

# Devi Ahilya Vishwavidyalaya Indore (M.P.)

Department of Higher Education, Govt. of M.P.

Post Graduate Semester wise Syllabus

As recommended and Approved by Board of Studies D.A.V.V.

उच्च शिक्षा विभाग, म.प्र. शासन

स्नातकोत्तर कक्षाओं के लिये सेमेस्टर अनुसार पाठ्यक्रम

अध्ययन मण्डल देवी अहिल्या विश्वविद्यालय द्वारा अनुशंसित तथा अनुमोदित

Session (सत्र) : 2020-21

## M. Sc. Botany (Semester System)

### Third Semester

Course PG 301: Plant Physiology 85+15

- UNIT I: **Plant water Relations** : Importance of water to plant ; plant water relations, diffusion, osmosis, concept of water potential ; absorption of water ; ascent of sap; transpiration , physiology of stomata ; mechanism of water transport through xylem .
- UNIT II: **Phloem transport**: Molecular mechanism of phloem, loading and unloading. Passive and active solute transport. Signal transduction over view, receptor-proteins, phospholipids signaling, role of cyclic nucleotides, Calcium calmodulin cascade.
- UNIT III: **Plant growth regulator and elicitors**: Physiological effects and mechanism of action of auxins, gibberellins, cytokinins, ethylene, abscisic acid, brassinosteroids, polyamines, Jasmonic acid and salicylic acid. Hormone receptors.
- UNIT IV: **Flowering process**: Photoperiodism and its significance. Endogenous clock and its regulation. Floral induction and development, Phytochrome and Cryptochrome and their photochemical and biochemical properties; Vernalization.
- UNIT V: **Stress Physiology** : Plant responses to biotic and abiotic stress, Water deficit and drought resistance. Salinity stress and resistance, Concept of freezing, heat and oxidative stresses.

  
06.3.19  


### Suggested Laboratory Exercise based on P.G. 301:

1. Radioisotope methodology, autoradiography, instrumentation ( GM counter and scintillation counter) and principles involved .
2. Principles of colorimetry, spectrophotometry, and florimetry/calorimetry.
3. Determine rate of transpiration by Ganong's photometer.
4. Determine rate of respiration in germinating/young buds by Ganong's respirometer

### Suggested readings-

1. Lodish, H., Berk, A., Zipursky, S.L., Matsudaira, P., Baltimore, D. and Darnell, J. 2000. Molecular cell biology (4<sup>th</sup> edition). W.H., Freeman and Company, New York USA.
2. Moore, T.C. 1989. Biochemistry and Physiology of Plant hormones (2ed.). Springer-Verlag, New York USA.
3. Nobel, P.S. 1999. Physiochemical and environmental plant physiology (2ed). Academic press, San Diego, USA
4. Salisbury, F., B., and Ross, C.W. 1991. Plant physiology 4<sup>th</sup> edition. Wdsworth Publishing CO. California USA.
5. Taiz, I. and Zeiger, E. 1998. Plant Physiology (2<sup>nd</sup>. Ed.). Sinauer Associates Inc. Publisher MS.
6. Dennis, D.T. and Terpin, D.H. Lefevre DD and Layzell D.V. 1997. Plant Metabolism. 2ed. Longman England.
7. Buchanan, B.B., Grullem, W. and Jones, R.L. 2000. Biochemistry and Molecular Biology of Plants. American society of plants physiologists, Maryland USA.

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