SYLLABUS

Course Code	*Course Num.*	*Course Name*	*Credit Hours*	*Lec.*	*Lab.*	*Tut.*	*Private study*	*Pre-requisites*	*Course Level*	*Teaching Language*
BIO	**323**	**Plant Physiology**	**4**	**3**	**2**	**0**	**6**	**BIO 322**	**6**	**English**

A. Course Description

Course description: This course has titles which will introduce the plant physiology. So, this course involves plant and cell architecture, water balance and transport in plants, mineral nutrition and assimilation, phloem transport, respiration, photosynthesis, growth and development, development and differentiation, hormones and phytochrome.

B. Course Outcomes

At the end of this course the student will be able to:

1. Describe vital objects in botany.
2. State the background in understanding of plant physiology.
3. Define Coordination and Homeostasis in plants.
4. Outline the principle of mineral and organic nutrition.
5. Compare the obtaining of energy of each photosynthesis and respiration.
6. Explain how Cellular Communication and Plant Defense take place.

C. References

Required Textbook

- *Plant Physiology*, 5th Edition. Sinauer Associates, Inc. Publishers, Sunderland, MA (2010). ISBN: 978-0-87893-866-7.
- *Introduction to Plant Physiology*, 4th Edition, University of Weseren (2008). ISBN 978-0-470-24766-2.

Other references

- *International journal of plant physiology.*

Course Website: http://www.valdosta.edu/colleges/education/program-assessment-analytics evaluation/documents/syllabi/BIOL3400.pdf.

D. Topics Outline

D1. Lectures topics

1. ***What is Plant Physiology? Botany Review.***
2. ***Plant and Cell Architecture.***
3. ***Water potential.***
4. ***Water Balance and Transport in Plants.***
5. ***Membrane Potential and Solute Transport.***

6. ***Mineral Nutrition.***
7. ***Mineral Assimilation.***
8. ***Phloem Transport.***
9. ***Biochemistry and Metabolism Respiration and Lipid Metabolism.***
10. ***Photosynthesis: The light reactions.***
11. ***Photosynthesis: Carbon reactions.***
12. ***Photosynthesis: Physiological and Ecological considerations.***
13. ***Cellular Communication.***
14. ***Plant Defenses: Surface protection and secondary metabolites.***
15. ***Growth and Development.***
16. ***Development and differentiation.***
17. ***Hormones:*** *Auxins, Gibberellins, Cytokinins, Ethylene, Abscissic Acid, Phytochrome.*

D2. Laboratories topics

1. ***Plant Water Potential Plant Pressure Bomb; Transpiration.***
2. ***Start Mineral Nutrition; discuss and design independent projects.***
3. ***Mineral Nutrition.***
4. ***Amylase induction during Seed Germination.***
5. ***Analysis of α-amylase by glucose accumulation.***
6. ***Analysis of α-amylase by starch hydrolysis.***
7. ***Analysis of Mineral Nutrition and Hormonal induction during seed germination or independent lab.***
8. ***Measurement and characterization of Photosynthesis.***
9. ***Measurement of the CO_2 dependence of photosynthesis.***
10. ***Measurement of Photorespiration in C3 and C4 plants.***
11. ***SDS-PAGE.***
12. ***SDS-PAGE and Electro blotting of proteins.***
13. ***Immunoblot-localization of cytoskeletal proteins in plant cells.***
14. ***General revision.***

E. Office Hours

Office hours give students the opportunity to ask in-depth questions and to explore points of confusion or interest that cannot be fully addressed in class.

F. Exams & Grading System

The semi-official dates of the exams for this course are:

- **Midterm 1:** 6th or 7th week.
- **Midterm 2:** 11th or 12th week.
- **Final Exam Lab:** 16th week.
- **Quizzes & Homeworks:** During the semester.
- **Final Exam:** 16th week.

Your course grade will be based on your semester work as follows:

Midterm 1: 15 %	**Midterm 2:** 15 %	**Final Exam:** 40 %	**Final Lab Exam:**20%
Quizzes, Homework, Attendance & Participation: 10 %			

The grading distribution:

A+	A	B+	B	C+	C	D+	D	F
[95, 100]	[90, 95)	[85, 90)	[80, 85)	[75, 80)	[70, 75)	[65, 70)	[60, 65)	[0, 60)

G. Student Workload

#	Teaching/Learning activities	Contact hours	Frequency	Total contact hours	Self-study hours	Total self-study hours	Student learning time
5	**Lecture**	3	15	45	2	30	75
2	**Tutorial**	0	0	0	0	0	0
0	**Lab\practical**	2	15	30	1	15	45
5	**Homework**	0	4	0	2	8	8
4	**Quiz**	0.5	2	1	1	2	3
6	**Midterm**	1.5	2	3	5	10	13
7	**Final Exam**	2	1	2	12	12	14
Total				**81**		**77**	**158**

H. Student Attendance/Absence

Only three situations will be considered as possible excused absences:

- Occurrence of a birth or death in the immediate family will be excused. ("Immediate family" is defined by the University as spouse, grandparents, parents, brother, or sister).
- Severe illness in which a student is under the care of a doctor and physically unable to attend class will be excused. Students are not excused for a doctor's appointment. Do not make appointments that conflict with rehearsals. Notes from the University Health Center will be accepted.

Executive Rules for Study Regulations and Exams

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