 The Islamia University of Bahawalpur

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# DEPARTMENT OF BOTANY

**Tentative Course Plan**

**Class: Semester- Session:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **Instructor** | | | **Iqra Khadim** | | | | | **Email:ikhadim179 @gmail.com** | | | | |
| **Course Title** | | | **Plant Physiology-II** | | | | | **Program** | | **BS (7TH Semester)** | | |
| **Course Number** | | | **BOTA-01704** | | | | | **Credit Hours** | | **3(2+1)** | | |
| **Lecture** | | | ……day: …. period (00:00a.m to 00: 00a.m), Room# 00 | | | | | | | | | |
| **Course Objective:** | | | | | | | | | | | | |
| **Methods of Teaching**   * Assigned readings * Group activities & Discussion * Audiovisual aids lectures * Web-assisted instruction * Student-Directed Teaching | | | | | | | | | | | | |
| **Resource Material** | | | **1. Text Books**  i. Plant Physiology” by S N Pandey and B K Sinha | | | | | | | | | |
| **2.Reference Books** | | **3.Research Papers** | | | | | | | |
| i | **Plant Physiology**. **Book** and Web **Reference**. TEXT required: . Taiz & Zeiger (2006) **Plant Physiology**. 4th Edition. Sinauer. Taiz L & Zeiger E (2002) | i | |  | | | | | |
| Ii |  | ii | |  | | | | | |
| **4.Hot Research Papers** | | **5.Web Resources** | | | | | | | |
| i |  | i | |  | | | | | |
| Ii |  | ii | |  | | | | | |
| **Office Help Hours** | | |  | | | | | | | | | |
| **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 | | | | | | | | | |
| **SEQUENCE OF TOPICS TO BE COVERED** | | | | | | | | | | | | |
| Lecturer # | | Topics (outline of main topics and sub topics) | | | | | Chapter # | | | Tutorial /Laboratory | | |
| **1** | | Introductory Lecture to the Subject | | | | |  | | |  | | |
| **2** | | Plant growth regulators, major natural hormones and their synthetic analogues | | | | | Plant growth regulators | | | Determination of K uptake by excised roots | | |
| **3** | | Bioassay, structure, biosynthesis, receptors | | | | | . | | |  | | |
| **4** | | Signal transduction and mode of action, transport physiol. effect of auxins Gibberellins, cytokinins, abscisicacid acid, ethylene | | | | |  | | |  | | |
| **5** | | Signal transduction and mode of action, transport physiol. effect of polyamines, Brassinosteriods, jasmonates, and salicylic acid | | | | |  | | | To investigates the preferential absorption of ions by corn seedlings and potato slices | | |
| **6** | | Water relations, the soil- plant- atmosphere continuum- an overview | | | | | Water relations | | |  | | |
| **7** | | Structure of water, physio chemical properties of water | | | | |  | | |  | | |
| **8** | | Water in soil and its potential, water in cell components | | | | |  | | | . | | |
| **9** | | Absorption of water in plants, Aquaporins their structure and types | | | | |  | | |  | | |
| **10** | | Cell water relations terminology, Hofler diagram | | | | |  | | |  | | |
| **11** | | Analysis of change in turgor, water and osmotic potential with change in cell volume, Osmoregulation | | | | |  | | |  | | |
| **12** | | Methods for measurement of water, osmotic and turgor potential, pressure chamber, psychrometery, pressure probe, pressure volume curve | | | | |  | | | To determine osmotic potential of massive tissue by freezing point depression method or by osmometer | | |
| **13** | | Plant mineral nutrition, Absorption of mineral nutrients- roots, mycorrhizae | | | | | Plant mineral nutrition | | |  | | |
| **14** | | Effect of soil pH on nutrient availability, Passive and active transport and their energetics | | | | |  | | |  | | |
| **15** | | , Essential and beneficial elements- their function and deficiency symptoms in plants | | | | |  | | |  | | |
| **16** | | Fertilizers and their significance in Agriculture | | | | |  | | |  | | |
|  | | **Mid Term Exam** | | | | | Course/Discussion from session 1 to 16 | | | | | |
| **17** | | Phytochromes | | | | | Phytochromes | | | | |  |
| **18** | | Discovery of phytochromes and cryptochromes | | | | |  | | | | |  |
| **19** | | Physical and chemical properties of phytochromes and their role in biological processes | | | | |  | | | | |  |
| **20** | | Control of flowering | | | | | Control of flowering | | | | |  |
| **21** | | Autonomous versus environmental regulation | | | | |  | | | | | To investigate water potential of a plant tissue by dye method and water potential apparatus |
| **22** | | Circadian rhythms | | | | |  | | | | |  |
| **23** | | Classification of plants according to photoperiodic reaction and induction | | | | |  | | | | |  |
| **24** | | Role of photoperiodism in flowering | | | | |  | | | | |  |
| **25** | | Biochemical signaling involved in flowering | | | | |  | | | | |  |
| **26** | | Vernalization and its effect on flowering | | | | |  | | | | |  |
| **27** | | Floral meristem and floral organ development | | | | |  | | | | |  |
| **28** | | Floral organ identity genes and the ABC model | | | | |  | | | | |  |
| **29** | | Gene regulation | | | | |  | | | | |  |
| **30** | | Signal transduction | | | | |  | | | | |  |
| **31** | | Gene regulation in prokaryotes | | | | |  | | | | |  |
| **32** | | Gene regulation in eukaryotes | | | | |  | | | | |  |
|  | | **Final Term Exam** | | | | | Course/Discussion from session 1- 32 | | | | | |

**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”.

**Instructor / Tutor**

**Approved by:**

**Chairman**