



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

B.Sc. (Life Science / Biotechnology / Chemistry)

BSLS 302: Morphology, Physiology and Developmental Biology of Angiosperms

| COURSE CODE | Category | COURSE NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
|-------------|----------|---|------------------------------|---------------|----------------------|-------------------------|----------------------|----|---|---|---------|
| | | | THEORY | | | PRACTICAL | | Th | T | P | CREDITS |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| BSLS 302 | DC | Morphology, Physiology and Developmental Biology of Angiosperms | 60 | 20 | 20 | 10 | 20 | 4 | 1 | 2 | 7 |

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

*Teacher Assessment shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives:

1. To study the morphology and physiology of higher plants
2. To study the stages of development in higher plants

Course Outcomes:

1. Student will be able to understand the structural and functional aspects of higher plants
2. Student will be able to understand the various stages of development in higher plants

Unit-I

The Root system: Root apex and Anatomy of root in monocotyledons and dicotyledons.
The Shoot system: Shoot apex and Anatomy of shoot in monocotyledons and dicotyledons.
Phyllotaxy and Anatomy of leaf in monocotyledons and dicotyledons.

Unit-II

Morphology of flower. Microsporogenesis and Megasporogenesis,
Pollination and Fertilization.
Development of embryo and endosperm in dicotyledons and monocotyledons.

Unit-III

Properties of water, water potential, absorption and transport. Transpiration and mechanism of stomata. Soil-plant-atmosphere continuum.
Drought, heat stress, salinity stress and chilling.



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Unit-IV

Photosynthesis: pigments, antenna and reaction centers. Primary light reactions, electron transport chain and phosphorylation. Calvin cycle and carbon fixation in C₃, C₄ and CAM plants.

Respiration: Glycolysis, TCA cycle and oxidative phosphorylation in Mitochondria.

Unit-V

Plant growth and photomorphogenesis. Phytochrome structure and function. Photoperiodism. Physiology of flowering and vernalization.

Plant movements, autonomic and Paratonic movements.

BSLSL305 Practical:

- 1) Histological study of roots of Monocots and Dicots
- 2) Histological study of Monocot and dicot stem
- 3) Morphology of monocot and dicot leaves
- 4) Floral organs, floral formula and floral diagram
- 5) Morphology of pollen grains
- 6) Morphology of ovary and placenta
- 7) Parts of Seed, embryo and endosperm
- 8) Plasmolysis and de-plasmolysis
- 9) Differential permeability
- 10) Isolation and absorption spectra of chlorophyll and carotenoids
- 11) Separation of chlorophyll and carotenoids by paper chromatography
- 12) Isolation of chloroplasts and demonstration of Hill activity
- 13) Scotomorphogenesis and photomorphogenesis
- 14) Gravitropic and phototropic movement

Books:

1. Embryology of Angiosperms- Bhojwani, S.S. and Bhatnagar, S.P.
2. An Introduction to Embryology of Angiosperms- Maheshwari, P., McGraw Hill Inc., N.Y.
3. Anatomy- Singh V., Pandey P.C. and Jain, D.K.
4. Modern Plant Physiology- Sinha, R.K. Narosa Publishing House.
5. Textbook of Plant Physiology - Verma V., Ane books Publishers.
6. An Introduction to Plant Anatomy-B.P. Pandey, S.Chand Publications.

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