Biology 458 - Introduction to Plant Biology

Fall 2016 (Lecture: Tues/Thur 12:30-1:45pm, Lab: Tues 2:00-4:40pm)

Syllabus (subject to change)

Instructor: Dr. Tanya Renner
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Phone: 619-594-2061
Office hours: By appointment, NLS 230 (door is locked, please knock)

Text: *Raven Biology of Plants*, 8th Edition, Evert & Eichhorn. Available at the San Diego State University bookstore. Laboratory materials will be provides on Blackboard and/or within the laboratory.

Course description: Cell biology and structure, photosynthesis, respiration, secondary metabolism, physiology of water relations and transport, growth and development, evolution of major groups, plant ecology of Southern California and topics related to agriculture.

Course Objectives:
This course is an introduction to and survey of the major areas of plant biology. We will define plants as the Embryophyta but will discuss important relationships with algae and bacteria. Topics that will be covered include cell structure and cell biology, biochemistry including photosynthesis, respiration and secondary metabolism, physiology of water relations and transport, plant growth and development, evolution of major groups and the plant ecology of Southern California. Finally, we will discuss some important topics in agriculture including genetically modified organisms as food. Students who complete the course will have a firm grounding in these areas. They will be prepared for other upper-division or graduate courses in plant biology. In addition, these students will gain enough knowledge in this area to be able to read and understand the primary literature in plant biology and be able to interpret scientific information presented in the popular literature.

In the lab we will work with plants from seeds to observing plants in the field. Students will be able to conduct experiments and manipulations of plants. Students will be able to summarize the data generated and analyze this data with reference to current state of knowledge of the conditions and molecules that control plant growth. Students will be able to synthesize this information and communicate their conclusions in a written lab report. Finally students will identify peer-reviewed articles in the area of plant biology and will be able to summarize the information in these articles and communicate this information in both a written and oral presentation.

Please note: *the instructor reserves the right to make changes to the policies and syllabus and will notify students of those changes in class. Field trips may need to be rescheduled based on weather or availability.*

Grading system: Based on percentage of total accumulated points from both lecture and lab.

Evaluation	Points
Exams	300 (3 @ 100 each)
Final Exam	150 (cumulative)
Lab Assignments	200
Popular Press Report	10
Mini lecture	40
Total points	**700**

Policies

Attendance. You are expected to arrive to class on time and actively participate each class period. Lateness and absence usually result in lost points. There is a clear relationship between class attendance and performance on exams and assignments. Field trips and other class activities begin at the start of class and may be missed if you do not arrive to class on time. Complete attendance is mandatory during all student presentations; otherwise presentation points will be forfeited. Because of insurance limitations, non-registered visitors are not allowed at class sessions or on field trips.

Course website. Class material will be posted on Blackboard (https://blackboard.sdsu.edu). This will include lecture outlines and exam/assignment scores. The lecture outlines will be available prior to each lecture for you to print and bring with you. The Blackboard site is likely to be updated weekly. The lecture material provided on the Blackboard site will be outlines and some figures, rather than a complete set of notes. I emphasize that these outlines do not take the place of lecture notes and they do not take the place of coming to class. You are expected to attend class and take your own lecture notes. You are expected to print out materials from Blackboard before a given lecture, and that you bring them to class. The pace of the lecture assumes that you have these materials with you in class so that you need not write down information already available from Blackboard.

Exams. Exam questions will be based on lecture material and reading assignments. Each exam will have multiple-choice, fill in the blanks, true/false and short answer questions in addition to one essay exam. The final exam will be cumulative.

Popular press assignment. First you need to find an article in the popular press about plants. Examples: invasive plant species, GMOs, the health advantages of plant-based anti-oxidants. Write a one page summary of this article, then based on material in our text and from lecture (in no more than one additional page) explain if you think the author has presented the science accurately or not. Please provide me

with a copy of the article. Examples of places to look: The New York Times (Tuesday is Science News day), San Diego Union Tribune, Time, Newsweek, or National Geographic. Other sources are acceptable but avoid strange web sites- try for more mainstream journalism.

Labs. In the lab we will work with different agricultural plants from seed over multi-week periods. Computers with an internet connection and Microsoft Excel will be used in some laboratories. If you have your own laptop, please bring it to the lab section. You will be provided with materials and/or questions for each laboratory.

Lab reports. Lab reports will be due following each laboratory, often following the last session of the lab over multi-week periods (see schedule). The lab report needs to be no more than three pages. At least two research papers must be cited within the Introduction and Conclusions. The format of lab reports will be as follows:

I. Introduction
II. Materials and Methods
III. Results
IV. Conclusions
V. References

Lab field trips. Please note that field trips will be held outside where proper clothing is necessary (e.g. walking shoes, hat, etc.). Field trips take place within class time barring unforeseen circumstances (caution: we leave promptly). **You will need to fill out and turn in a release of liability prior to attending (see course schedule for the date by which to turn this in).** See attached form. Questions associated with field trips will have a special format, which will be given to you prior to each field trip.

Mini lecture. Find two research papers on a related topic in plant biology. These articles must cover a topic we discussed in class. Write a two-to-three page summary of the articles (Report). Please provide me with copies of the articles. Places to look include: *American Journal of Botany*, *Trends in Plant Biology*, *Plant Physiology*, *The Plant Journal*, *Trends in Ecology and Evolution*. We will learn about searching for articles using library resources. If you are having trouble finding an article, ask the instructor or a one of the reference librarians for assistance. You will also make a class presentation based on this summary (Mini-Lecture). The presentation should be approx. 10 minutes and should be in PowerPoint.

Make-ups. There will be no make-up exams or laboratories. Late assignments will be accepted but will be penalized 25%. Assignments will not be accepted more than one week late. After this period in time, a score of 0 will be assigned.

If you have a serious illness or major family problem (for example, a death in the family), and must miss an exam please contact the instructor as soon as possible to

make other arrangements. In order to compensate for the missed exam you may be given an alternative assignment such as an all essay exam.

Unavoidable conflicts with religious holidays, major sporting events for student-athletes, or academic activities should be kept to a minimum and documented by the appropriate university office. Documentation should be presented to the instructor during the first two weeks of class.

Events that require prolonged absence (more than three lectures or more than two activity sections) should be discussed with the instructor and the Biology undergraduate advising office.

Rebuttals. If you think you were graded unfairly (or erroneously) on an assignment or exam, please turn in a written explanation (rebuttal) with your graded assignment/exam to the instructor within two weeks. The instructor will write a response and return it to you. You may set up an appointment if you disagree with the resolution.

Scholastic ethic. I have a zero-tolerance policy for cheating of any sort. If you are caught cheating on an exam you will receive a grade of zero on that exercise. This includes looking at your neighbor's exam. Additionally, plagiarism on other assignments, lab reports, mini-lecture report/presentation, etc. will result in a score of zero. You must appropriately cite ideas that are not your own. If you turn in an assignment that is not your own work, the incident will be reported to the Center for Student Rights and Responsibilities for review. This includes copying answers from any other source. This also includes any situation where identical text is turned in by two students on an assignment, whether they are both in the course now, or one has taken the course previously. *According to university policy, cheating, plagiarism, and copying will be reported to the Center for Student Rights and Responsibilities for review.*

Be courteous. Every student is expected to contribute to a positive, distraction-free learning environment. No use of cell phones, laptops, or other electronics in class except with instructor permission. Points may be lost for infractions. No talking while the instructor or another student is talking to the class. In general, please be respectful of other students and the educational process.

Students with disabilities. If you are a student with a disability and need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that we cannot provide accommodations based upon disability until receiving an accommodation letter from Student Disability Services. Your cooperation is appreciated.

Grade tracking sheet

Exams = 450 points (3 exams @ 100 points each and 1 final exam @ 150 points)
Exam 1 ____
Exam 2 ____
Exam 3 ____
Final exam (cumulative) _____
Total exam score _____

Laboratories = 200 points
Pigment Lab (10) ____
Photosynthesis Lab (20) ____
Genomics Lab (20) ____
Hormone Lab (30) ____
Stress Lab (30) ____
Brassica rapa Mutant Lab (30) ____
San Diego Natural History Museum – Herbarium field trip (20) ____
Torrey Pines field trip (20) ____
Mission Trails field trip (20) ____
Total lab score ____

Popular press assignment = 10 points
Report with press article (10) _____

Mini lecture = 40 points
Mini lecture topic (2.5)
Mini lecture sources (2.5)
Report with at least two research article sources (20) ____
PowerPoint (10) _____
Presentation (5) _____
Total mini lecture _____

Total points = 700 pts
Grand total (700) _____

Grade percent = Grand total ____/700 points possible = ____ x 100 = _____ %

Final grade (*percentage of total points*):

A (A- to A+)	=	90 - 100
B (B- to B+)	=	80 - 89
C (C- to C+)	=	70 - 79
D (D- to D+)	=	60 - 69
F	=	below 60

Fall 2016 Tues/Thur Tentative Schedule

Date	Topics	Reading	Laboratory	Due dates
Aug. 30	Intro. To Plant Biology	Ch. 1	***Organization & Intro.***	
Sept. 1	Molecular Composition of Plant Cells	Ch.2 & Ch. 20 pg. 497		
Sept. 6	Plant Cell Biology	Ch. 3	***Library & Primary Literature (Room LA-76)***	**Release of Liability Forms for Field Trips**
Sept. 8	Plant Cell Biology II	Ch. 3		
Sept. 13	Respiration	Ch. 6	***Pigment Lab***	**Pigment Qset (10)**
Sept. 15	Photosynthesis Part I (Light Reactions)	Ch. 7 pgs. 122-135		
Sept. 20	Photosynthesis Part II (Dark Reactions)	Ch. 7 pgs. 135-149	***Photosynthesis Lab***	**Photosynthesis Qset (20)**
Sept. 22	**Exam 1 (100)**			
Sept. 27	Development of the Plant Body	Ch. 22	***Genomics Lab***	**Genomics Qset (20)**
Sept. 29	Cells and Tissues of the Plant Body	Ch. 23		
Oct. 4	***San Diego Nat. Herbarium***		***San Diego Nat. Herbarium***	**Herbarium Qset (20)**
Oct. 6	Roots & Transport	Ch. 24 & 30		
Oct. 11	Shoots	Ch. 25	***Start Hormone Lab***	**Popular press (10)**
Oct. 13	Leaves & Secondary Growth	Ch. 25 & 26		
Oct. 18	Growth & Development I (Internal - Hormones)	Ch. 27	***Finish Hormone Lab***	**Mini lecture topic (2.5)**
Oct. 20	**Exam 2 (100)**			
Oct. 25	***Torrey Pines Field Trip***		***Torrey Pines Field Trip***	**Torrey Pines Qset (20)**
Oct. 27	Growth & Development II (External)	Ch. 28		
Nov. 1	Abiotic & Biotic Stress	See Blackboard	***Start Stress Lab***	**Hormone Report (30)**
Nov. 3	Agriculture & GMOs	Ch. 21		
Nov. 8	Plant Diversity I: Bryophytes	Ch. 16	***Finish Stress Lab, Start <u>Brassica rapa</u> mutant lab***	**Mini lecture sources (2.5)**
Nov. 10	Plant Diversity II: Seedless Vascular Plants	Ch. 17		
Nov. 15	Plant Diversity III: Gymnosperms	Ch. 18	***Finish <u>Brassica rapa</u> Mutant Lab***	**Stress Report (30)**
Nov. 17	**Exam 3 (100)**			
Nov. 22	***Mission Trails Field Trip***	Ch. 19	***Mission Trails Field Trip***	**Mission Trails Qset (20)**
Nov. 24	**HOLIDAY, NO CLASS!**	**Have Fun ☺**		
Nov. 29	Plant Diversity IV: Angiosperms	Ch. 19	***Mini Lectures***	**Mini lecture Report (20) & Powerpoint (10) due by 8am (email). Presentation in lab (5)**
Dec. 1	Seeds, Fruits, and Flowers	Ch. 20 & Ch. 25 pgs. 604-607		
Dec. 6	Plant Ecology I	Ch. 32	***Mini Lectures***	**Mutant Report (30)**
Dec. 8	Plant Ecology II	Ch. 32		
Dec. 13	Review		***NO LABORATORY***	
Dec. 15	**Final Exam (150): 10:30am-12:30pm**			

***** Lab studies are indicated in ***italics and bold***. Numbers in parentheses indicate point value.

SAN DIEGO STATE UNIVERSITY

RELEASE OF LIABILITY, PROMISE NOT TO SUE, ASSUMPTION OF RISK AND AGREEMENT TO PAY CLAIMS

Activity: Three field trips in the Fall 2016 semester: San Diego Natural History Museum (SDNHM), Torrey Pines State Natural Reserve (TP), and Mission Trails Regional Park (MT)

Activity Date(s) and Time(s): 10/4/2016 (SDNHM), 10/25/2016 (TP), 11/22/2016 (MT): 12:30pm-4:40pm

Activity Location(s): SDNHM, Torrey Pines State Natural Reserve, and Mission Trails Regional Park

In consideration for being allowed to participate in this Activity, on behalf of myself and my next of kin, heirs and representatives, **I release from all liability and promise not to sue** the State of California, the Trustees of The California State University, California State University, San Diego State University, their employees, officers, directors, volunteers and agents (collectively "University") from any and all claims, **including claims of the University's negligence**, resulting in any physical or psychological injury (including paralysis and death), illness, damages, or economic or emotional loss I may suffer because of my participation in this Activity, including travel to, from and during the Activity.

I am voluntarily participating in this Activity. I am aware of the risks associated with traveling to/from and participating in this Activity, which include but are not limited to physical or psychological injury, pain, suffering, illness, disfigurement, temporary or permanent disability (including paralysis), economic or emotional loss, and/or death. I understand that these injuries or outcomes may arise from my own or other's actions, inaction, or negligence; conditions related to travel; or the condition of the Activity location(s). **Nonetheless, I assume all related risks, both known or unknown to me, of my participation in this Activity, including travel to, from and during the Activity.**

I agree to **hold** the University **harmless** from any and all claims, including attorney's fees or damage to my personal property, that may occur as a result of my participation in this Activity, including travel to, from and during the Activity. If the University incurs any of these types of expenses, I agree to reimburse the University. If I need medical treatment, I agree to be financially responsible for any costs incurred as a result of such treatment. I am aware and understand that I should carry my own health insurance.

I am 18 years or older. **I understand the legal consequences of signing this document, including (a) releasing the University from all liability, (b) promising not to sue the University, (c) and assuming all risks of participating in this Activity, including travel to, from and during the Activity.**

I understand that this document is written to be as broad and inclusive as legally permitted by the State of California. I agree that if any portion is held invalid or unenforceable, I will continue to be bound by the remaining terms.

I have read this document, and I am signing it freely. No other representations concerning the legal effect of this document have been made to me.

Participant Signature: _____ Date: _____

Participant Name (print): _____ Red ID (SDSU employee/student): _____

If Participant is under 18 years of age:

I am the parent or legal guardian of the Participant. **I understand the legal consequences of signing this document, including (a) releasing the University from all liability on my and the Participant's behalf, (b) promising not to sue on my and the Participant's behalf, (c) and assuming all risks of the Participant's participation in this Activity, including travel to, from and during the Activity.** I allow Participant to participate in this Activity. I understand that I am responsible for the obligations and acts of Participant as described in this document. I agree to be bound by the terms of this document.

I have read this two-page document, and I am signing it freely. No other representations concerning the legal effect of this document have been made to me.

_____

Signature of Minor Participant's Parent/Guardian

_____ _____

Name of Minor Participant's Parent/Guardian (print) Date

_____

Minor Participant's Name