NORTH MAHARASHTRA UNIVERSITY, JALGAON

Syllabus of Ph.D.Course Work.

Paper II Botany

1. Experimental Techniques:

i) Micrometry, Centrifugation techniques, Chromatographic techniques, Spectroscopic techniques, Microtomy and slide preparation.

ii) Preparation of standard solutions: Molar, Molal, Normal and percent (%) solutions. pH of solutions, role of buffers and their preparation.

iii) Isolation and Culture of algae- General requirement, common media such as, Knop's(Modified) medium, Pringscheims medium (1930), Czurdas's medium, Chu's (1942) No.10 medium, Modified Chu's 10 medium, Bold's basal medium(1963), Beijerinks (1898) medium, Allenand Arnon,s Medium(Modified) ASM-1medium, Pringscheim's biphasic soil water medium, Isolation of algae, Bacteria free cultures, Continuous cultures, Synchronous culture and mass culture.

iv) Isolation and culture of fungi from air, water and soil- general requirement, Media, Screening of fungi for production of antibiotics, organic acids and enzymes.

v) Cell and tissue culture in plants, totipotency, Callus culture, Micropropagation, Embryo culture, Secondary metabolites

vi) Physicochemical properties and analysis of water

vii) Hybridization and selection in self and cross pollination crops, mass and pureline selection pedigree and bulk methods applied in improvement of crops.

viii) Experimental taxonomic procedure: comparative morphology- shape and size of leaf, stipule, bract, bracteole, calyx, corolla, morphology of stamen and ovary; vessel variation, stomatal variation, trichomes, storage protein bands, phenolics and alkaloids, saponins.

2. International code and Botanical nomenclature:

Principles, major rules, revisions and recommendations, effective and valid publications, typification, rejection of names of taxa, starting date point, priority and authority.

Recommended Books:

1. Naik, V.N.(1985) Taxonomy of Angiosperms. Tata McGraw-Hill Co. New Delhi, India
2. Mondal, A.K. (2005) Advanced Plant Taxonomy. New Central Book Agency, Kolkata, India.
3. Sivaranjan, V.V.(1985) Introduction to principles of Plant Taxonomy. Oxford & IBH Publishing Co. New Delhi, India.
4. Aneja, K.R.(2004) Experiments in Microbiology, Plant Pathology and Bitechnology (4^{th} Ed.), New Age International Publishers, New Delhi, India.
5. Dwivedi, J.N. and R.B.Singh (1990) Essentials of Plant Techniques. Scientific Publishers, Jodhpur, India.
6. Purohit, S.S. (1999) Biotechnology: Fundamental and Applications, Agrobios, India.
7. Razdan, M.K.(1995) An Introduction to Plant Tissue Culture. Oxford and IBH publishing co, New Delhi, India.
8. Trivedi, R.R. and Goel D.K. ( ) Chemical and Bilogical Methods for water Pollution studies, Environmental Publication, Karad (MS), India.
9. Gupta, P.K.( ) Cytogenetics. Rastogi Publishers, Merrut, India.
10. Verma, P.S. and Agrawal ( ) Cell Biology, Genetics, Molecular Biology and Ecology. S.Chand and Co.New Delhi, India.
11. Abbosi, S.A. (1958) Water Quality Sampling and Analysis. Discovery Publishing House, New Delhi, India.
12. APH (1975) Standard Methods for Examination of Water and Waste Water (14^{th} Ed.) American Public Health Association, New York, USA.
13. Trivedi, R.C. (2001) Algal Biotechnology. Pointer Publisher, Jaipur, India
14. Bhojwani, S.S.(1990) Plant Tissue Culture: Applications and Limitations, Elsevier Science Publishers, New York, USA.
15. Fahn, A.(1982) Plant Anatomy(3 rd ED.) Pergamum Press, New York, USA.
16. Pandey, B.P.(2007) Plant Anatomy. S.Chand and Co. New Delhi, India.

Committee for Framing Syllabus:

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3. Dr. Miss. L.T.Deore (Member)
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