**Maj/Bot-304 PLANT SYSTEMATICS 4(3+1)**

1. Introduction: Importance and relationship with other sciences, Phases

of plant taxonomy. Origin and radiation of angiosperm, their probable

ancestors, when, where and how did the angiosperms evolve; the

earliest fossil records of angiosperms.

2. Concept of Species : What is a species? Taxonomic species,

Biological species, Micro and macro species.

3. Variation : Types of variation, Continuous and discontinuous variation,

Clinal variation

4. Systematics and Genecology / Biosystematics: Introduction and

importance, Methodology of conducting biosystematics studies,

Various biosystematics categories such as ecophene, ecotype,

ecospecies, coenospecies and comparium.

6. Taxonomic Evidence: Importance and types of taxonomic evidences:

anatomical, cytological, chemical, molecular, palynological,

geographical and embryological.

7. Nomenclature : Important rules of botanical nomenclature including

effective and valid publication, typification, principles of priority and its

limitations, author citation, rank of main taxonomic categories,

conditions for rejecting names.

8. Classification: Why classification is necessary? Importance of

predictive value. Brief history, Different systems of classification with at

least one example of each (Linnaeus, Bentham and Hooker, Engler

andPrantl, Takhtajan and Dahlgren.

9. Brief introduction of Numerical taxonomy.

10. General characteristics, distribution, evolutionary trends, phyletic

relationships and economic importance of the following families of

angiosperm:

1. Apiaceae(Umbelliferae)
2. Arecaceae(Palmae)
3. Asclepiadaceae
4. Asteraceae(Compositae)
5. Brassicaceae (Cruciferae)
6. Cannaceae
7. Caryophyllaceae
8. Chenopodiaceae
9. Convolvulaceae
10. Cucurbitaceae
11. Euphorbiaceae
12. Fabaceae (Leguminosae)
13. Lamiaceae (Labiatae)
14. Liliaceae
15. Malvaceae
16. Papaveraceae
17. Poaceae (Graminae)
18. Ranunculaceae
19. Rosaceae
20. Scrophulariaceae
21. Solanaceae

**Practicals**

1. Technical description of plants of the local flora and their identification

up to species level with the help of a regional/Flora of Pakistan

2. Preparation of indented and bracketed types of keys

3. Preparation of permanent slides of pollen grains by acetolysis method

and study of different pollen characters.

4. Study of variation pattern in different taxa.

5. Submission of properly mounted and fully identified hundred herbarium specimens at the time of examination

6. Field trips shall be undertaken to study and collect plants from different

ecological zones of Pakistan.

**Books Recommended**

1. Ali, S.I. and Nasir, Y. 1995. Flora of Pakistan. Karachi Univ. Press, Karachi

2. Ali, S.I. and Qaiser, M. 1995 -todate. Flora of Pakistan.Karachi Univ.

Press, Karachi.

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. &Hawksworth, D.L.,(eds.) 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. Davis, P.H. & Heywood, V.H. 1963. Principles of Angiosperm

Taxonomy. Oliver & Boyd, London

5. Ingrouille, M. 1992. Diversity and Evolution of Land Plants, Chapman &

Hall. London

6. Nasir, E. & Ali, S.I. 1994. Flora of Pakistan. Karachi Univ. Press,

Karachi.

7. Stace, C. (1992). Plant Taxonomy and Biosystematics, Edward Arnold..

8. Takhtajan, A. (1986). Flowering Plant: Origin and Dispersal, Oliver and

Boyd, Edinburgh

9. Jones, S. B. and Luchsinger, A.E. 1987. Plant Systematics. McGraw

Hill, Inc. New York.

10. Naik, V.N. 1988. Taxonomy of Angiosperms. Tata McGraw Hill

Publishing Company, New Delhi.

11. Stussy, T.F. 1990. Plant Taxonomy, Columbia University Press, USA.

12. Jeffrey C. 1980. An Introduction to Plant Taxonomy. Cambridge

University Press.UK

13. Levine, D.A. 2000. The Origin, Expansion and Demise of Plant

Species.Oxford University Press.