



**On the Lab:** Attendance in the laboratory sessions is mandatory. If you have an unexcused absence from a laboratory, you will not be able to turn in the subsequent homework assignment for that laboratory. If an absence from a laboratory session is excused, and the homework involves the analysis of data collected during the lab, the instructor may assign and alternate but equivalent homework assignment to the student who had an excused absence for that lab session. Appropriate laboratory attire should be worn while attending lab session. This includes shoes with closed toes and preferably long pants. Personal protection materials are provided in the lab when required for an experiment. Cell phones are to be turned off or set to vibrate during lecture and lab. Calls should ideally be taken only in the instance of an emergency and discretely outside the classroom or lab. If an important call is expected, the instructor should be notified ahead of time that a student may need to step out during the lecture or lab.

**On plagiarism:** *In the era of web information, cutting and pasting, and word processing it is very tempting and easy to plagiarize. This includes lifting whole paragraphs, or even a single sentence. Plagiarism inhibits learning. You need to be able to express your own thoughts and ideas in writing, which is part of the educational experience at SIUC and in this course. Your answers on the labs, question sheets and exams must be your own, and may be subject to electronic comparison to other work. If you have difficulty writing, please visit me at office hours or after class for additional help.*

**Readings assignment:** One of your semester long assignments is to keep up with scientific news. I have selected several articles from this year's issues of the three top scientific journals (*Science, Nature* and *Cell*). These will be introduced in class, and put on D2L. 1-2 questions in each of your exams will pertain to these articles.

**Literature search assignment:** Your first Lab report is a literature search. In the beginning of the semester, each of you will be given a paper copy of the scientific journal *Plant Physiology* published in 2001-2002. You must select an article from that journal, and distill from it one of the pertinent questions asked and answered in the paper. You will examine the history of that question by looking at the introduction and references. Then you will look into the future using the web of science and the <http://www.plantphysiol.org/> website to see what follow-up work has been done in the 13-14 years since the publication of the article, and see how/if our understanding has changed regarding that question. This exercise gives you both an appreciation of mechanisms underlying scientific inquiry, the connectedness and synergy of the scientific community, and how to navigate the interconnections within scientific articles forwards and backwards through time through citations.

**Exams:** The course will include 3 midterms and 1 final examination. If you have a scheduling conflict and cannot attend an examination you must give written notice to the course instructor 10 days prior to the exam date for review. Make up examinations are subject to university policy and the instructor's discretion. Emergency absence is also subject to university rules, please contact your instructor as soon as possible if an emergency occurs which will result in absence from an exam.

**Grading:**

Finals grades for this course will be based on a total of 500 points, with the allocation below.

Lecture exams 400 pts (4 @ 100 pts each)	A 720-800 pts
Question sets 200 pts (4 @ 50 pts each)	B 640-719 pts
Lab homework 100 pts (5 @ 20 pts each)	C 560-639 pts
Lab reports 100 pts (5 @ 20 pts each)	D 480-559 pts
	F <480 pts

Grades will not be subject to test score adjustments (curved), you are tested against the material, not fellow students.

# Lectures PLB320

<i>Lecture</i>	<i>Topic</i>	<b>Text Reading</b>
1	Introduction, pathways for inter-plant interaction	Lecture notes
2	Review of basic botany and anatomy	Chapter 1
3	Review of genetics and genomics	Chapter 2
4	Plant Cells and Water	Chapter 3
5	Plant Cells and Water	Chapter 3
6	Plant water physiology	Chapter 4
7	Plant water physiology	Chapter 4
8 <i>Q1due</i>	Photosynthesis physics	Chapter 7
9	Photosynthesis physics	Chapter 7
Ex1	First Midterm Exam on Lectures 1-9	
10	Photosynthesis chemistry	Chapter 8
11	Photosynthesis chemistry	Chapter 8
12	Plant circulation: movement of fluids through the phloem	Chapter 11
13	Plant circulation: Source-Sink relationship	Chapter 11
14	Plant respiration: Chemistry	Chapter 12
15	Plant respiration: Genes and the mitochondrial genome	Chapter 12
16	Metabolic pathways: Primary metabolism	Chapter 12
17 <i>Q2due</i>	Metabolic pathways: Primary metabolism	On KEGG
18	Metabolic pathways: Secondary metabolism	On KEGG
Ex2	Second Midterm Exam on lectures 10-18	
19	Mineral nutrition	Chapter 5
20	Mineral nutrition	Chapter 5
21	Solute transport mechanisms	Chapter 6
22	Solute transport proteins	Chapter 6
23	Nutrient assimilation: Nitrogen	Chapter 13
24	Nutrient assimilation: Sulfur and Phosphorus	Chapter 13
25	Cell wall structure and expansins	Chapter 14
26	Cell wall chemistry: SySy, UGPase, CeS, CaZy	Chapter 14
27	Signaling pathways: Map Kinases	Chapter 15
28	Signaling pathways: Hormone communication	Chapter 15
Ex3	Third Midterm Exam on lectures 19-28	
29 <i>Q3due</i>	Signaling photoreceptors: Phytochrome and Cryptochrome	Chapter 16
30	Embryogenesis and early signaling for body organization	Chapter 17
31	Gene networks regulating organization of the meristems	Chapter 17
32	Abscissic acid, GA and seed dormancy	Chapter 18
33	Tropisms and Auxin	Chapter 18
34	Vascular tissue differentiation	Chapter 18
35	Circadian rhythm and flowering	Chapter 20
36	Ethylene, SA, JA in defense against pathogens	Chapter 23
37 <i>Q4due</i>	Ethylene, SA, JA in defense against pathogens	Chapter 23
38	ABA, ROS, and gene regulons in drought and cold stress	Chapter 24
39	ABA, ROS, and gene regulons in drought and cold stress	Chapter 24
40	Review	
<b>Final Exam 10:15am Friday December 18th</b>		

**Lab:** LSII room 457

**Time:** Tuesday 1-3pm

**Lab Teaching Assistant:** Laxmi Sagwan      **Office hours:** Thursday 10-12am

**Email:** [laxmi@siu.edu](mailto:laxmi@siu.edu)

**Office:** LSII room 427

## Laboratory schedule PLB320

<i>Week</i>	<i>Topic</i>	<i>Reiss Lab Number</i>	<i>note</i>
1	Basic spectrophotometry	1, appendix C	HW
2	Cellular water relations	9 part I, 10	
3	Cellular water relations	9 part I, 10	RE
4	Photosynthesis	3 part I and II	
5	Photosynthesis	3 part I and II	RE
6	Metabolism	2	HW
7	Metabolism	13 part II	HW
8	No lab (Fall Break)		
9	Ions and Guard cell movement	11	
10	Ions and Guard cell movement	11	RE
11	Hormones	17	RE
12	Hormones	28, 29	
13	Hormones	28, 29	RE
14	Hormones	27	
15	Hormones	27	HW
16	No lab		

**Note: HW = homework, RE = Report**

*Emergency Procedures.* Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT's website at [www.bert.siu.edu](http://www.bert.siu.edu), Department of Safety's website [www.dps.siu.edu](http://www.dps.siu.edu) (disaster drop down) and in Emergency Response Guideline pamphlet. Know how to respond to each type of emergency.

*Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency. The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.*