

## Syllabus for Ph.D. Course Work in Botany

### (1) Good Laboratory Practices (GLP) used in different areas of Plant Science (Botany)

#### [A] Instrumentation: Basic concept and operation of instruments used in concerned field of study:

- (a) Microscopy
- (b) Electrophoresis
- (c) Chromatography
- (d) Centrifugation
- (e) Spectrophotometry
- (f) Laminar Air Flow system
- (g) Autoclave
- (h) Incubator
- (i) Oven etc.

#### [B] Topic selection: Relevance of the topic for Ph.D. work specially in terms of social and academic context.

### (2) Cytological techniques :

- (a) Material Collection
- (b) Fixation
- (c) Staining
- (d) Permanent slide preparation,
- (e) Techniques of cytological analysis

### (3) Plant physiology and tissue culture techniques:

- (a) Plant water relations, Metabolism, Growth and Development patterns
- (b) Selection of explants
- (c) Media preparation
- (d) Callus regeneration
- (e) Differentiation and organogenesis
- (f) Micropropagation

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(4) Microbiological techniques:

- (a) Media Preparation
- (b) Isolation of Bacteria and fungi from water and soil
- (c) Characterization and identification of microorganisms

5. Phytodiversity and Environmental study techniques:

- (a) Scientific site selection
- (b) Population and community study
- (c) Material collection & preservation including herbaria preparation
- (d) Identifications & cataloguing
- (d) Analysis of micro- and macro morphological and biochemical key characters
- (e) Air, Water and Soil sampling and analysis

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