Certificate course on Use of Biofertilizers and Biopesticides for Green Farming

Offered by the Department of Microbiology:

DINABANDHU ANDREWS COLLEGE
GARIA, KOLKATA

Maitreyee Mondal

D. A. COLLEGE Dept. of Microbiology GARIA

Title:
Certificate Course on Use of Biofertilizers and Biopesticides for Green Farming

Course Overview

This course provides a comprehensive overview of green farming practices, focusing on practical applications. It lets participants quickly grasp key concepts and skills for implementing sustainable and eco-friendly farming practices. The participants will

- Acquire practical knowledge and skills in a short duration
- Learn essential strategies for implementing green farming practices
- Gain insights from real-world case studies and field demonstrations

Eligibility

Undergraduate students of Microbiology, Biotechnology, Botany and Agriculture

Course Duration: 30 hours (6 hrs per week x 5 weeks)

Course Coordinator: **Dr. Swapna Mukherjee**, Department of Microbiology

Joint Coordinator: **Dr Tanmay Ghosh**, Department of Microbiology

Collaborator: Dr Mohan Kumar Biswas, Department of Plant Pathology, Visva Bharati University

SYLLABUS STRUCTURE OF THE ADD-ON COURSE

Module	UNIT TITLE	HOURS
Module -1	Introduction to Green Farming	3
Module -2	Basics of Biofertilizers	6
Module -3	Symbiotic and non-symbiotic N2 fixers and Phosphate solubilizers	9
Module -4	Mycorrhizal Biofertilizers	9
Module -5	Biopesticides and Bioinsecticides derived from microbe	3
Total		30

Module 1: Introduction to Green Farming

- Principles of green farming
- Importance of sustainable practices
- Overview of global trends in green agriculture

Maitreyee Mondal

D. A. COLLEGE Dept. of Microbiology GARIA

Module 2: Basics of Biofertilizers

- Types of biofertilizers and their benefits
- Methods of biofertilizer production (composting, vermicomposting, and the use of microbial cultures)
- Microbes used as biofertilizers for various crop plants and their advantages over chemical fertilizers

Module 3: Symbiotic and non-symbiotic N2 fixers and Phosphate solubilizers

- Isolation, characteristics, inoculum production and field application of *Rhizobium, Frankia and Azolla*
- Isolation, characteristics, inoculum production and field application of free-living *Azospirillum, Azotobacter*
- Isolation, characteristics, inoculum production and field application of Phosphate solubilizing microbes

Module 4: Mycorrhizal Biofertilizers

- Importance of mycorrhizal inoculum, types of mycorrhizae and associated plants
- Mass inoculum production of VAM, field applications of Ectomycorrhiza and VAM.

Module 5: Biopesticides and Bioinsecticides derived from microbe

- Classification of biopesticides, their various sources and modes of action
- Types of microbe-based bioinsecticides and their advantages over synthetic pesticides (target specificity, environmental safety, integrated pest management);
- *Bacillus thuringiensis*: toxin production and field applications,
- Nucleopolyhedroviruses (NPVs) – application and uses

Course Outcome

1. Proficient understanding of biofertilizers and biopesticides, their application, and their role in sustainable agriculture.
2. Practical skills in selecting, applying, and managing biofertilizers and biopesticides for enhanced crop yield while minimizing environmental impact.

Maitreyee Mondal

LEARNING RESOURCES

SL. NO.	TITLE OF THE BOOK	AUTHOR(S)	PUBLISHER
1	HANDBOOK OF BIOFERTILIZERS AND BIOPESTICIDES	A.M. DESHMUKH, R.M. KHOBRAGADE, P.P. DIXIT	OXFORD BOOK COMPANY
2	BIOFERTILIZERS AND BIOPESTICIDES	KRISHNENDU ACHARYA, SURJIT SEN, MANJULA RAI	TECHNO WORLD
3	BIOFERTILIZERS BIOPESTICIDES IN SUSTAINABLE AGRICULTURE	B.D. KAUSHIK, DEEPAK KUMAR, MD. SHAMIM	CRC PRESS
4	BIOFERTILIZERS TECHNOLOGY	N. RAMANATHAN	KALYANI PUBLISHER
5	ORGANIC FARMING, BIOFERTILIZERS AND BIOPESTICIDES TECHNOLOGY	ASHOK KUMAR CHOUDHARY	ANMOL PUBLICATIONS
6	BIOFERTILIZERS AND BIOPESTICIDES	H.C. LAKSHMAN, CHANNABASAVA A.	POINTER PUBLISHERS

EVALUATION POLICY FOR THE ADD-ON COURSE

The basic philosophy behind the Evaluation policy for this 30 Hours Add-on course is to objectively judge the participants (students) whether the concepts were understandable to them or not and whether they could apply these concepts to solve numerical and conceptual problems.

The Evaluation would be done through 2 components –

i) C1 Course-end Assessments (Written Test) [Total Marks: 30]

ii) C2 Practical /LAB [Total Marks: 20]

Total Marks of the Evaluation process would be – 50 Marks

TABLE FOR QUALIFICATION

TOTAL SCORE (OUT OF 50)	GRADE
45 – 50	O – OUTSTANDING
40 – 44	E – EXCELLENT
35 – 39	A – VERY GOOD
30 – 34	B – GOOD
25 -29	C - FAIR
BELOW 25	F - FAILED

Maitreyee Mondal

GENERAL RULES AND REGULATIONS

1. Students must attend and appear for all the Module-End Assessments. If any student fails to submit any of the Module-End Assignments or fails to attend any of the Module End Assessment examinations , the particular Student would NOT BE ELIGIBLE FOR CERTIFICATE.
2. Students must attend and appear for the Course-End Assessment Examination. If any student fails to submit the Course-End Assessment or fails to attend the Course-End Assessment Examination , the particular Student would NOT BE ELIGIBLE FOR CERTIFICATE.
3. Students must attend and appear for the Course-End Viva. If any student fails to fails to attend the Course-End Viva, the particular Student would NOT BE ELIGIBLE FOR CERTIFICATE.
4. Total Marks of Course Evaluation will be 50 Marks.
5. Minimum 50% Marks has to be scored to receive any Certificate. There will be only ONE Attempt allowed for each of the Module-End Assessments and the Course-End Assessment.
6. There will be NO PROVISION for Backlog Clearance.
7. General Rules and Regulations of the College must be followed without any exception.
8. **Minimum 75% attendance is required to receive the certificate of the course.**

Maitreyee Mondal