

BIOL3745 Plant Physiology

Fall 2017; 9:00 am - 9:50 am MWF; RM: Cushwa Hall 3218

Instructor: Xiangjia "Jack" Min, Ph.D.

Office: WB 3013; Phone: (330) 941-1945; e-mail: xmin@ysu.edu

Office Hours: **MWF**, 10:00 am – 12:00 pm; **Tu Th**, 10:00 – 11:00 am

Text: "Plant Physiology" Taiz and Zeiger 2010, 5th (preferred) OR 6th edition, Sinauer

Course website: <http://proteomics.ysu.edu/courses/BIOL3745/>

Goals: The primary objective of this course is to examine the physiology of higher plants with emphasis on the whole plant aspects as well as on biochemical, cell biological and molecular aspects of how plants function including transport and translocation of water and solutes, plant nutrition, photosynthesis, growth and development.

Course Topics: (Chapter numbers are based on the 5th edition)

Chapter 1 & 2: read and review on your own

Unit 1. Transport and translocation of water and solutes

1. Water & Plant Cells (week 1, 8/23 – 8/25, chapter 3)
2. Water balance of plants (week 2, 8/28 – 9/1, chapter 4)
3. Mineral nutrition and Solute transport (week 3/4, 9/6 – 9/15, chapter 5/6) (Note: **9/4 holiday**)

1st TEST on 9/18

Unit 2. Biochemistry and metabolism

4. Photosynthesis (week 5/6, 9/18 – 9/29 chapter 7 - 9)
5. Stomatal biology / Translocation (week 7, 10/2 -10/6 chapter 10)
6. Lipid metabolism and Respiration; Mineral assimilation (week 7/8, 10/2 -10/13, chapter 11, 12)

2nd TEST on 10/16

Unit 3. Growth and development

7. Cell walls (week 9, 10/18 – 20, chapter 15)
8. Growth and Dev (week 10, 10/23 –10/27, chapter 16)
9. Phytochrome (week 11, 10/30 – 11/3, chapter 17-18)
10. Plant hormones: Auxin; Gibberellins (week 12, 11/6 – 11/8, chapter 19, 20) (**11/10 holiday**)

3rd TEST on 11/13

11. Plant hormones: Cytokinins, ABA, Ethylene, BR (week 13, 11/15 - 17, chapter 21 – 23)
12. Flowering (week 14/15, 11/20 – 12/1, chapter 25) (**11/22 -24 no class; holiday**)
13. Stress physiology (week 16, 12/4 – 12/8, chapter 26)

Final exam: Dec 13 at 9:00 am (1 hr)

EVALUATION: There will be 3 mid-terms (25% of course grade each), and a final exam (25% of course grade, the final exam will cover the last section only). Bonus will be awarded (5%) based on the attendance.