



# The Islamia University of Bahawalpur

Abbasia Campus, Bahawalpur, Pakistan Ph: +92 - 62 - 9239114, Fax: +92 - 62 - 9250099 Email: qec@iub.edu.pk

## Tentative Course Plan DEPARTMENT OF BOTANY

Class: MS Botany

Semester-5th (Botany)

Session: 2017-21

<b>Instructor</b>	<b>Ghulam Sarwar</b>		<b>Email:</b> <a href="mailto:lifesci.flora786@gail.com">lifesci.flora786@gail.com</a>	
<b>Course Title</b>	<b>Plant Anatomy</b>		<b>Program</b>	<b>BS Botany</b>
<b>Course Number</b>	<b>BOTA- 01506</b>		<b>Credit Hours</b>	<b>3(2+1)</b>
<b>Lecture</b>	.....day: ..... period (00:00a.m to 00: 00a.m), Room# 00			
<b>Course Objective:</b>				
<ol style="list-style-type: none"> <li>To provide the students understanding about anatomical features of vascular plants</li> <li>To enable the students to access &amp; generate new knowledge in purposeful fashion.</li> </ol>				
<b>Methods of Teaching</b>				
<ul style="list-style-type: none"> <li>Assigned readings ✓</li> <li>Group activities &amp; Discussion ✓</li> <li>Audiovisual aids lectures ✓</li> <li>Web-assisted instruction ✓</li> <li>Student-Directed Teaching ✓</li> </ul>				
<b>Resource Material</b>	Books Prescribed:			
	1. Dickison, W. C. 2000. Integrative plant anatomy. Academic Press, U. K.			
	2. Fahn, A. 1990. Plant Anatomy. Pergamum Press, Oxford.			
	3. Esau, K. 1960. Anatomy of Seed Plants. John Wiley, New York.			
	4. Metcalf, C. R. and Chalk, L. 1950. Anatomy of the Dicotyledons. Clarendon Press. Oxford.			
	5. Anon. Manual of Microscopic Analysis of Feeding Stuffs. The American Association of feed Microscopists.			
6. Vaughan, J. G. 1990. The structure and Utilization of Oil Seeds. Chapman and Hall Ltd. London.				
7. Metcalfe, C. R. 1960. Anatomy of the Monocotyledons. Gramineae. Clarendon Press, Oxford.				
8. Metcalfe, C. R. 1971. Anatomy of the Monocotyledons.V. Cyperaceae. Clarendon Press, Oxford.				
9. Cutler, D. F. 1969. Anatomy of the Monocotyledons. IV. Juncales. Clarendon Press, Oxford.				
10. Cutler, D. F. 1978. Applied Plant Anatomy. Longman Group Ltd. England				
11. Raymond, E. S. and E. Eichhorn. 2005. Esau's Plant Anatomy; Meristematic cells and tissues of plant body. John Willey Sons.				
2.Reference Book		3.Research Papers		
i	Eames, A.J.and L.H. Mac Daniels. 2002. An introduction toPlant Anatomy. Mac-Graw Hill Publishing Company Limited,New Delhi.	i		
ii	Raymond, E.S. and E. Eichhorn. 2005. Esau's Plant Anatomy; Meristematic cells and tissues of plant body. John Willey Sons.	ii		
4.Hot Research Papers		5.Web Resources		
i		i		
ii		ii		
<b>Office Help Hours</b>				
<b>Grading</b>				
Exam (Date to be announced) Mid- Exam (30%) Final Exam (50%) Problem Session/Assignments (20%)				
<b>Problem Session</b>				
.....day: 00 and 00 periods (0:00-00:00am), Room# 00				
<b>SEQUENCE OF TOPICS TO BE COVERED</b>				
Session	Topics (outline of main topics and sub topics)	Chapter	Tutorial /Laboratory	
1	Introductory lecture to the subject		Study of organization of shoot and root meristem, different primary and secondary tissues from the living and preserved material in macerates and	
2 & 3	fundamental parts of the plant body, Internal organization	Plant body and its development		
4 & 5	Different tissue systems of primary and secondary body.			
6	Classification of Meristematic tissues	Meristematic tissues		
7& 8	Cytohistological characteristics, initials and their derivatives.	<b>-do-</b>		
9 & 10	Delimitation, different growth zones, evolution of the concept of apical organization.	Apical meristem		

11 & 12	Shoot and root apices.	-do-	sections, hairs, glands and other secondary structures.
13 & 14	Types, origin, internal organization of Leaf.	Leaf	
15 & 16	Development of different tissues with special reference to mesophyll, venation, bundle-sheaths and bundle-sheath extensions. Enlargement of epidermal cells.	-do-	Study of abnormal/unusual secondary growth.
<b>Mid Term Exams</b>			
17 & 18	Origin, structure, storied and non-storied cell types, types of divisions: additive and multiplicative.	Vascular cambium	
19 & 20	Cytoplasmic characteristics, seasonal activity and its role in the secondary growth of root and stem.	-do-	Peel and ground sectioning and maceration of fossil material.
21	Abnormal secondary growth		
22 & 23	Origin, structure, development, functional and evolutionary specialization of Epidermis and epidermal emergences.	<b>Tissues</b>	
24 & 25	Parenchyma, Collenchyma, Sclerenchyma,	-do-	
26 & 27	Xylem, Phloem with special emphasis on different types of woods, Periderm.	-do-	Comparative study of wood structure of Gymnosperms and Angiosperms with the help of prepared slides.
28 & 29	Laticifers (classification, distribution, development, structural characteristics, functions) and Resin Canals	Secretory tissues	
30	Anatomy of reproductive parts: - Flower - Seed – Fruit	<b>Reproductive Anatomy</b>	
31	Economic aspects of applied plant anatomy.		
	Anatomical adaptations		
32	<b>Final Term Exam</b>		

#### **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%
<b>Total</b>	<b>100%</b>

#### **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:**

**Chairman**