

Mississippi Valley State University

College: Arts and sciences
Course Number: BI 403

Department: Natural Sciences
Course Name: Plant Physiology

Instructor:
Manju Pande, Ph.D.

Class Meetings-Location/Time
Lecture – MWF/11:00-11:50am
Lab – R 8-10:40, FLW-138

Office Location
STC 2253, FLW 118

Office Phone:
254-3382, 3377

Email Address:
mpande@mvsu.edu

Office Hours:
M-F 10:11:00am
MTWF – 2-3:00pm

Credit Hours: 4 (Lec-3, Lab -1)

Prerequisite(s): BI 112, CH 111-112



Course Objectives

1. Developing a knowledge base for plant metabolism and development of higher plants.
2. To study mechanism involved in the uptake of water and mineral nutrients, and their transport across the cell membranes
3. To assist you in understanding the mechanism of carbon fixation, and its transport to different parts of the plant body.
4. Promoting an understanding of plant growth hormones
5. To study the influence of light, day length and seasonal variations on plant growth

Student learning outcome

1. The students should be able to understand the physiological basis of Plant growth.
2. Students should be able to demonstrate the knowledge of the mechanism of Carbon fixation.
3. Students should be able demonstrate the knowledge of environmental factors affecting flowering and plant growth.

Textbook: PLANT PHYSIOLOGY AND DEVELOPMENT by Lincoln Tiaz and Eduardo Zeiger. Sixth edition

www.plantphys.net – An online companion to “Plant Physiology” by Tiaz and Zeiger

Recommended Readings:

Introduction to Plant Physiology by Hopkins, William G.

BOTANY An Introduction to Plant Biology by James D. Mauseth, fifth edition. Jones & Bartlet

www.plantphysiol.org/content

www.elsevier.com/journals/journal-of-plant-physiology/0176-1617

www.sciencedirect.com/science/journal/1761617

Major Areas of study (Blackboard incorporated)

Chapter 1. Plant Cells

Overview of plant structures, plant cell, plasmodesmata

Transport and Translocation of water and solutes

Chapter 3. Water and Plant cell

The structure and properties of water

Water transport processes

Chapter 4. Water balance of plants

Water in the soil, water absorption by roots, water transport through the xylem and movement from leaves to atmosphere

Chapter 5. Mineral Nutrition

Essential nutrients, deficiencies and symptoms

Biochemistry and Metabolism

Chapter 7. Photosynthesis: The light reactions

General concepts, photosynthetic apparatus

Antenna systems, electron transport, repair and regulation of the photosynthetic machinery

Chapter 8. Photosynthesis: Carbon reactions

The calvin cycle, regulation of calvin cycle

Photorespiration

Chapter 12. Assimilation of Mineral nutrition

Growth and Development

Chapter 19. Auxin- The growth hormone

Chapter 20. Gibberellins: regulators of Plant height

Chapter 21, 22, and 23 and 24. Cytokinins, Ethylene, Abscisic acid and Brassinolide

Chapter 25. The control of Flowering

Circadian rhythms, Photoperiodism, Vernalization.

Lab Assignments: Labs and group research projects)

1. Physiology of germination
2. Transpiration, Plasmolysis
3. Enzyme activity
4. Soil analysis
5. Hydroponic system
6. Mineral deficiency Lab
7. Light absorption spectrum
8. Effect of plant growth hormones
9. Effect of Light on plant growth

Use of Technology

Technology is integrated into the course to enhance and facilitate the promotion and development of four attributes of HTM. The technology used includes but not limited to:

1. www.plantphys.net, an online companion to the textbook.
2. Computer and LCD projector, videos, and charts
3. Compound light microscopes with computer and colored monitor
4. Use of Spectrophotometers, grinders, centrifuges, electronic balances, etc.
5. Use of Internet Searches – infotrac, EBSCOhost.
6. Computer applications for collecting, analyzing, and displaying data.

Course Basic Requirements

Each Student is required to:

1. Attend lecture and lab regularly on scheduled class days. In case of emergency or under Physician's care, a signed excuse from the student dean is required.
2. Complete all home works & assigned readings from the text and other resources.
3. Demonstrate knowledge of course content on each examination.
4. Submit home works and other assignments on the announced due dates

Method of Instructions

Course instruction will include classroom lectures, demonstrations and discussions. These will be complemented by use of video demonstrations, charts, microscope slides, overheard projectors, models, lab projects. **This Course is integrated with Blackboard. The Lecture Power points, Assignments and Quizzes will be found on Blackboard. Please contact Mr. Pendelton at 662-254-3114 for any question you may have and as well as for your user name and setting up your password.**

Note: The major Tests will be given in class.

Method of Evaluation

3 Unit Test	– 300 each
Midterm	- 100 points
Final (comprehensive)	- 100 points
Homework and other Class assignments	- 100points

Term Paper/Presentation - 100 points.
(Separate instructions for the term paper will be given later on, in the class)
Total - 700 points

Lab Examination - 50 points
Laboratory reports - 50 points
Portfolio - 100 points
Graphs and Participation in the small research projects- 50 points
Total - 250points

Laboratory reports: are due at the end of each laboratory period.

Grading Scale

90-100	A
80-89	B
70-79	C
60-69	D
59- below	F

Make up work policy

It is the student's responsibility to make up lecture test, assignments or any other material missed due to absences. Only official or personal emergency absences (medical certificates) will be recognized. **Any missed test or homework should be made up within three class days of your return.** There will be no make up missed lab test, and lecture makeup exams are not necessarily easier.

Attendance and Withdrawal policy

Students are expected to attend and participate in all lecture and Laboratory classes assigned to be present before the completion of roll call. The instructor will follow the absentee policy in the college catalog. Absences more than 3 in lecture or lab will be notified to the Dean.

Academic Integrity

Academic dishonesty is defined to include, but is not limited to , any of the following:

1. Plagiarism: submitting as one's own work the product of someone else's research, writing, artistic conception invention, or design.
2. Cheating and dishonest practices in connection with examination, papers, and projects.
3. Forgery, misrepresentation or fraud

Violaton of academic integrity will be handled according to Mississippi Valley State University Policy

Services for Students with Disabilities

Mississippi Valley State University is committed to providing reasonable accommodations for students with a documented disability. If you feel you are eligible to receive accommodations for a covered disability (medical, physical, psychiatric, learning, vision, hearing, etc.) and would like to request it for this course, you must be registered with the Services for Students with Disabilities (SSD) program administered by University College. It is recommended that you visit

the Disabilities Office located inside the EMAP Computer Lab in the Technical Education (IT) Building to register for the program at the beginning of each semester.

For more information or to schedule an appointment, please contact Mr. Billy Benson, Jr. via phone or email at 662-254-3005 or billy.benson@mvsu.edu.

Few Class rule

1. Please arrive on time and ready to work
2. No food and drink in the classroom
3. Turn off the pagers and the cell phones before coming to the classrooms
4. At the end of the Lab period, please clean up your work area. Return the microscopes in the designated area and slides to their trays.

This Syllabus does not constitute a contract with the University. This contains guidelines for the course. I reserve the right to make changes (add or delete) as needed.