




SHRI SHIVAJI EDUCATION SOCIETY AMRAVATI'S  
SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR

Department of Microbiology  
Skill-Based Certificate Course: Biofertilizers & Biopesticides  
Session 2022-2023



RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY  
Established by Government of India on 15th August 1958. Declared as State University by Maharashtra Public Education Act No. 25 of 1975.  
DEPARTMENT OF LIFELONG LEARNING AND EXTENSION  
Gurumanak Bhavan, University Campus, Amravati Road, Nagpur - 440 033. Phone : 2530860  
E-mail : doll\_rtmnu@gmail.com

To:  
The Principal  
SSES Amravati Science  
College Congress Nagar,  
Nagpur

No. DOLLE/48/22  
Dated : 31.10.2022

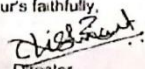
Subject : Sanction for Conducting Short Term Courses under Jeevan Shikshan  
Abhiyan on No Grant Basis. (2022-23)

Sir/Madam,  
With reference to your proposal for conducting Short Term courses indicated below  
under Jeevan Shikshan Abhiyan of this Department, this is to inform you that your proposal has  
been accepted and your College has been granted permission to conduct the course on the  
following conditions:  
Details of the Course

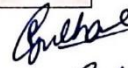
Sr No.	Name of the Course	Name of Course Coordinator	Duration	Credit	No. of Candidates to be admitted	Fees to be Charged per Student	Fees to be Deposited With the Dept.
1	Certificate Course in Biofertilizers and Biopesticides	Dr. Ms. Pranita.B. Gulhane	45 hrs. T-37hrs P-8hrs	2	20	1500/-	10%

Rules & Regulations of this Department regarding these courses should be strictly followed.

- Owing to Covid-19 situations all the norms of Central & State Government and instructions by R.T.M. Nagpur University, Nagpur should be strictly followed.
- This sanction is valid for this particular Batch only.
- Fees for the course should be charged as per the norms prescribed.
- Expenditure on the course should be incurred as per norms.
- Course should be started within a Month from the date of sanction.
- Please communicate your acceptance within a month and submit the Initial Report  
Submit the List of Students admitted in the excel format attached herewith.  
Also send a soft copy in CD/Pen drive.

Your's faithfully,  
  
Director



  
Dr. Pranita Gulhane  
Department of Microbiology  
Science College, Congress Nagar,  
NAGPUR.

## Activity Report: Skill Based Certificate Course Biofertilizer and Biopesticides (2022-23)

Intercollegiate workshop on “Intellectual Learning Strategies & Skill Development” on the occasion of 125<sup>th</sup> Birth Year Celebration of Dr. Panjabrao alias Bhausaheb Deshmukh, Centenary Year Celebration of R.T.M. Nagpur University & National Science Day was organized by Department of Microbiology, S.S.E.S.A’s Science College, Nagpur on 4<sup>th</sup> March, 2023. The workshop was conducted under the chairmanship of Hon’ble Prof. Mahendra P. Dhore, Principal, Science College, Nagpur, Coordinator- Respected Prof. Atul D. Bobdey and Convener- Dr. Pranita B. Gulhane. Verbal Welcome to Hon’ble Dignitaries, Guest Speaker & Participants was done by Dr. Priya Fuke ma’am. The Presidential address was by Hon’ble Principal Prof. Mahendra Dhore Sir.

The workshop was conducted by Dr. Sarita Mowade ma’am on the topic “Biofertilizers & Biopesticides Production process”. Total 20 students were enrolled for the course. Questionnaire sessions were also conducted after the lecture. A total of 165 students have participated for the same and expressed the creativity in it. Vote of thanks was given by Ms. Deepthi Hynal ma’am. All the staffs of the organizing committee contributed for the success of the programme.

Theory and Practical exam was conducted in offline mode having 50 M.C.Q. questions for theory exam were given while 50 marks practical exam was conducted. Internal assessment was done on the basis of regularity of students and visit to Mahatma Gandhi Institute for Rural Industrialization (MGIRI), Wardha on 04<sup>th</sup> November 2022.



Hon’ble Principal sir along with Teaching faculty & Resource person in Skill course workshop dt. 04/03/23



*Pranita Gulhane*  
Dr. Pranita Gulhane  
Department of Microbiology  
Science College, Congress Nagar,  
NAGPUR.

## Educational Tour Report: Skill Based Certificate Course Biofertilizer and Biopesticides (2022-23)

Visit of Skill based certificate course students was carried out at Mahatma Gandhi Institute for Rural Industrialization (MGIRI), Wardha on 04<sup>th</sup> November 2022. Internal assessment of those students was carried out on the basis of regularity of students and the Educational tour visit at MGIRI, Wardha. Many Skill based mini projects regarding manufacturing of herbal products, use of cotton fibres yarning for clothes –making, bamboo craft as well as hand on training of sophisticated laboratory equipments. Total 67 students visited the same with great enthusiasm.



MGIRI, Wardha Visit by Skill course students dt. 04/11/22



*Gulhane*  
Dr. Pranita Gulhane  
Department of Microbiology  
Science College, Congress Nagar,  
NAGPUR.

**List of the Students: Skill Based Certificate Course- Biofertilizers and Biopesticides (Session 2022-23)**

Sr. No.	Name of Student	Signature
1)	Ashwini Baraskar	<i>Baraskar</i>
2)	Aishwarya Tinkhede	<i>Tinkhede</i>
3)	Hemakshi Kuthe	<i>Kuthe</i>
4)	Janhvi Burade	<i>Burade</i>
5)	Kashish Jamgade	<i>Jamgade</i>
6)	Ketaki Chaudhari	<i>Chaudhari</i>
7)	Khushi Kawade	<i>Kawade</i>
8)	Mokshita Madan	<i>Madan</i>
9)	Monali Mahant	<i>Mahant</i>
10)	Janhvi Pandey	<i>Pandey</i>
11)	Pradnya Pawade	<i>Pawade</i>
12)	Renuka Gokhle	<i>Gokhle</i>
13)	Sanika Zade	<i>Zade</i>
14)	Sakshi Paunikar	<i>Paunikar</i>
15)	Shrawani Kalamkar	<i>Kalamkar</i>
16)	Sanskriti Ghodmare	<i>Ghodmare</i>
17)	Shruti Tiwari	<i>Tiwari</i>
18)	Tanaya Deudkar	<i>Deudkar</i>
19)	Tanvi Samarth	<i>Samarth</i>
20)	Tithi Bondre	<i>Bondre</i>
21)	Vaidehi Anasane	<i>Anasane</i>
22)	Vishakha Pandey	<i>Pandey</i>



*Pranita Gullane*  
**Dr. Pranita Gullane**  
 Department of Microbiology  
 Science College, Congress Nagar,  
 NAGPUR.

S.S.E.S.A'S SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR  
 U.G. Department of Microbiology Time Table Session-2022-2023  
 Skill Based Course: Biofertilizers & Biopesticides

w.e.f. 27/11/23

Days	Class B./Se.	Skill Based Course										
		1	2	3	4	5	6	7	8	9	10	
Monday & Tuesday	Sem I	07:30-08:18	08:18-09:06	09:06-09:54	10:00-10:48	10:48-11:36	11:36-12:24	12:44-01:32	01:32-02:20	02:20-03:08	3.12-5.36	5.36-6.20
	Sem II	MB(B1)					MB-C10 (B1,B2) (B5,B6)				Biofertilizer & Biopesticide s Practical PG	
	Sem IV					MB(B1,B2) SG+PF			MB-C1 (B1,B2)SS	MB-C5 (B5, B6)PRG		
	Sem VI	MB(B1) SS+SG			MB-C1 (B5, B6) PF		MB-C9 (B1, B2) PG		MB (B6) PRG+SG			
Wednesday & Thursday	Sem II					MB-C10 (B1,B2,B5,B6) Wed-SPD MB-C6 (B1,B2,B5,B6) Thru-VC		MB(B5) SVK				
	Sem IV	MB(B6) SSD						MB-C7 (B1, B2) WedPF+ Thru-PRG MB-C5 (B5, B6) Wed-SSD+ Thru-SS				
	Sem VI					MB B2 PF+SG		MB-C7(B1, B2) (B5,B6)PRG				
Friday & Saturday	Sem II			MB-C1 (B1,B2) FriSG Sat-PF	MB-C7 (B5, B6) PRG			MB(B2,B6) PRG+SSD			Biofertilizer & Biopesticides (Thur, Fri, Sat) PG	
	Sem IV						MB-C7 (B1, B2) SS	MB-C5 (B5, B6) PRG		PRCT MB B5 SSD		
	Sem VI	MBB5					MB-C1 (B1, B2) Fri-PRG+Sat-PF MB-B2(B5,B6) Fri+ Sat-PRG					

Teaching Faculty: PG- Dr. Pranita Gulhane, SS- Sanchari Sarkar, SG- Shivani Gohane, PRG- Priya Gaidhane, PF- Priya Dukes, Sonali Shende

SEAL  
 Gulhane  
 Dr. Pranita Gulhane

**Rashtrasant Tukadoji Maharaj Nagpur University**

**Exam Name: Skill based Certificate Course Examination, Summer- 2023**

**Duration: 1hr**

**Name of Subject: Biofertilizer and Biopesticides**

**Max Marks:50**

**Medium: English**

**Marks Obtained**

**Centre Name: Shri Shivaji Science College Congress Nagar, Nagpur**

**Date: 13/03/2023**

**Name of Student:**

**Year: B.Sc      Group :**

**Note: (1) Attempt any 25 questions.**

**(2) Each question carries 2 marks**

**(3) No negative marking**

- 
1. With our present-day lifestyles, what is a major cause of concern?
    - a) Inflation
    - b) Poverty
    - c) Illiteracy
    - d) Environmental Pollution
  
  2. Why is there a need to switch to organic farming?
    - a) Increasing poverty
    - b) Increasing road accidents
    - c) Increasing environmental pollution
    - d) Increasing population
  
  3. Mycorrhiza is an example of
    - (a) symbiosis
    - (b) amensalism
    - (c) parasitic
    - (d) competition

4. *Rhizobium* is a ----- bacterium that fixes atmospheric nitrogen.
- a) free living
  - b) halophile
  - c) *non symbiotic*
  - d) *acidophilic*
5. Which of the following is not a free-living Nitrogen-fixing bacteria?
- a) *Azotobacter*
  - b) *Clostridium*
  - c) *Klebsiella*
  - d) *Xanthomonas*
6. 7. Which of the following is an aerobic nitrogen-fixing bacterium?
- a) *Azotobacter*
  - b) *Clostridium*
  - c) *Rhodospirillum*
  - d) *Rhodopseudomonas*
7. Presence of which of the following elements is required for nitrogen fixation?
- a) Phosphorus
  - b) Carbon
  - c) Silver
  - d) Oxygen
8. Which of the following statements is not related to mycorrhiza?
- a) Many members of genus *Glomus* forms mycorrhiza
  - b) Fungal symbiont absorbs nitrogen
  - c) Plants show resistance to root-borne pathogens
  - d) There is an overall increase in plant growth and development
9. What is the full form of VAM?
- a) Vesicular-arbuscular mycorrhiza
  - b) Venom Azolla mycorrhiza
  - c) Venom-arbuscular mycorrhiza
  - d) Vesicular-azollae mycorrhiza
10. What are bio-insecticides?
- a) Insects
  - b) Living organisms that kill specific insects
  - c) Insects that kill other big insects
  - d) Fungi
11. . Which of the following is incorrectly matched?
- (a) *Alnus* – *Frankia*
  - (b) Alfalfa – *Rhizobium*
  - (c) Nitrogen fixer – *Anabaena*

(d) Mycorrhiza – *Rhodospirillum*

**12. Which of the following nitrogen fixers is found in rice fields associated with *Azolla*?**

(a) *Tolypothrix*

(b) *Frankia*

(c) *Anabaena*

(d) *Spirulina*

**13. Which of the following is not a biofertilizer?**

(a) Mycorrhiza

(b) *Rhizobium*

(c) *Agrobacterium*

(d) *Nostoc*

**14. Which of the following is used as a biofertilizer for soybean crop?**

(a) *Nostoc*

(b) *Azospirillum*

(c) *Rhizobium*

(d) *Azotobacter*

**15. This is not used in organic farming**

(a) snail

(b) earthworm

(c) *Oscillatoria*

(d) *Glomus*

**16. Which of the following is a nitrogen fixer in the root nodules of *Alnus*?**

(a) *Clostridium*

(b) *Bradyrhizobium*

(c) *Azorhizobium*

(d) *Frankia*



**17. Which of the following is a pair of biofertilizers?**

- (a) *Salmonella* and *E.coli*
- (b) *Rhizobium* and grasses
- (c) *Nostoc* and legume
- (d) *Azolla* and BGA

**18. Which of the following fern is a biofertilizer?**

- (a) *Salvinia*
- (b) *Azolla*
- (c) *Pteridium*
- (d) *Marsilea*

**19. Which of the following is an endomycorrhiza?**

- (a) *Rhizobium*
- (b) *Agaricus*
- (c) *Glomus*
- (d) *Nostoc*

20. Pick the correct statement

- (a) legumes do not fix nitrogen
- (b) legumes fix nitrogen independent of bacteria
- (c) legumes fix nitrogen through bacteria in their roots
- (d) legumes fix nitrogen through bacteria in their leaves

21. Organic farming is the technique of raising crops through the usage of

- (a) resistant varieties
- (b) manures
- (c) biofertilizers
- (d) all of the above

22. Chemical fertilizer use does not generally pollute which of the following?

- a) Soil
- b) Water
- c) Ground
- d) Air

23. Which of the following statements about biological farming is false?

- a) Farmers understand the webs of interaction among organisms
- b) Use of biocontrol measures will increase our dependence on chemical fertilizers
- c) Farmers become familiar with the various life forms that inhabit the field
- d) Farmers become aware of the life cycles and feeding habits of organisms

28. What are biocontrol agents, and how do they work to keep butterfly caterpillars at bay?

- a) Bacillus thuringiensis
- b) Lactobacillus
- c) Acetobacter aceti
- d) Treponema pallidum

29. In India, which of the following crops has been developed by genetic engineering?

- a) Bt-potato
- b) Bt-pomato
- c) Bt-cotton
- d) Bt-jute

30. Which of the following statements about Trichoderma is incorrect?

- a) It is a bacterium
- b) Very common in root ecosystems
- c) Free-living
- d) Effective biocontrol agents

**Signature of Valuer:**



**Name of Valuer: Dr. Pranita B. Gulhane**



## Answer key

1.a

2.b

3.c

4.a

5.a

6.a

7.d

8.a

9.c

10.a

11.a

12.d

13.d

14.c

15.b

16.b

17.a

18.b

19.c

20.b

21.a

22.a

23.b

24.c

25.c

26.d

27.d

28.a


29.a

30.b

**Mark List: Skill Based Certificate Course- Biofertilizers and  
Biopesticides (Session 2022-23)**

Sr. No.	Name of Student	Marks obtained out of 50 (Theory)	Marks obtained out of 40 (Practical)	Marks obtained out of 10 (Internal)	Total Marks 100
1)	Ashwini Baraskar	46	36	10	92
2)	Aishwarya Tinkhede	42	35	10	87
3)	Hemakshi Kuthe	42	36	10	88
4)	Janhvi Burade	46	36	10	92
5)	Kashish Jamgade	36	37	10	83
6)	Ketaki Chaudhari	48	36	10	94
7)	Khushi Kawade	50	38	10	98
8)	Mokshita Madan	46	39	10	95
9)	Monali Mahant	44	35	10	89
10)	Janhvi Pandey	42	34	10	86
11)	Pradnya Pawade	48	35	10	93
12)	Renuka Gokhle	44	36	10	90
13)	Sanika Zade	46	38	10	94
14)	Sakshi Paunikar	AB	AB	AB	AB
15)	Shrawani Kalamkar	50	37	10	97
16)	Sanskriti Ghodmare	48	36	10	94
17)	Shruti Tiwari	42	35	10	87
18)	Tanaya Deudkar	48	36	10	94
19)	Tanvi Samarth	44	35	10	89
20)	Tithi Bondre	50	34	10	94
21)	Vaidehi Anasane	48	35	10	93
22)	Vishakha Pandey	42	34	10	86



  
**Dr. Prarita Gullane**  
**Department of Microbiology**  
**Science College, Congress Nagar,**  
**NAGPUR.**



## Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur

[Established by Government of Central Provinces Education Department by Notification No. 513 dated the 17<sup>th</sup> of August, 1923 & presently a State University governed by Maharashtra Public Universities Act, 2016(Mah. Act No. 61 of 2017)]

University Skill Development Centre  
(under Board of Lifelong Learning and Extension)

### Certificate

No. JSAB13-01.....

Shri/Smt./Ku. .... *Ashwini Baraskar* ..... is

awarded with Certificate on successful completion of the course titled

..... *Biofertilizers and Biopesticides* ..... in

session *2022-23*.... under *Jeevan Shikshan Abhiyan* conducted for

45 hours from *01/11/2022* to *08/03/2023* by the *Board of Lifelong*

*Learning & Extension* in collaboration with *Department of Botany,*

*S.S.E.S. Amt's Science College Congress Nagar, Nagpur, 440012.*

He/She has passed the Examination with ..... *0* ..... Grade

Total Credits Earned : 01

*M. Shinde*

Principal  
SSES Amt's Science College  
Congress Nagar, Nagpur-12

*P. Bhatnagar*

Course Co-ordinator  
SSES Amt's Science College  
Congress Nagar, Nagpur-12

*P. Mahapatra*

Director  
Board of Lifelong Learning  
and Extension, RTMNU, Nagpur

