Programme	BS Botany	Course Code	BOT-313L	Credit Hours	1
Course Title	**Systematics of Angiosperms (Lab)**				

Lab Course Contents

- Technical description of plants of the local flora and their identification up to species level with the help of a regional/Flora of Pakistan.
- Preparation of indented and bracketed types of keys.
- Submission of properly mounted and fully identified hundred herbarium specimens at the time of examination.
- Field trips shall be undertaken to study and collect plants from different ecological zones of Pakistan.
- Description of important families of angiosperms: Apiaceae (Umbelliferae), Arecaceae (Palmae), Asclepiadaceae, Asteraceae (Compositae), Boraginaceae, Brassicaceae (Cruciferae), Cannaceae, Capparidaceae, Caryophyllaceae, Casuarinaceae, Chenopodiaceae, Convolvulaceae, Cucurbitaceae, Cyperaceae, Euphorbiaceae, Fabaceae (Leguminosae), Juncaceae, Lamiaceae (Labiatae), Liliaceae, Magnoliaceae, Malvaceae, Myrtaceae, Orchidaceae, Papaveraceae, Poaceae (Graminae), Ranunculaceae, Rosaceae, Salicaceae, Scrophulariaceae, Solanaceae, Trochodendraceae, Winteraceae.

Textbooks and Reading Material

1. Ali, S. I. and Nasir, Y. (1995-to date). *Flora of Pakistan*. Karachi Univ. Press, Karachi.
2. Davis, P.H. and Heywood, V. H. (1963). *Principles of Angiosperm Taxonomy*. Oliver & Boyd, London.
3. Greuter, W., McNeill, J. Barrie, F.R., Burdet, H. M., Demoulin, V., Filguerras, T.S., Niclson, D.H., Silva, P.C., Skog, J.E., Trehane, P., Turland, N. J. and Hawksworth, D. L. (2000). *International code of botanical nomenclature (Saint Louis Code) adopted by the Sixteenth International botanical congress St. Louis Missouri, July –August 1999*. Koeltz, Konigstein. (Regnum Veg.138.)
4. Judd, W.S., Campbell, C.S., Kellogg, E.A., Stevens, P.F. and Donoghue, M. J. (2015). *Plant Systematics*; A phylogenetic Approach, Sinauer, USA.
5. Levine, D. A. (2000). *The Origin, Expansion and Demise of Plant Species*. Oxford University Press.
6. Naik, V. N. (1988). *Taxonomy of Angiosperms*. Tata McGraw Hill Publishing Company, New Delhi.
7. Simpson, M. G. (2018). *Plant Systematics* (3rd edition). Elsevier Academic Press, UK. .(Latest edition)
8. Singh, G. (2016). *Plant Systematics*; An Integrated Approach (3rd edition), University of Dehli, India.(Latest edition)
9. Stace, C. (1992). *Plant Taxonomy and Biosystematics*, Edward Arnold.
10. Takhtajan, A. (1986). *Flowering Plant: Origin and Dispersal*, Oliver and Boyd, Edinburgh.
11. D.J. Briggs and S.M. Walters. (2016) *Plant Variation and Evolution*, Cambridge University Press & Assessment
12. Journal Articles/ Reports Pakistan journal of Botany, Mycotaxon, Plant systematics and Evolution.

Teaching Learning Strategies

- Lectures
- Group Discussion
- Laboratory work Seminar/ Workshop

Assignments: Types and Number with Calendar

- Lecture Based Examination (Objective and Subjective)
- Assignments Class discussion
- Quiz Tests