



TRIPURA UNIVERSITY

**(A Central University)
Suryamaninagar-799022**

Syllabus

For

Semester - II

Botany (Major/General)

Year 2014

Semester-II
Syllabus for B.Sc. Botany (General)
2014
(Theoretical)

Paper- BT 201 Full marks-50

Total Lectures - 33 periods
(Each period = 1 hour)

Unit-I: Algae and Bryophyte

(16 Periods)

1. General account: 1.1 Thallus organization, 1.2, Economic importance of algae.
2. Diatom: 2.1 Cell structure, 2.2 Auxospore formation in Centrales and Pennales.
3. Life history: *Oedogonium*, *Chara*, *Ectocarpus* and *Polysiphonia*.
4. General account : 4.1 Origin of Bryophytes, 4.2 Amphibian nature,
5. Life history: Gametophyte structure & reproduction, Development of sporophyte, Spore dispersal of 5.1 *Marchantia*, 5.2 *Anthoceros*, 5.3 *Funaria*.
6. Evolution of sporophyte - Progressive theory.

Unit-II: Pteridophyta, Gymnosperm & Paleobotany(17 Periods)

1. Life history: Sporophyte structure, reproduction and structure of gametophyte of 1.1 *Lycopodium*, 1.2 *Selaginella*, 1.3 *Equisetum*, 1.4 *Pteris*.
2. Telome concept & its significance.
3. Progymnosperm - A brief concept.
4. Life histories Distribution in India, vegetative and reproductive structure, Development of gametophyte and embryogeny of 4.1 *Cycas*, 4.2 *Pinus*, 4.3 *Gnetum*.
5. Plant fossil- 5.1 Types of fossils, 5.2 Different modes of preservation Schopf(1975),
6. Importance of fossil study.
7. Geological time scale with dominant plant groups through ages.

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Semester-II
Syllabus for B.Sc. Botany (General)
2014
(Practical)

Paper- BT 202 Full marks-50

1. Work out on algae.....10 Marks
2. Work out on Pteridophytes10 Marks.
3. Identifications with reasons. (2X7).....14 Marks.
(Algae-1, Bryophyta-2, Pteridophyta-1, Gymnosperm-2, Paleobotany-1)
4. Laboratory Note book8 Marks.
5. Viva-voce.....8 Marks.

PRACTICAL: BT- 202P

I. To learn use of Simple and Compound Microscopes.

II. ALGAE & BRYOPHYTES

1. Work out of the following algae with reproductive structure (Free hand drawing):
Oedogonium, Chara, Ectocarpus.
2. Study of Permanent slides: *Volvox, Polysiphonia.*
3. Morphological study of the plant body (Bryophytes): Genera as mentioned in theoretical syllabus.
4. Study from permanent slides: *Marchantia*(L.S. through gemma cup, antheridiophore, archegoniophore, sporophyte), *Anthoceros*(L.S. of sporophyte), *Funaria*(L.S. of capsule).

III. PTERIDOPHYTES, GYMNOSPERMS & PALAEOBOTANY

1. Morphological study of the sporophytic plant body (Pteridophytes): Genera as mentioned in the theoretical syllabus.
2. Workout of the reproductive structures: *Lycopodium, Selaginella, Pteris.*
3. Study from permanent slides: *Psilotum*(T.S. of synangium), *Equisetum* (T.S. of stem-internode, L.S. of strobilus).
4. Morphological study: *Cycas* (microsporophyll and megasporophyll), *Pinus*(female and male cone), *Gnetum*(female and male cone)
5. Study from permanent slides: *Cycas* (L.S. of ovule), *Pinus*(L.S. of male and female cone), *Gnetum*(L.S. of male cone and ovule).
6. Study of mega fossils.

IV. LABORATORY RECORDS

Laboratory Note Book of each section must be signed by the respective teacher with date during practical classes.

Semester-II
Syllabus for B.Sc. Botany (Major)
2014
(Theoretical)

Paper- BT 201H Full marks-60

Total Lectures - 48 periods
(Each period = 1 Hour)

Unit-I: Algae and Bryophyte

(23 Periods)

1. General account : 1.1 Thallus organization, 1.2 Ultra-structure of plastid & flagella, 1.3 Origin & evolution of sex.
2. Outline classification (Lee-1999) up to phylum with characters.
3. Chlorophyceae- Salient features, Life history : *Chlamydomonas*, *Oedogonium*.
4. Charophyceae- Salient features, Life history : *Chara*.
5. Xanthophyceae- Salient features, Life history-*Vaucheria*.
6. Bacillariophyceae(Diatom) :6.1 Cell structure, 6.2 Auxospore formation in Centrales and Pennales.
7. Phaeophyceae- Salient features, Life history-*Ectocarpus*.
8. Rhodophyceae- Salient features, Life history-*Polysiphonia*.
9. Economic importance of algae.
10. General account: 10.1 Origin of Bryophytes, 10.2 Amphibian nature, 10.3 Alternation of generation (Homologous and antithetic theory).
11. Life history: Gametophyte structure & reproduction, Development of sporophyte, Spore dispersal of 11.1 *Riccia*, *Marchantia*, 11.2 *Anthoceros*, *Pellia*, 11.3 *Funaria*.
12. Phyllogeny :12.1 Evolution of sporophyte (Progressive and regressive theory).
13. Importance of Bryophyta.

Unit-II: Pteridophyta, Gymnosperm & Palaeobotany (25 Periods)

1. Life history: Sporophyte structure, reproduction and structure of gametophyte of 1.1. *Psilotum*, 1.2. *Selaginella*, 1.3. *Equisetum*, 1.4. *Pteris*, 1.5. *Marsilea*.
2. Fossil Pteridophytes- Structure and features, Geological distribution & evolutionary significance of 2.1. *Rhynia*, 2.2. *Lepidodendron* (reconstructed) 2.3. *Calamites* (reconstructed) 2.4. *Miadesmia*.
3. Telome concept & its significance.
4. Heterospory and seed habit.
5. Economic importance as food and medicine.
6. Progymnosperm – 6.1 Diagnostic characters, 6.2 Vegetative & reproductive structures of *Archeopteris*.
7. Life histories- Distribution in India, vegetative and reproductive structure, Development of gametophyte and embryogeny of 7.1. *Cycas*, 7.2. *Pinus*, 7.3. *Gnetum*.
8. Fossil gymnosperms-Structure and features of 8.1 *Lygnopteris*, 8.2 *Williamsonia*, 8.3 *Cordaites*.
9. Economic importance with reference to wood, resins, essential oils & drugs.
10. Plant fossil- 10.1 Types of fossils, 10.2 Different modes of preservation (Schopf-1975), 10.3 Conditions favouring fossilization, 10.4 Importance of fossil study.
11. Geological time scale with dominant plant groups through ages.
12. Indian Gondwana system.

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Semester-II
Syllabus for B.Sc. Botany (Major)
2014
(Practical)

Paper- BT 202H Full marks-40

1. Work out on algae..... 8 Marks.
2. Work out on Pteridophytes..... 8 Marks.
3. Identifications with reasons2X7=14 Marks.
(Algae-1, Bryophyta-2, Pteridophyta-1, Gymnosperm-2, Paleobotany-1)
4. Laboratory Note book 5 Marks.
5. *Viva-voce*.....5 Marks

PRACTICAL: BT- 202H

I. To learn use of Simple and Compound Microscopes.

II. ALGAE & BRYOPHYTES

1. Work out of the following algae with reproductive structure (Free hand drawing and drawing under drawing prism with magnification): *Oedogonium*, *Chara*, *Ectocarpus*, *Polysiphonia*.
2. Study of Permanent slides: *Volvox*, *Vaucheria*, *Polysiphonia*.
3. Morphological study of the plant body (Bryophytes): Genera as mentioned in theoretical syllabus.
4. Study from permanent slides: *Riccia* (V.S. of thallus with antheridia/archegonia/sporophyte), *Marchantia* (L.S. through gemma cup, antheridiophore, archegoniophore, sporophyte), *Anthoceros* (L.S. of sporophyte), *Funaria* (L.S. of capsule).

III. PTERIDOPHYTES, GYMNOSPERMS & PALAEOBOTANY

1. Morphological study of the sporophytic plant body (Pteridophytes): Genera as mentioned in the theoretical syllabus.
2. Workout of the reproductive structures: *Selaginella*, *Pteris*, *Marsilea*.
3. Study from permanent slides: *Psilotum* (T.S. of synangium), *Lycopodium* (L.S. of strobilus), *Equisetum* (T.S. of stem-internode, L.S. of strobilus).
4. Morphological study: *Cycas* (microsporophyll and megasporophyll), *Pinus* (female and male cone), *Gnetum* (female and male cone).
5. Study from permanent slides: *Cycas* (L.S. of ovule), *Pinus* (L.S. of male and female cone), *Gnetum* (L.S. of male cone and ovule).
6. Study of mega fossils.
7. Study from permanent slides: *Lepidodendron*, *Calamites*, *Lyginopteris*, *Cordaites*, *Glossopteris*.

IV. LABORATORY RECORDS

Laboratory Note Book of each section must be signed by the respective teacher with date during practical classes.