DEGREE OF MASTER OF PHILOSOPHY
CHOICE BASED CREDIT SYSTEM
SYLLABUS FOR M.Phil. BOTANY
(FOR THE STUDENTS ADMITTED FROM THE
ACADEMIC YEAR 2017-2018 ONWARDS)
## COURSE STRUCTURE

<table>
<thead>
<tr>
<th>SEM</th>
<th>CODE</th>
<th>Course title</th>
<th>Hrs</th>
<th>IA</th>
<th>EA</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>I</td>
<td>Core course –I</td>
<td>Research methodology</td>
<td>6</td>
<td>25</td>
<td>75</td>
<td>100</td>
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<tr>
<td></td>
<td>Core course –II</td>
<td>Advances in Botany</td>
<td>6</td>
<td>25</td>
<td>75</td>
<td>100</td>
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<td></td>
<td>Core course –III</td>
<td>Papers On Topic of Research (Guide will prepare the syllabus and it will be send to COE)</td>
<td></td>
<td>25</td>
<td>75</td>
<td>100</td>
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<tr>
<td></td>
<td>Core course –IV</td>
<td>Dissertation and Viva voce</td>
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- Dissertation 150 marks
- Viva voce 50 marks
- Total 200 marks

## CIA COMPONENTS

- Test - 15Marks
- Seminar – 10 marks
SEMESTER I
(For Students Admitted from the academic year 2016 – 2017)
M. Phil., BOTANY DEGREE
CORE COURSE-I: RESEARCH METHODOLOGY

Unit-I

Unit-II

Spectrophotometer-Principle-
Beer Lambert’s Law. UV, IR, FTIR, Atomic Absorption Spectroscopy, CD, Stop Flow, Mass , MALDI-TOF and NMR.

Unit-III
Chromatography: Principle, Procedures and Application of TLC, PC, Gel filtration and Ion exchange, Affinity Chromatography, GC, GLC, HPLC/FPLC and HPTLC. Applications of Chromatography in biological research.

Electrophoresis: Principle of Gel electrophoresis, Polyacrylamide gel electrophoresis (PAGE & SDS PAGE) and Agarose gel electrophoresis, comet assay and capillary electrophoresis. Two dimensional electrophoresis and isoelectrofocussing.

Unit-IV

Experimental design, ANOVA one way and two way analysis, statistical softwares-MS Excel and SPSS, DMRT (Duncan Multiple Range Test). Experimental designs – Concepts, Principles (Replication, Randomization), Completely Randomized Design (CRD), Randomized complete Block design (RCBD).
Unit - V


References

MODEL QUESTION PAPER  
M. Phil., BOTANY DEGREE EXAMINATION  
CORE COURSE I RESEARCH METHODOLOGY  

Time: 3Hrs.                                                                                                               Max. Marks: 75

Part A (5 x 5 = 25 Marks)  
Answer all questions; All questions carry equal marks (either a or b);  
Draw diagrams wherever necessary; Each answer should not exceed 300 words.

1. a) Write short notes on Fluorescent Microscope.  
   Or  
   b) Explain the working mechanisms of SEM.  
2. a) Write short notes on Principle of centrifugation.  
   Or  
   b) Discuss NMR Spectroscopy.  
3. a) Write the application of HPLC  
   Or  
   b) Write short notes on Agarose gel electrophoresis.  
4. a) Describe the measures of central tendency.  
   Or  
   b) Discuss about the applications of correlation in biological research.  
5. a) Write notes on NCBI and PubMed  
   Or  
   b) "Editing is essential for manuscript preparation “—Justify

Part B (5 x 10 = 50 Marks)  
Answer all questions; All questions carry equal marks (either a or b);  
Draw diagrams wherever necessary; Each answer should not exceed 1000 words.

6. a) Explain the working mechanisms of TEM  
   Or  
   b) Give detail account on Atomic force microscopy  
7. a) Discuss the principle and mechanism of UV Spectroscopy  
   Or  
   b) Explain the principle and mechanism of Ultra Centrifugation.  
8. a) Explain in detail different types of chromatography and their application.  
   Or  
   b) Explain two dimensional Electrophoresis s and write its application  
9. a) A cross involving different gene gave rise to F2 generation of tall and dwarf in the  
     ratio 110:90 by means of chi -square test prove whether this value is deviating from  
     3:1 ratio (Table value =3.841 and level of significance 5%)  
     Or  
     b) Explain relationship between coefficient of correlation and regression with example.  
10. a). Explain the Chi-square test with suitable examples.  
    (or)  
    b). Give an account on Data collection.  

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SEMESTER I
M. Phil., BOTANY DEGREE
CORE COURSE-II: ADVANCES IN BOTANY

Unit-I: Plant Biodiversity

Unit-II: Molecular Biology
Isolation and amplification of nucleic acid- Genome DNA (E.coli), Plasmid DNA, total RNA, Polymerase chain reaction - Types and its application. Phosphatase treatment of cloning vectors, use of adapters and linkers in cloning-screening of recombinants-labeling of nucleic acids by radioactive methods plaque and colony hybridization- Blotting techniques Southern, Northern and Western -DNA sequencing and Microarray.

Unit-III: Plant Physiology and Biochemistry

Unit-IV: Plant Biotechnology
Unit-V: Nanobiotechnology


Reference books
MODEL QUESTION PAPER
M.Phil., BOTANY DEGREE EXAMINATION
CORE COURSE II - ADVANCES IN BOTANY

Time: 3Hrs.                                                                                                               Max. Marks: 75

Part A (5 x 5 = 25 Marks)
Answer all questions; All questions carry equal marks (either a or b);
Draw diagrams wherever necessary; Each answer should not exceed 300 words.

1. a) Write a short notes on Biosphere reserves
   Or
   b) Discuss the activities of NBPGR.
2. a) Write notes on Plasmid.
   Or
   b) Give a short account on Southern Blotting.
3. a) Write a short notes on signal transduction
   Or
   b) Briefly write about organogenesis.
4. a) Briefly write about polyamines and its application.
   Or
   b) Write notes on synthetic seed technology.
5. a) Define magnitude of Nanobiotechnology
   Or
   b) Give notes on nanorobots.

Part B (5 x 10= 50 Marks)
Answer all questions; All questions carry equal marks (either a or b);
Draw diagrams wherever necessary; Each answer should not exceed 1000 words.

6. a) Explain the Ex situ conservation with suitable example
   Or
   b) Discuss the various molecular markers and write its application.
7. a) Give a detailed account on PCR and its applications.
   Or
   b) Write notes on DNA sequencing.
8. a) Briefly discuss the molecular aspects of stress physiology.
   Or
   b) Write an essay on light harvesting complex
9. a) Explain the role of tissue culture in secondary metabolites production.
   Or
   b) Give a account on Intellectual Property Rights.
10. a) Describe the technique of Liposome mediated drug delivery.
    Or
    b) Discuss - nanomedicines are BOON or BANE

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MODEL QUESTION PAPER
M.Phil., BOTANY DEGREE EXAMINATION
(For Students Admitted from the academic year 2017 – 2018)
CORE COURSE III – PAPERS ON TOPIC OF RESEARCH

Time: 3Hrs. Max. Marks: 75

Part-A 5 questions (5 x 5 = 25 Marks)
   Answer all questions;
   All questions carry equal marks
   (either or, one from each unit)

Part-B 5 questions (5 x 10 = 50 Marks)
   Answer all questions;
   All questions carry equal marks
   (either or, one from each unit)