Institute of Education and Research Science Faculty
University of the Punjab, Lahore

Course Outline

Programme	BSSEd	**Course Code**	**SE-305L**	**Credit Hours**	1
Course Title	**Botany I-Lab (Plants Diversity)**				

Course Introduction

The course is organised to provide a piece of adequate knowledge about different plant groups with their representatives along with their Taxonomy, Morphology and life cycle patterns. It is generally aim to familiarize students with the morphological and systematic knowledge of different plant groups, their evolution and their Economic importance.

Learning Outcomes

On the completion of the course, the students will:

- Familiarized with the morphological and systematic knowledge about different plant groups.
- Practical Performance
- Qualify for basic to moderate-level jobs involving knowledge of plants and their environment.

	Course Content	**Assignments/Readings**
Week 1	1. Culturing and staining of microbial types.	Practical copy preparation
	Introduction	
Week 2	1. Culturing and staining of microbial types.	Practical copy preparation
	Performance	
Week 3	1. Culturing and staining of microbial types.	Practical copy preparation
	Performance	
Week 4	1. Culturing and staining of microbial types.	Practical copy preparation
	Results and discussion	
Week 5	2. Maintenance and preservation of cultures of microbes (bacteria/ Cynobacteria / algae / fungi).	Practical copy preparation

	Introduction	
Week 6	2. Maintenance and preservation of cultures of microbes (bacteria/ Cynobacteria / algae / fungi).	Practical copy preparation
	Performance	
Week 7	2. Maintenance and preservation of cultures of microbes (bacteria/ Cynobacteria / algae / fungi).	Practical copy preparation
	Performance	
Week 8	2. Maintenance and preservation of cultures of microbes (bacteria/ Cynobacteria / algae / fungi).	Practical copy preparation
	Results and discussion	
Week 9	3. Identification of various types mentioned in the syllabus from fresh/ preserved specimens and prepared slides.	Practical copy preparation
	Introduction	
Week 10	3. Identification of various types mentioned in the syllabus from fresh/ preserved specimens and prepared slides.	Practical copy preparation
	Performance	
Week 11	3. Identification of various types mentioned in the syllabus from fresh/ preserved specimens and prepared slides.	Practical copy preparation
	Performance	
Week 12	3. Identification of various types mentioned in the syllabus from fresh/ preserved specimens and prepared slides.	Practical copy preparation
	Results and discussion	
Week 13	4. Study of morphology and reproductive structure of the types mentioned in the theory (Specimens/ prepared slides).	Practical copy preparation

	Introduction	
Week 14	4. Study of morphology and reproductive structure of the types mentioned in the theory (Specimens/ prepared slides).	Practical copy preparation
	Performance	
Week 15	4. Study of morphology and reproductive structure of the types mentioned in the theory (Specimens/ prepared slides).	Practical copy preparation
	Performance	
Week 16	4. Study of morphology and reproductive structure of the types mentioned in the theory (Specimens/ prepared slides).	Practical copy preparation
	Results and discussion	

Textbooks and Reading Material

1. Agrios, G.N. (2004). Plant Pathology. (8th Ed.), Academic Press London.
2. Alexopoulos, C.J ., Mims, C.W. and Blackwell, M. (1996). Introductory Mycology. (4th Ed.) John Wiley and Sons, UK.
3. Biswas, C, and Johri, B.M. (1999). The Gymnosperms. Narosa Publishing House. New Delhi and London.
4. Lee, E. R. (2007). Phycology. (4th Ed.) Cambridge University Press U.K.
5. Mauseth. J.D. (2003). Botany: An Introduction to Plant Biology. (3rd Ed.) Jones & Bartlett Pub.UK.
6. Prescott, L.M ., Harley, J.P. and Klein, A.D. (2004). Microbiology, (3rd Ed.) WM. C. Brown Publishers.
7. Sambamurty, A.V.S.S. (2005). A Textbook of Bryophytes, Pteridophytes, Gymnosperms and Paleobotany. I.K. International Pvt. Ltd. New Delhi, Banglore, Mumbai. 573 pp.

Teaching Learning Strategies

1. Laboratory Work
2. Group Work

Assignments: Types and Number with Calendar
1. Quiz 2. Presentation 3. Written Test 4. Class discussion
Assessment

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

PHYSICS LAB-II (SE-305AL)		(CR1)
Preq.	**WAVES AND OPTICS**	

Objectives

To prepare students in performing experiments related to waves and optics.

Syllabus

The study of harmonic oscillation of helical springs connected in parallel and series, Laws of gyroscope, Measurement of speed of sound in air, Interference and diffraction of water waves with ripple tank, Interference of light by Fresnel biprism, Study of the diffraction intensity using double slit system. To determine Horizontal/Vertical distance by Sextant, The determination of wavelength of Sodium –D lines by Newton's Ring, The determination of wavelength of light/laser by Diffraction grating, Determination of wavelength of sodium light by Fresnel's biprism, The determination of resolving power of a diffraction grating, The measurement of specific rotation of sugar by Polarimeter and determination of sugar concentration in a given solution, To study the combinations of harmonic motion (Lissajous figures), To study the parameters of waves (Beats phenomenon)

Recommended Books

Physics laboratory experiments by Jerry D. Wilson, Cengage Learning (2014).

General Physics Laboratory I Experiments by Kapila Clara Castoldi, Kendall Hunt, (2015).

Physics Lab Experiments by Matthew French, Mercury Learning & Information, (2016).

Experiments And Demonstrations In Physics: Bar-ilan Physics Laboratory by Kraftmakher Yaakov, World Scientific (2014).