

**Plant Physiology  
Biology 345  
Syllabus – Spring 2014**

Instructor: Dr. Bob Wise, 424-3404, Room HS 16, wise@uwosh.edu

ORGANIZATION: This course (5 credits) has three one-hour lectures and one four-hour laboratory a week. Lecture topics will stick pretty closely to the syllabus, although some lectures will get a little ahead and others a bit behind.

LECTURE: MWF from 1:50-2:50, Room HS456

LABORATORY: Thursday 11:30-3:30, Room HS56

OFFICE HOURS: MW from 4:10-5:30

TEXTBOOK: Hopkins, W.G. and N.P.A. Hüner. 2009. *Introduction to Plant Physiology*, 4<sup>th</sup> ed., John Wiley and Sons, New York, 503 pp. Required.

EXAMS: There will be four, 100-point, short-essay-style exams on the lecture material during the semester (see syllabus for dates). Makeup exams are possible, but they are a real pain in the butt for both you and me. Although I strongly discourage their use, let's deal with these on an as-needed basis.

LABORATORY: Some labs will probably finish early, others will run late, and still others will take two to thirteen weeks from beginning to end and may require someone to come in at non-lab times to water plants or record data.

LABORATORY ASSIGNMENTS: We will conduct about eighteen different laboratory exercises in the 13 weeks of lab. Students will be required to turn in (on the due dates shown in the laboratory syllabus) an abstract (and associated data sheets, etc.) for ten of the eighteen laboratory exercises. Those reports will be graded (maximum = 10 points each) and returned within a week.

GRADING:

Lecture Exams (4 x 100 pts)	400 points
<u>Laboratory Abstracts (10 x 10 pts)</u>	<u>100 points</u>
Total	500 points

GRADING SCALE:

<u>Total points</u>	<u>Percent</u>	<u>Letter grade</u>
500-460	100-92.0	A
459-450	91.9-90.0	A-
449-440	89.9-88.0	B <sup>+</sup>
439-410	87.9-82.0	B
409-400	81.9-80.0	B-
399-390	79.9-78.0	C <sup>+</sup>
389-360	77.9-72.0	C
359-350	71.9-70.0	C-
349-340	69.9-68.0	D <sup>+</sup>
339-310	67.9-62.0	D
309-300	61.9-60.0	D-
299-0	<59.9	F

ATTENDANCE: Attendance in Lecture and Laboratory is mandatory. Making up missed labs is not possible. An unexcused absence from any lecture or laboratory will result in an automatic 10-point reduction.

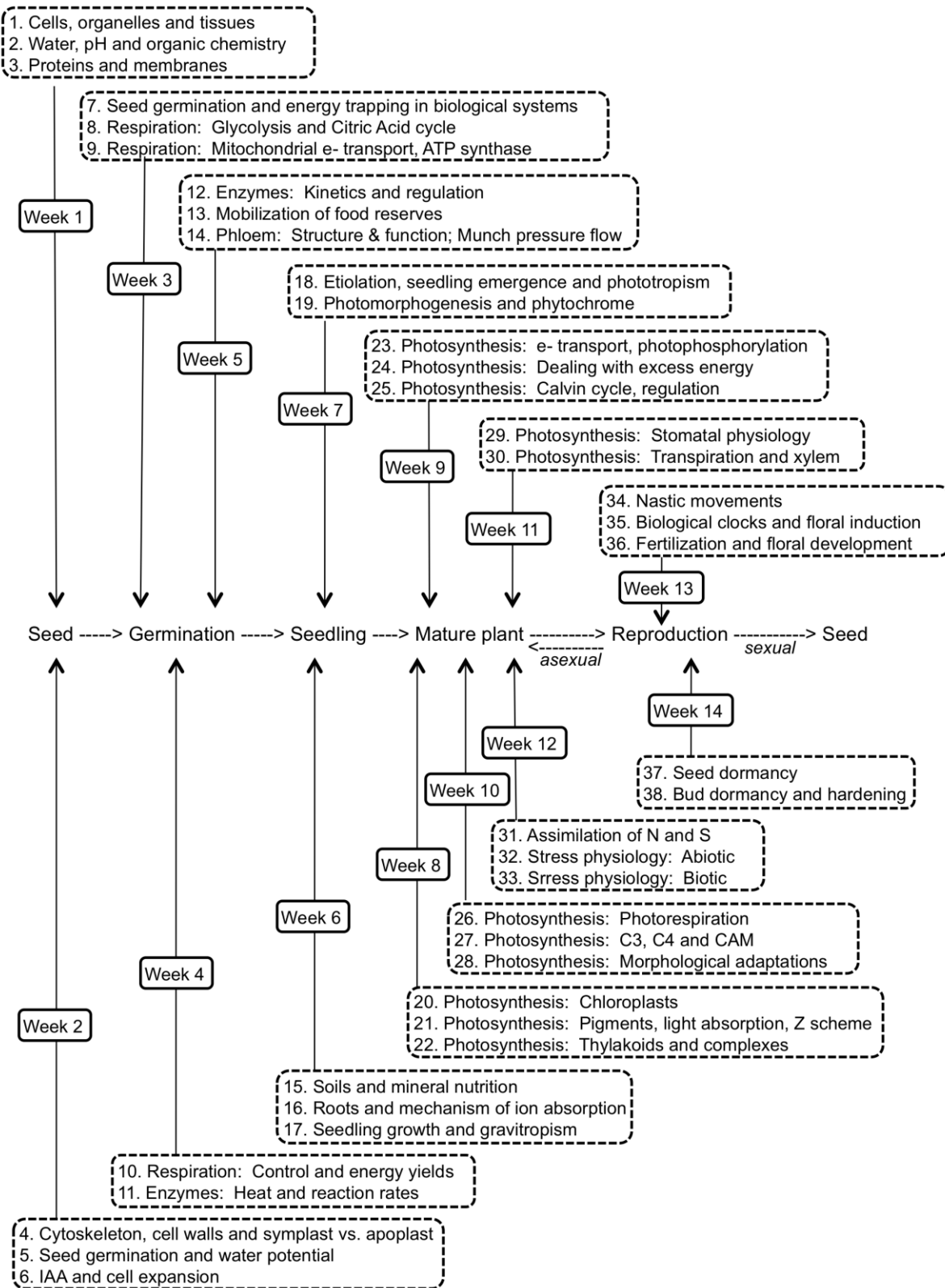
STATEMENT ON ACADEMIC MISCONDUCT:

Students are referred to the University of Wisconsin Oshkosh Student Discipline Code as detailed in Specific provisions of Chapter 14 of the State of Wisconsin Administrative Code. Any student(s) found in violation of any aspect of the above Code (as defined in sections UWS 14.02 and 14.03) will receive a sanction as detailed in UWS 14.05 and 14.06. Sanctions range from an

oral reprimand to expulsion from the University of Wisconsin-Oshkosh. Students have the right to request a hearing and to appeal sanctions (as defined in UWS 14.08-14.10).

Students with disabilities should contact their lecture and lab instructors in the first week of class in order to arrange all possible accommodations.

# Schedule of Lecture Topics – Spring, 2014



## Lecture Syllabus and Exam Schedule--Spring 2014

Date	Lecture number and topic	Textbook section
Feb 3	1 Cells, organelles and tissues	H&H Box 5.1, 16.2, W&H Chpt 1
Feb 5	2 Water, pH and organic chemistry	H&H 1.1-1.5
Feb 7	3 Proteins and membranes	H&H Appendix I.2, I.1, 3.2, 3.5.1
Feb 10	4 Cytoskeleton, cell walls and symplast vs. apoplast	H&H 17.1-17.2, Box 17.1
Feb 12	5 Seed germination and water potential	H&H 16.3.3-16.3.4 and 1.6-1.11
Feb 14	6 IAA and cell wall expansion	H&H 18.2-18.4, 18.6, 16.1, 17.3, Box 18.2
Feb 17	7 Seed germination and energy trapping in biological systems	H&H 19.8.2, 5.1-5.2
Feb 19	8 Respiration - Glycolysis and the Citric Acid Cycle (CAC)	H&H 10.4-10.7
Feb 21	9 Respiration - Mitochondrial e- transport, ATP synthase	H&H 10.7.2-10.9, 5.3
Feb 24	10 Respiration - Control and energy yields	H&H 3.5, 10.12, 10.13
Feb 26	11 Enzymes: Heat and reaction rates	H&H Box 8.1
Feb 28	--- <b>Exam I</b> (lectures 1-10)	---
March 3	12 Enzymes: Kinetics and regulation	none
March 5	13 Seed germination, mobilization of food reserves	H&H 21.1, 16.3.3, 19.1-19.9, Box 19.2, 10.1-10.2, 10.10
March 7	14 Phloem, translocation and Münch pressure flow hypothesis	H&H 1.5.1, 9.4-9.10
March 10	15 Soils and mineral nutrition	H&H 2.6, 3.1, 3.9, 4.2-4.4
March 12	16 Roots and the mechanism of ion absorption	H&H 2.7, 3.2-3.8
March 14	17 Seedling growth and gravitropism	H&H 16.4, 20.1-20.4, Box 20.2, 23.2
March 17	18 Etiolation, seedling emergence and phototropism	H&H 22.4.2, 21.2, 23.1
March 19	19 Photomorphogenesis and phytochrome	H&H Chapter 22
March 21	--- <b>Exam II</b> (lectures 11-18)	---
<b><u>Spring Break--March 22-30</u></b>		
March 31	20 Photosynthesis - Chloroplasts	none
April 2	21 Photosynthesis - Pigments, light absorption and Z scheme	H&H 6.3, 6.1.6, 7.3, 7.7
April 5	22 Photosynthesis - Thylakoids and protein complexes	H&H 7.2-7.3 and 5.3.2
April 7	23 Photosynthesis - Cyclic e- transport, photophos, and ratios	H&H 5.3, 7.4-7.5, 7.7
April 9	24 Photosynthesis - Dealing with excess energy	H&H 14.2.1, 14.2.2 and 14.6
April 11	25 Photosynthesis - The Calvin-Benson cycle & regulation	H&H 8.5, 8.6, 9.1
April 14	26 Photosynthesis - Photorespiration	H&H 8.7
April 16	27 Photosynthesis - C <sub>3</sub> , C <sub>4</sub> and CAM	H&H 15.2-15.4
April 18	28 Photosynthesis - Morphological and physiological adapts	H&H 7.1, 15.1
April 21	29 Photosynthesis - Stomatal physiology, drought, ABA	H&H 8.1-8.4, 13.4.3, 21.1
April 23	30 Photosynthesis - Transpiration and anatomy of xylem	H&H 1.5.2, 2.1-2.5, Box 2.1
April 25	--- <b>Exam III</b> (lectures 19-27)	---
April 28	31 Photosynthesis - Assimilation of N	H&H 11.1-11.9
April 30	32 Stress physiology: Abiotic (environmental)	H&H 13.3, Box 13.1, 14.2.2
May 2	33 Stress physiology: Biotic (weeds and plant pathology)	H&H 13.6, parts of Chapter 27
May 5	34 Plant movements: Tactic, tropic and nastic	H&H 23.3, 26.4
May 7	35 Photoperiodism, the biological clock and floral induction	H&H Chapter 24
May 9	36 Flower initiation, development and fertilization	H&H 25.1, 25.2, 16.3.1, 21.1.4
May 12	37 Seed maturation, fruit development and seed dormancy	H&H 16.3.2, 16.3.4, 21.1.4, 26.3, 25.3
May 14	38 Bud dormancy and tissue hardening	H&H 14.4, 26.2
May 16	--- <b>Exam IV</b> (lectures 28-37)	---