



# The Islamia University of Bahawalpur

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## Tentative Course Plan DEPARTMENT OF BOTANY

Class: BS Botany Semester-6th (Botany) Session: 2017-21

Instructor	Ghulam Sarwar	Email:	<a href="mailto:lifesci.flora786@gmail.com">lifesci.flora786@gmail.com</a>
Course Title	Plant Biochemistry-I	Program	BS Botany
Course Number	Bota- 01603	Credit Hours	3(2+1)

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

To provide students with brief introduction to fundamental and advanced concepts in plant biochemistry  
To elucidate the structure and role of primary metabolites in plants.

### Course Outcomes:

#### Methods of Teaching

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

### Resource Material

#### Books Prescribed:

- Campbell, M.K. and F. Shawn. 2008. Biochemistry 6<sup>th</sup> Edition.
- Heldt, H-W. 2008. Plant Biochemistry. 3<sup>rd</sup> Edition, Academic Press, U.K.
- Voet, D., Voet J. G. and Pratt, C. W. 1998. Fundamentals of Biochemistry, John Wiley and Sons, New York.
- Dey, P. M. and Harborne, J. B. 1997. Plant Biochemistry. Harcourt Asia PTE Ltd. Singapore.
- Smith, E. L, Hill, R L, Lehman, R I., Lefkowits, R J. Handler and Abraham. 2003, Principles of Biochemistry, (General Aspects). White. International Student Edition. McGraw Hill International Book Company.
- Zubay G.,2003, Biochemistry, MacMillan Publishing Co., New York.
- Chesworth,J. M., Strichbury T. and Scaife., J. R. 1998. An introduction to agricultural biochemistry. Chapman and Hall, London.
- Mckee, T. and Mckee, J. R. 1999. Biochemistry – An Introduction. WCB/McGraw-Hill, New York, Boston, USA.
- Lea, P. J.. and Leegood, R. C. 1993. Plant Biochemistry and Molecular Biology. Wiley and Sons, New York.
- Abdes, R. H. Frey, P. A. and Jencks W. P. 2004, Biochemistry, Jones and Bartlet, London.
- Goodwin T. W. and Mercer, E. I. 1997. Introduction to Plant Biochemistry. Pergamon Press, Oxford.

#### 2.Reference Book

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| i  | <b>Schultz J.C. 2005.</b> World of the Cell                |
| ii | Conn E. E. and Stumpf, P.K. 2002. Outlines of Biochemistry |

#### 3.Research Papers

i

ii

#### 4.Hot Research Papers

i

ii

#### 5.Web Resources

i

ii

Plant Physiology & Biochemistry  
Annual Review of Biochemistry

**Office Help Hours** .....day: .... period (00:00a.m to 00: 00a.m), Room# 00

### Grading

Exam (Date to be announced)  
Mid- Exam (30%) Final Exam (50%)  
Problem Session/Assignments (20%)

**Problem Session** .....day: .... period (00:00a.m to 00: 00a.m), Room# 00

### SEQUENCE OF TOPICS TO BE COVERED

Session	Topics (outline of main topics and sub topics)	Chapter #	Tutorial /Laboratory
1	Introductory lecture to the subject		Separation of soluble proteins by polyacrylamide gel (PAGE) Electrophoresis.
2 & 3	Occurrence and classification. A general account of ribose deoxyribose, xylulose, xylose.	Carbohydrates	
4 & 5	A general account of D-glucose, D-galactose, D-mannose, cellobiose, sucrose, maltose, maltose, trehalose, pentosans,	-do-	
5 & 6	A general account of starch, cellulose, hemicellulose, amino sugars.	-do-	
7& 8	A general account of derived acids and alcohols, glycosides, mucilages, pectins and lignins.	-do-	Separation of nucleic acids by gel electrophoresis.
9 & 10	Occurrence, classification, Structure and chemical	Lipids	

	properties of fatty acids, triglycerides, phospholipids.		
11 & 12	Structure and chemical properties of glycolipids, sulpholipids, waxes and sterols.	-do-	
13 & 14	Amino acids and their structure Classification of protein, Electro chemical properties and reactions of amino acids.	Proteins	
15, 16	Primary, secondary, tertiary and quaternary structure of proteins, protein targeting, Protein folding and unfolding.	-do-	
Mid Term Exams			
17&18	Transport, storage, regulatory and receptor proteins, Protein purification, Protein sequencing, Biological role.	-do-	To determine potential alkaloids in plants.
19&20	General introduction. Purine and pyrimidine bases, nucleosides, nucleotides. Structure and properties of DNA and RNA. Types and functions of RNA.	Nucleic Acids	
21&22	Chemical synthesis of oligonucleotides and DNA sequencing, DNA restriction enzymes, Properties of DNA polymerase I, II and III.	-do-	
23 & 24	Nature and functions, I.U.E classification with examples of typical groups.	Enzymes	To estimate terpenoids in plants.
25 & 26	Isozymes, ribozymes, abzymes.	-do-	
27 & 28	Enzyme specificity. Enzyme kinetics.	-do-	
29	Nature of active site and mode of action, Allosteric.	-do-	
30	Enzyme and feedback mechanism.	-do-	
31&32	Course/Discussion from session 1- 30	-do-	
Final Term Exam			

**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**