

Programme	BS Botany	Course Code	BOT-305L	Credit Hours	1
Course Title	Advanced Plant Physiology (Lab)				
Lab Course Contents					
Upon completion of practical content, the students will be able to:					
<ul style="list-style-type: none"> • Measure and analyze the osmotic potential of plant tissues using freezing point depression and osmometry. • Use dye methods and water potential apparatus to measure and interpret water potential in plant tissues. • Quantify stomatal density and conductance to understand their roles in gas exchange and plant responses to environmental conditions. • Measure potassium uptake by excised roots and comprehend its significance in plant nutrition. • Examine the preferential absorption of ions by corn seedlings and potato slices to understand ion selectivity and nutrient management. 					
Textbooks and Reading Material					
<ol style="list-style-type: none"> 1. Taiz, L., Zeiger, E. Møller I.M. and Murphy, A. (2015). <i>Plant Physiology and Development</i>, 6th Edition. Sinauer Associates Inc., Sunderland MA. ISBN: 0-87893-831-1,700pp. 2. Jones, R. L., Ougham, H. H. Thomas, S. and Waaland. (2012). <i>The Molecular Life of Plants</i>. Wiley Blackwell. ISBN: 978-0-470-87011-2012, 766pp. 3. Buchanan, B. B., Gruissem, W., Jones, R. L. (2015). <i>Biochemistry and Molecular Biology of Plants</i>. Wiley-Blackwell. 2nd Edition, ISBN: 978-0-470- 71421-8, 1280pp. 4. Grotewold, E., Chappell, J. and Kellogg, E. A. (2015). <i>Plant Genes, Genomes, and Genetics</i>. Wiley-Blackwell ISBN: 978-1-119-99888. 5. Suggested Readings 6. Plant Physiology and Development (http://6e.plantphys.net/). 7. The Arabidopsis Book (https://aspb.org/publications/other-aspb-publications/the-arabidopsis-book/). 8. Plant Physiology (http://www.plantphysiol.org/). 9. Annual Review of Plant Biology (http://www.annualreviews.org/journal/arplant). 10. The Plant Cell (http://www.plantcell.org/site/teachingtools/). 11. Teaching tools in Plant Biology (http://www.plantcell.org/content/teaching-tools-plant-biology). 12. Basic Biology Concepts Khan Academy (http://le4learning.com.pk/category/basic-sciences/biology). 13. Current Protocols in Plant Biology (http://www.currentprotocols.com/WileyCDA/Section/id-810246.html). 					
Teaching Learning Strategies					
<ul style="list-style-type: none"> • Lectures • Group Discussion • Laboratory work • Seminar/ Workshop 					
Assignments: Types and Number with Calendar					
<ul style="list-style-type: none"> • Lecture Based Examination (Objective and Subjective) • Assignments • Class discussion • Quiz • Tests 					