

ಮಂಗಳೂರು  
MANGALORE



ವಿಶ್ವವಿದ್ಯಾನಿಲಯ  
UNIVERSITY

(Accredited by NAAC with 'A' Grade)

ಕ್ರಮಾಂಕ/ No. : MU/ACC/CR.46/2014-15/A2

ಕುಲಸಚಿವರ ಕಛೇರಿ

ಮಂಗಳಗಂಗೋತ್ರಿ - 574 199

Office of the Registrar

Mangalagangothri - 574 199

ದಿನಾಂಕ/Date: 15.02.2016

## NOTIFICATION

Sub : Revised syllabus for Ph.D. Course work in Applied Botany  
Ref: Academic Council decision No.: 3:20(2015-16), dated 25.01.2016.

~~~~~

The revised Syllabus for Ph.D Coursework in Applied Botany which approved by the Academic Council at its meeting held on 25.01.2016 is hereby notified for implementation with effect from the academic year 2015-16.

REGISTRAR.  
15/2  
K.R.

To:

- 1) The Chairmen of P.G. Departments/ Co-ordinators of P.G. Courses/ Principals of the Recognised Colleges/ Directors of Recognised Institutions of Mangalore University.
- 2) The Chairman, Board of Studies in subject concerned.
- 3) The Superintendent (ACC), O/o the Registrar, Mangalore University.
- 4) Guard File.

**MANGALORE UNIVERSITY**  
**Department of Applied Botany**

**SCHEME OF EXAMINATION FOR Ph.D. COURSE WORK IN  
APPLIED BOTANY**

| Papers   | Particulars          | Hours of Instruction per week | Duration of Exam (hrs) | Marks |        |       |         |
|----------|----------------------|-------------------------------|------------------------|-------|--------|-------|---------|
|          |                      |                               |                        | IA    | Theory | Total | Credits |
| Paper I  | Research Methodology | 4                             | 3                      | 30    | 70     | 100   | 4       |
| Paper II | Review of Literature |                               |                        |       |        |       |         |
|          | Review Report        | 16                            | -                      | -     | -      | 150   | 8       |
|          | Viva                 | -                             | -                      | -     | -      | 50    | 2       |
| Total    |                      |                               |                        |       |        |       | 14      |

1. Internal Assessment will be based on one theory test for 30 marks and one seminar to be evaluated for 20 marks. The total of these two will be reduced to 30 marks.
2. Theory examination (Research Methodology) - Question paper will have parts I, II & III (marks 70, duration 3 hrs).

Part I will have 5 questions out of which four are to answered. Each question is of 10 marks.

Part II will have 6 questions out of which four are to be answered. Each question is of 5 marks.

Part III will have 9 questions out of which 5 are to be answered. Each question is of 2 marks.

A model question paper is given along with.

Ph.D. Course Work in Applied Botany  
Paper I – Research Methodology

Duration: 54 Hours

**UNIT I: (10 Hours)**

Research prerequisites:

- a) Testing of hypothesis – refinement of experiment
- b) Field/Lab. techniques. design, sample size
- c) Collection, compilation, analysis, interpretation of data and drawing conclusions.
- d) Literature retrieval, citation methods.
- e) Format in writing research paper/dissertation.

**UNIT II: (10 Hours)**

Principles of Instrumental Analysis:

Microscopy and Photomicrography:

- a) Tissue preparation
- b) Light Microscopy
- c) Fluorescent Microscopy
- d) EM-Transmission & Scanning
- e) Auto –radiography

**UNIT III: (12 Hours)**

Analytical Techniques:

- a) Ultracentrifugation (Tissue fractionation)
- b) Chromatography techniques (HPLC, TLC, GC, Paper)
- c) Electrophoresis
- d) Spectrophotometry

**UNIT IV: (12 Hours)**

Safety and Toxicology (Occupation)

- a) Inhalation safety
- b) Permissible limits
- c) Safety appliances
- d) Biosafety
- e) Ethical Issues - GM crops, Ethical procedures on animal experiments

Intellectual Property Rights:

- a) Concepts and procedures for patents, designs, copyrights, trade marks
- b) Geographical indications
- c) Protection of new plant varieties
- d) Plagiarism

Future prospectives in the relevant branch.



## **UNIT V: (10 Hours)**

Biostatistics and computer applications:

- a) Standard deviation
- b) Theory of probability
- c) Student-t-test
- d) Analysis of variance
- e) Graphical representation
- f) Principles of computing
- g) Computer application in biological research

### **References:**

J.E. Celis, (1994): Cell Biology – a laboratory hand book, Vol. I, II and III, Academic press.

C. Hawkins and M. Sorgi (Eds) (1985) Research how to plan, speak and write about it. Springes- Verlag; Hiedelberg.

T.H. Hassard (1991) Understanding Biostat. Mosby year book, London

Norman T.J. Bailey (1994) Statistical methods in biology, 3<sup>rd</sup> edition, Cambridge University Press.

Philip Sheeler (1987) Cell and Molecular Biology, III edition, John Wiley New York.

Sadasivam S. and Manickam (1996) Biochemical Methods, New Age International Publishers, New Delhi.

Wilson. K. and Kenneth H. Goulding, 1987. A Biologist's Guide to principles and Techniques of Practical Biochemistry, 3<sup>rd</sup> Edition, English Language Book Society.

MODEL QUESTION PAPER

Ph.D. COURSE WORK Examination  
APPLIED BOTANY

Paper I - Research Methodology

Time: 3 Hours

Max. Marks: 70

I. Answer **any four** of the following: (4x10=40)  
(Each answer not exceeding 5 pages)

- 1)
- 2)
- 3)
- 4)
- 5)

II. Write notes on **any four** of the following: (4x5=20)  
(Each answer not exceeding 3 pages)

- 6)
- 7)
- 8)
- 9)
- 10)
- 11)

III. Write short notes on **any five** of the following: (5x2=10)  
(Each answer not exceeding 1 page)

- 12)
- 13)
- 14)
- 15)
- 16)
- 17)
- 18)
- 19)
- 20)

ಮಂಗಳೂರು  
MANGALORE



ವಿಶ್ವವಿದ್ಯಾನಿಲಯ  
UNIVERSITY

(Accredited by NAAC)

ಕ್ರಮಾಂಕ/ No. : MU/ACC/CR 67/2020-21/A2

ಕುಲಸಚಿವರ ಕಛೇರಿ

ಮಂಗಳಗಂಗೋತ್ರಿ - 574 199

Office of the Registrar

Mangalagangothri - 574 199

ದಿನಾಂಕ/Date:25.11.2021

**NOTIFICATION**

Sub: Revised syllabus for Ph.D. Coursework in Applied Botany  
Ref: Academic Council approval vide agenda  
No.: ಎಸಿಸಿ:ಶೈ.ಸಾ.ಸ.2: 18(2021-22) dated 27.10.2021

\*\*\*\*\*

The revised syllabus for Ph.D. Coursework in Applied Botany which has been approved by the Academic Council at its meeting held on 27.10.2021 is hereby notified for implementation with effect from the academic year 2021-22.

  
REGISTRAR

To,

1. The Chairman, Dept. of Applied Botany, Mangalore University, Mangalagangothri
2. The Chairman, PG BOS in Applied Botany, Dept. of English, Mangalore University.
3. The Registrar (Evaluation), Mangalore University.
4. The Superintendent (ACC), O/o the Registrar, Mangalore University.
5. The Asst. Registrar (ACC), O/o the Registrar, Mangalore University.
6. Guard File.



Ph.D. Course Work in Applied Botany  
**Course 2: Research and Publication Ethics (RPE)**

**THEORY**

**UNIT I: (3 Hours)**

**PHILOSOPHY AND ETHICS**

- a) Introduction to philosophy: definition, nature and scope, concept, branches
- b) Ethics: definition, moral philosophy, nature of moral judgments and reactions

**UNIT II: (5 Hours)**

**SCIENTIFIC CONDUCT**

- a) Ethics with respect to science and research
- b) Intellectual honesty and research integrity
- c) Scientific *misconducts*. Falsification, Fabrication, and Plagiarism (FFP)
- d) Redundant publications: duplicate and overlapping publications, salami slicing
- e) Selective reporting and misrepresentation of data

**UNIT III: (7 Hours)**

**PUBLICATION ETHICS**

- a) Publication ethics: definition, introduction and importance
- b) Best practices / standards setting initiatives and guidelines: COPE, WAME, etc.
- c) Conflicts of interest
- d) Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types
- e) Violation of publication ethics, authorship and contributorship
- f) Identification of publication misconduct, complaints and appeals
- g) Predatory publishers and journals

**PRACTICE**

**UNIT IV: (4 Hours)**

**OPEN ACCESS PUBLISHING**

- a) Open access publications and initiatives
- b) SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies
- c) Software tool to identify predatory publications developed by SPPU
- d) Journal finder / journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggested, etc.

**UNIT V: (4 Hours)**

**PUBLICATION MISCONDUCT**

**A. Group Discussions (2 hrs.)**

1. Subject specific ethical issues, FFP, authorship
2. Conflicts of interest
3. Complaints and appeals: examples and fraud from India and abroad

**B. Software tools (2 hrs.)**

Use of plagiarism software like Turnitin, Urkund and other open source software tools

**UNIT VI: (7 Hours)**

**DATABASES AND RESEARCH METRICS**

**A. Databases (4 hrs.)**

1. Indexing databases
2. Citation databases: Web of Science, Scopus, etc.

**B. Research Metrics (3 hrs.)**

1. Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, CiteScore
2. Metrics: h-index; g index, i10 index, altmetrics

**References.**

Bird, A. (2006). *Philosophy of Science*. Routledge..

MacIntyre, Alasdair (1967) *A Short History of Ethics*. London.

P. Chaddah, (2018) *Ethics in Competitive Research: Do not get scooped; do not get plagiarized*. ISBN:978- 9387480865

National Academy of Sciences, National Academy of Engineering and Institute of Medicine. (2009). *On Being a Scientist. A Guide to Responsible Conduct in Research.: Third Edition*. National Academies Press.

Resnik, D. B. (2011). What is ethics in Research & why is it important. *National Institute of Environmental Health Sciences*, 1 —10. Retrieved from [https:// www.niehs.nih.gov/research/resources/fbioethics/whatis/index.cfm](https://www.niehs.nih.gov/research/resources/fbioethics/whatis/index.cfm)

Beall, J. (2012). Predatory publishers are corrupting open access. *Nature*, 489(7415), 179-179. <https://doi.org/10.1038/489179a>

Indian National Science Academy (INSA), *Ethics in Science Education, Research and Governance*(2019), ISBN:978-81 -939482-1 -7. [http://www.insaindia.res.in/pdf/Ethics\\_Book.pdf](http://www.insaindia.res.in/pdf/Ethics_Book.pdf)