The Islamia University of Bahawalpur

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Tentative Course Plan
DEPARTMENT OF BOTANY

Class:	Semester-	Session:

Instructor	Dr. Sadaf Zehra	**Email: sadaf_uaar@yahoo.com**	
Course Title	Plant Physiology and Ecology	**Program**	**BS**
Course Number	LS-01403	**Credit Hours**	4(3+1)

Lecture	……day: …. period (00:00a.m to 00: 00a.m), Room# 00

Course Objective:

Physiology is the study of function. In this course we will explore the link between form and function in plants. Approach will be primarily at the whole organism level. Laboratory experiments will reinforce the lecture topics. Students will be exposed to current research in plant physiology through lecture specific objectives of this course will be to understand the following topics: cell structure and function, water relations, conduction of water and organic matter, the role of mineral nutrients in growth and development, the metabolic processes of photosynthesis and respiration, hormonal regulation of growth and development, movement in plants.

Methods of Teaching

- Assigned readings
- Group activities & Discussion
- Audiovisual aids lectures
- Web-assisted instruction
- Student-Directed Teaching

Resource Material	1.Books Prescribed
	1. Taiz, L. and Zeiger, E. 2006. Plant Physiology. 4th. Ed. Sinauers Publ. Co. Inc. Calif.
	2. Salisbury F.B. and Ross C.B. 1992. Plant Physiology. 5th Edition. Wadsworth Publishing Co. Belmont CA.
	3. Hopkins, W.B. 1999. Introduction to Plant Physiology. 2nd Ed. John Wiley and Sons. New York
	4. Schultz, J.C. 2005. Plant Ecology. Springer-Verlag, Berlin.
	5. Ricklefs, R.E. 2000. Ecology. W.H. Freeman and Co., UK.
	6. Ricklefs, R.E. 2001. The Economy of Nature. W.H. Freeman and Co., UK.
	7. Hussain F. 1989. Field and Laboratory Manual of Plan Ecology. National Academy of Higher Education, Islamabad.
	8. Hussain, S.S. 1989. Pakistan Manual of Plant Ecology; National Book Foundation, Islamabad.
	9. Larcher, W. 2003 Physiological Plant Ecology: Ecophysicology and Stress Physiology of Functions Groups – Springer Verlag.
	10. Smith, R. L. 1996. Ecology and Field Biology. Addison Wesley Longman, Inc., New York.
	11. Smith, R. L. 2004.Ecology and field biology. Addison Wesley Longman, Inc., New York.
	12. Subrahmanyam, N.S. and Sambamurthy, A.V.S.S. 2000. Ecology. Narosa Publishing House, New Delhi.
	13. Townsend, C.R., Harper, J.L. and Begon, M.E. 2002. Essentials of Ecology. Blackwell Scientific Publications, UK.

2.Reference Book		3.Research Papers	
i		i	
ii		ii	

4.Hot Research Papers		5.Web Resources	
i		i	
ii		ii	

Office Help Hours	Monday-Friday: 00:00am

Grading	Exam (Date to be announced) Mid- Exam (30%) Final Exam (50%) Problem Session/Assignments (20%)		
Problem Session	…..day: 00 and 00 periods (0:00-00:00am), Room# 00		

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SEQUENCE OF TOPICS TO BE COVERED

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Session/ week	Topics (outline of main topics and sub topics)	Chapter #	Tutorial /Laboratory
1	Introductory lectures about Plant Physiology and Ecology		Preparation of solution of specific normality of acids / bases, salts, sugars,
2	Solutions, types. Water relations (water potential, osmotic potential, pressure potential, matric potential).		molal and molar solutions and their standardization
3	Absorption and translocation of water. Passive and active transport of nutrients.		
4	Stomata regulation. Theories regarding Mechanism of opening and closing of stomata.		Measurement of leaf water potential by Tissue volume method
5	Photosynthesis: History of photosynthesis, Nature and units of Light, Ultrastructure of thylakoid vesicle. Various pigments and photosynthetic activity		Measurement of leaf water potential by Fallong drop method
6	Electron and proton transport through thylakoid protein – pigment complexes, Photophosphorylation and its mechanism, CO_2 reduction (dark reactions)		Chemical testes for the following cell constituents. Starch Cellulose
7	Respiration: Definition and respiratory substrates. Respiratory Quotient. Glycolysis, Krebs cycle.		Chemical testes for the following cell constituents. Lignin Proteins
8	Electron transport chain and Anaerobic respiration		Extraction of chlorophyll from the leaves and separation of component pigments on a paper chromatogram.
	Mid Term Exam	Course/Discussion from session 1 to 14	
9	Phototropism: Definition, historical background, Classification of plants based on phototropic response,		Measurements of vegetation by Quadrat and line intercept methods
10	Dormancy: Definition and causes of seed and bud dormancy; methods of breaking seed dormancy. Physiological processes during seed germination.		Field trips to ecologically diverse habitats
11	Introduction, aims and applications of ecology.		

12	Soil as an ecological factor and its importance.		
13	Light and Temperature. Quality of light, diurnal and seasonal variations. Ecophysiological responses. Water: Field capacity and soil water holding capacity.		
14	Water as an ecological factor and its importance. Water cycle.		
15	Characteristics of xerophytes and hydrophytes. Effect of precipitation on distribution of plants.		
16	Wind as an ecological factor and its importance.		
	Final Term Exam	Course/Discussion from session 1- 29	

Student Evaluation criteria:

Attendance	5%
Workshop / Assignments/Case study	5%
Surprise Test/Sudden Test , Quizzes	5%
Class Participation	5%
Mid Term Paper	30%
Final Term paper	50%
Total	**100%**

Student Responsibilities:

Students must attend class. Failure to attend class may result in failure in the course. Students must also arrive on time and remain in class for the entire period. Cellular Phones and Beeper must be Turned off (Proper classroom decorum [behavior] adopts, Course outlines and calendars explain requirements and assignments, students are responsible for knowing what they say. Students are also responsible for doing all assigned work on time. Excessive absences (more than 03) will result in "F Grade". Students may prepare Sketchbook for taking notes and for references.

Instructor/Tutor

Approved by:

Dean/ Chairman/ HOD/ Subject Specialist/ Program Coordinator