(Based on Paper–I: Bryophytes, Pteridophytes, CellBiology and Biomolecules)

1. *Riccia*:Specimen:Thalluswithsporophyte;P.S.:ThallusV.T.S.,ThalluswithAntheridia and Archegonia
2. *Funaria*:Morphology of thallus;Mounting of Antheridia and Archegonia, Peristome; P.S: Antheridial and Archegonial branch, L.S. Capsule, Protonema
3. *Marchantia*: Specimen of Thallus, Reproductive organs**.** Permanent slides or charts of V.S.ofthallus,Reproductiveorgans.
4. *Nephrolepis*:Morphology;Mounting:Ramenta,Hydathode,Sporangia;P.S.:Prothallus with Antheridia and Archegonia; V.S. leaflet passing through sorus
5. *Selaginella*–Morphology;Mounting:wholemountofstrobilus;P.S.:L.S.Strobilus
6. *Equisetum*: Morphology; Mounting: L.S.of strobilus, Permanent Slides: T.S.of rhizome; L.S.of strobilus
7. To study cell division stages-Mitosis-in Onion root tip by squash method.
8. Study of different stages of Meiosis(Chart/Permanent Slides).
9. Study of Cellorganelles through Model/Charts–Cellwall, Endoplasmicreticulum, Ribosome, Nucleus, Lysosome, Dictyosome.
10. HistochemicallocalizationofStarch,Lignin,FatandGlucosefromplantmaterial.
11. Histo chemical localization of RNA in plant tissue.
12. Study of DNA(Watson&Crick),DNA replication through model/charts.
13. Study of RNA and Types RNA(mRNA,rRNA,tRNA)throughmodel/charts.
14. Study of Giant chromosome through Charts:Polytene and Lamp brush chromosome.
15. Project/Submission

SHRIGOVINDGURU UNIVERSITY

Syllabus on the bases of New Education Policy(NEP)

As Proposed by University Grant Commission

For

B.Sc. Semester -II

BS23MN2BO1
Minor Course(BOTANY)

Bryophytes and Pteridophytes

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SHRIGOVINDGURUUNIVERSITY

Syllabus on the bases of New Education Policy(NEP)

B.Sc. Semester – II BS23MN2BO1

Minor Course-BOTANY

[Bryophytes and Pteridophytes]

UNIT:1. BRYOPHYTES

- Introduction
- General Characteristics
- Classification according to Rothmaler and Proskauer
- Systematic Position; Adaptationtol and habit, Thallus (External & Internal) organization; Reproduction (excluding development) and life cycle of the
    - *Riccia*
- Systematic Position; Adaptationtol and habit, Thallus (External & Internal) organization; Reproduction (excluding development) and life cycle of the
    - *Funaria*
- Ecological aspects of Bryophytes
- Economic importance of Bryophytes

UNIT:2.PTERIDOPHYTES

- Introduction
- General Characteristics
- Systematic Position; Morphology, Anatomy and Reproduction (excluding development) and life cycle of
    - *Nephrolepis*
- Systematic Position; Morphology, Anatomy and Reproduction (excluding development) and life cycle of
    - *Selaginella*
- Ecological aspects of Pteridophytes
- Economic importance of Pteridophytes
- Heterospory and seedhabit

Suggested Readings

1. Smith, G.M. 1972. *Cryptogamic Botany*Vol. 1 &2.Tata McGraw Hill Publishing Co. Ltd. New Delhi.
2. College Botany Vol. I&II Das, Datta, Gangulee and Kar, New Central book Agency.
3. Algae,Fungi, Bryophytes, Pteridophyte by Vasishta., S.Chand Pub., New Delhi.
4. Parihar,N.S.(1991).AnintroductiontoEmbryophyta:Vol.I.Bryophyta.Central Book Depot. Allahabad.
5. Vashistha,P.C.,Sinha,A.K.,Kumar,A.(2010).Pteridophyta.S.Chand.Delhi, India.
6. Bendre Ashok and Kumar Ashok. A Texbook of Practical Botany vol. I & II. Rastogi Publication Meerut.

SHRIGOVINDGURUUNIVERSITY

Syllabuson thebasesofNewEducationPolicy(NEP)

B.Sc. Semester - II

MinorCourse-BOTANY

Practical

[BasedonPaper:BryophytesandPteridophytes]

1. *Riccia*:

   Specimen:Thalluswithsporophyte

   P.S.:ThallusV.T.S.,ThalluswithAntheridiaand Archegonia

2. *Funaria*:

   Specimen:Morphologyofthallus,ThalluswithSporophytes Mounting:

   Antheridia, Archegonia, Peristome.

   P.S:AntheridialandArchegonialbranch,L.S.Capsule,Protonema

3. *Nephrolepis:*

   Specimen:SporophyticPlant

   Mounting:Ramenta,Hydathode,Sporangia

   P.S.:ProthalluswithAntheridiaandArchegonia;V.S.leafletpassingthroughsorus

4. *Selaginella*:

   Specimen: Morphology of Thallus

   Mounting:wholemountofstrobilus; P.S.:

   L.S. Strobilus

5. Project/Submission

SHRI GOVIND GURU UNIVERSITY

Syllabus on the bases of New Education Policy (NEP)

As Proposed by University Grant Commission

For

B.Sc. Semester - II

BS23MD2BO1
MDC Course (BOTANY)

Diversity of Cryptogams

INFORCE FROM JUNE 2023

SHRI GOVIND GURU UNIVERSITY

Syllabus on the bases of New Education Policy (NEP)

B.Sc. Semester – II

BS23MD2BO1

MDC BOTANY

[Diversity of Cryptogams]

UNIT: 1. ALGAE and FUNGI

Algae:

- Introduction, General characteristics
- Economic importance of Algae
- Life history of *Nostoc* 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

Fungi:

- Introduction, General Characteristics
- Economic importance of Fungi
- Life history of *Puccinia* with reference to,
    - Systematic position with reasons up to family
    - Habit and Habitat, Vegetative structure and Reproduction.

UNIT: 2. BRYOPHYTES and PTERIDOPHYTES

Bryophytes:

- Introduction, General Characteristics
- Systematic Position; Adaptation to land habit, Thallus (External & Internal) organization; Reproduction (excluding development) and life cycle of the
    - *Funaria*
- Ecological aspects of Bryophytes
- Economic importance of Bryophytes

Pteridophytes:

- Introduction, General Characteristics
- Systematic Position; Morphology, Anatomy and Reproduction (excluding development) and life cycle of
    - *Nephrolepis*
- Ecological aspects of Pteridophytes
- Economic importance of Pteridophytes

Suggested Readings

1. Smith, G.M. 1972. *Cryptogamic Botany* Vol. 1 & 2. Tata McGraw Hill PublishingCo. Ltd. New Delhi.
2. College Botany Vol. I & II Das, Datta, Gangulee and Kar, New Centralbook Agency.
3. Algae, Fungi, Bryophytes, Pteridophyte by Vasishta., S. Chand Pub., New Delhi.
4. Parihar, N.S. (1991). An introduction to Embryophyta: Vol. I. Bryophyta. Central Book Depot. Allahabad.
5. Vashistha, P.C., Sinha, A.K., Kumar, A. (2010). Pteridophyta. S. Chand. Delhi, India.
6. Bendre Ashok and Kumar Ashok. A Texbook of Practical Botany vol. I & II. Rastogi Publication Meerut.

SHRI GOVIND GURU UNIVERSITY

Syllabus on the bases of New Education Policy (NEP)

B.Sc. Semester - II

MDC Course - BOTANY

Practical

[Based on Paper: Diversity of Cryptogams]

1. Study of Microscope (Simple and Compound)
2. *Nostoc*:

    Specimen: Thallus

    Mounting: Colony

    P.S: Colony
3. *Spirogyra*:

    Specimen: Thallus

    Mounting: Thallus and Conjugation types

    P.S: Thallus and Conjugation types

4. Puccinia:

    Herbarium specimens of Black Stem Rust of Wheat and infected Barberry leaves;

    Mounting – Uredospore and Telutospore

    P.S: Uredospore, Telutospore, Pycnidiospores and Aecidiospores,

5. *Funaria*:

    Specimen: Morphology of thallus; Thallus with Sporophytes

    Mounting: Antheridia, Archegonia, Peristome.

    P.S: Antheridial and Archegonial branch, L.S. Capsule, Protonema
6. *Nephrolepis*:

    Specimen: Sporophytic Plant

    Mounting: Ramenta, Hydathode, Sporangia

    P.S.: Prothallus with Antheridia and Archegonia; T.S. leaflet passing through sorus
7. Project / Submission