Spring 2-1-2022

BIOO 433.01: Plant Physiology

Anna Sala
University of Montana, Missoula, anna.sala@umontana.edu

BIOO 433 - PLANT PHYSIOLOGY – SPRING 2022 - SYLLABUS

Instructor Information

Dr. Anna Sala, NS 117; anna.sala@umontana.edu

Meeting time and room

Tuesdays, Thursdays 11:00-12:20; LA 338

(Strongly) Recommended Text:

Taiz, Zeiger, Møller, Murphy. Fundamentals of Plant Physiology. Oxford (Sinauer). 2018

Office Hours

Thursday 3-5 PM via zoom or by appointment via email (please, write BIOO433 in subject)

Electronic Resources

Moodle

Course Description

This course is an introduction to the physiological processes underlying plant growth and development, and plant responses to the environment.

Learning Outcomes

At the end of this course, I hope you will be able to explain:

1. the importance of plants in nature and for society
2. the major differences between plant and animal cells and the implications for plant function and for society
3. where plant growth (biomass accumulation) begins in plants and how it occurs (in general terms)
4. why plants need water and the strategies they use to remain hydrated
5. how plants acquire nutrients from the soil
6. how plants are able to synthesize carbohydrates using the energy from light
7. which environmental factors plants respond to and how (broad mechanisms)
8. scientific papers, their goals, results and significance to intro biology students

Course Structure

The course consists of two 1 h 20 minute sessions per week. I emphasize on understanding, critical thinking and integration of core concepts. I ask lots of questions and I rely strongly on interaction with students. So, I encourage you to ask questions at any time during class. This often generates good discussions, which often delay us a bit. This is why the class schedule is only tentative.

I will post earlier lectures on Moodle, but they have minimal text. I recommend that you download them before class and take notes on them. I also post study questions, which I also

recommend reading before class (this helps to focus on specific topics) and answering as we go (There are lots of questions, so I recommend working on them as we go).

Some recommendations

1. Attend class and take good notes
2. Print power points ahead of time to take notes on them
3. Rewrite your notes according to your own style of learning. Place emphasis on integration and understanding
4. Read the book and the study questions before class to give you a sense of where to focus
5. As we go over the material, respond the review questions (there may be up to 100 or so per topic!). Some are open ended and some require reviewing the notes
6. Before each exam, summarize all your notes into a 1 or 2 page condensed summary. This really forces you to extract the core concepts.
7. Before the exam review the study questions and responses
8. If, after studying, there are questions which you still do not know how to answer, please ask them in class, during office hours or make an appointment.
9. Set study groups to go over material and study questions. It really helps.

Communication

I will use your UM email address to give updates about the class. Please, make sure to check it often and/or link it to the email address you commonly use. If you write me an email, please write BIOO433 in the subject so I can flag it to respond.

Grading

Grading will be based on readings of paper from the scientific literature, quizzes and three exams, including the final.

I will assign six papers from the scientific literature during the course (posted on Moodle). For each paper, you will: 1) write a very brief summary of what the paper is about and why the topic is important, followed by an explanation of what you found most interesting about the paper and why; and 2) answer questions on the paper that I will post. Each paper will be worth 20 points (10 each).

Summary and responses to questions are due one week after the questions are handed out. Students will lose 10% of the grade per day late.

After each main topic during the course, there will be a quiz of very short questions. This adds up to six quizzes. Each will be worth 15 points.

We will also have three exams, including the final, each worth 100 points. The final exam will be partially comprehensive. Exams generally consist of short answer questions. These may include factual questions, interpretation of data from published scientific research, and other thought-provoking questions. I seek evidence of both knowledge and understanding.

Make-up exams will be permitted only with compelling and supported reasons and arranged prior to the scheduled exam. *No early final exams will be given*, so make any travel plans accordingly.

Graduate students are also required to write a review paper (5 pages maximum) on a topic in plant physiology related to their graduate research. These papers must be turned in the last day of class (50 points).

Type of Assignment	Total	%UG	%G
Exam 1	100	19	17
Exam 2	100	19	17
Exam 3	100	19	17
Papers (6 @ 20 pts)	120	22	21
Quizzes (6 @ 15 points each)	90	17	15
Participation	25	5	4
Review Paper (**Graduate**)	50		9
Total Undergraduate	535		
Total Graduate	585		

Letter grade assignments are as usual: A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69 and F < 60%.

Adds, drops and changes of grade

I will follow university policies on drops, adds, and changes of grade, which sets deadlines and dates after which course changes are not automatically approved. Requests to drop a course or change the grade basis to benefit a student's grade point average will not be approved. A grade of C or higher will be considered passing for the P/NP option.

Disability modifications

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity. If you think you may have a disability adversely affecting your academic performance, and you have not already registered with the Office for Disability Equity, please do so at the Lommasson Center 154 or call 406.243.2243. I will work with you and the Office for Disability Equity to provide an appropriate modification.

COVID-19-Related Precautions and Recommendations

- For COVID information and updates please visit the UM Coronavirus information site.
- Please, sit in your assigned seat.
- Please, wear masks at all times and abstain from eating or drinking. Check the UM's face covering policy.
- Please, clean your personal work space when you arrive for class, and before you leave the classroom.
- Check the Keep on Learning website for resources and lists of remote learning spaces.
- Stay home and contact the Curry Health Center at (406) 243-4330 if you feel sick and/or if exhibiting COVID-19 symptoms.
- If you are diagnosed with COVID-19, follow instructions for quarantine and contact your advisor so they can help you stay on track academically.
- Students, please remain vigilant outside the classroom and help mitigate the spread of COVID-19.

Special COVID-19 related accommodations

I designed the course with the assumption it would be face to face. The class is very small and I hope a face to face class will be possible. Studies have unequivocally show that students learn much better face to face.

Of course, if you get sick or must quarantine, I will make accommodations so you can attend via Zoom.

Tentative schedule

The following is a tentative schedule. However, ***exam dates will not change***.

Week	Dates	Topic
1	Jan. 18	Introduction, Characteristics of plants
	Jan. 20	Plant and Cell Architecture
2	Jan. 25	Plant and Cell Architecture
	Jan. 27	Cell walls - QUIZ 1
3	Feb. 1	Water relations – 1st Paper Due
	Feb. 3	Water relations
4	Feb. 8	Water relations
	Feb. 10	Water relations - QUIZ 2
5	Feb. 15	EXAM 1
	Feb. 17	Mineral nutrition – 2nd Paper Due
6	Feb. 22	Mineral nutrition
	Feb. 24	Mineral Nutrition
7	Mar. 1	Solute Transport - QUIZ 3
	Mar. 3	Photosynthesis: light reactions – 3rd Paper Due
8	Mar. 8	Photosynthesis: light reactions
	Mar. 10	SPRING BREAK
9	Mar. 15	Photosynthesis: dark reactions
	Mar. 17	Photosynthesis: dark reactions
10	Mar. 22-24	Photosynthesis: Ecology - QUIZ 4
11	Mar. 29	EXAM 2
	Mar. 31	Phloem transport – 4th Paper Due
12	Apr. 5	Phloem transport
	Apr. 7	Respiration
13	Apr. 12	Respiration
	Apr. 14	Nitrogen Assimilation - QUIZ 5
14	Apr. 19	Secondary Metabolism
	Apr. 21	Secondary Metabolism
15	Apr. 26	Light Responses – 5th Paper Due
	Apr. 28	Light Responses
16	3-May	Hormones - QUIZ 6
	5-May	Hormones – 6th Paper Due
	13-May	FINAL EXAM (8:10-10:10)