

NAAC ACCREDITED 'A'

SEVADAL MAHILA MAHAVIDYALAYA

Sakkardara Chowk, Umrer Road, Nagpur.

Certificate Course on Microbiological Quality Control and Testing of Food and Water



Dr. Prabhakar R. Bhandari
Course Co-ordinator

UG and PG Department of Microbiology
Academic Session 2023-24



Microbiological Quality Control and Testing of Food and Water

Description and Preamble of the course:

- This module is designed to give learners a clear understanding of the role of microbiological quality assurance and quality control, particularly as applied to the (bio) pharmaceutical, Food, Water Industries and medical device sectors.
- It will provide learners with the information and laboratory skills to enable them to recognise the role of the microbiologist in the production of safe and wholesome products and to participate effectively in Quality Assurance teams in industry.
- It will equip learners with the skills necessary to design appropriate QC testing protocols for raw materials, waters, in-process and finished products.
- Learners should be able to adopt an advisory role in situations relating to Microbiological Quality Control by recommending suitable materials, equipment and procedures. 'Laboratory practicals will be delivered/rolled out to students with a lecturer led emphasis on sustainability.
- Students will be asked to reflect on how they may incorporate sustainability into their practical work when preparing their laboratory reports'.
- Learners will have gained sufficient knowledge of the microbiology of pharmaceutical and healthcare products to enable them to take up responsible positions in QA and QC in Industry.

Syllabus on Certificate course on Microbiological Quality Control and Testing of Food and Water

PART-A

General Requirements for Microbiological Laboratories (10 Hrs- T-5+ P-5)

SN	Particulars
1	Equipment
2	Glassware/Plastic ware
3	Media/Reagents and Reference cultures
4	Quality Assurance: Assuring Quality of Test Results in Microbiology Laboratory
5	Good Microbiology Laboratory Practices including Biosafety and Biohazard Management

Nagpur



Part-B
Methods of Analysis for food Quality (20 Hrs- T-10+ P-10)

S. No.	METHOD NO.	METHOD
1	FSSAI15.001:2023	Method for Enumeration of Aerobic Plate Count (APC)
2	FSSAI15.002:2023	Method for Enumeration of <i>Bacillus cereus</i>
3	FSSAI15.004:2023	Method for Enumeration of Coliforms
4	FSSAI15.005:2023	Method for Commercial Sterility Test for Sterilized/UHT Milk /Flavored Evaporated Milk
5	FSSAI15.006:2023	Method for Commercial Sterility Test for Sterilized/UHT Cream
6	FSSAI15.008:2023	Method for Enumeration of Sulfite Reducing Clostridia based on ISO :15213
7	FSSAI15.009:2023	Methods for Isolation and Identification of <i>Clostridium Perfringens</i> and <i>Clostridium Botulinum</i> and Enumeration of <i>Clostridium Perfringens</i> based on ISS887-Part4
8	FSSAI15.010:2023	Method for Enumeration of <i>Enterobacteriaceae</i>
9	FSSAI15.011:2023	Method for Enumeration of <i>Escherichia Coli</i> based on ISO: 16649-2

Part C
Methods of Analysis Water/Test methods for Water Quality (20 Hrs- T-10+ P-10)

S. No.	METHOD NO.	METHOD
1	FSSAI15.024:2023	Method for Enumeration of Aerobic Microbial count/Standard Plate Count
2	FSSAI15.025:2023	Method for Enumeration of <i>Escherichia coli</i> and Coliforms
3	FSSAI15.026:2023	Method for Enumeration of Coliforms (Alternative method)
4	FSSAI15.027:2023	Method for Determination of Enterococci (Faecal Streptococci)
5	FSSAI15.028:2023	Method for Detection of Enterococci (Faecal Streptococci) (Alternative method)
6	FSSAI15.029:2023	Method Detection of <i>Salmonella</i>
7	FSSAI15.032:2023	Method for Detection of Yeast & Mould
8	FSSAI15.038:2023	Method for Detection of MS2 Phage in Water by Enrichment Spot Assay Technique
9	FSSAI15.023:2023	Method for Enumeration of Yeast and Mould

Scheme of Course:

- The course will be taught through both teaching of theory and Practical classes
- Theory: 25 Hour
- Practical: 25 Hour
- Guest Lecture/ Seminar/ Workshop/ Field Visits: 10 Hour
- Exam pattern: Offline: Theory -03 Hours and Practical Examination- 06 Hour
- Attendance: 75 % of attendance is compulsory



Requirements of Staff and Budget:

Full Time Teaching Staff	Non Teaching Staff	Budget
02	01	Rs. 5, 00,000/- Approximate for Laboratory Equipments, Consumables and Staff Salary.

Course and Learning Outcome: After completion of the unit, Student is able to

- Quality Control Microbiology Certificate - This certificate in quality control microbiology and biology is designed to prepare students for careers in fields such as Microbiology, medical devices, pharmaceuticals, biological, food safety, Water safety bio manufacturing, and testing laboratories.
- Quality control (testing finished products) and quality assurance (checking quality during production) both serve essential roles in industrial Microbiology and pharmaceutical manufacturing.
- This certificate would prepare the student for a job as a quality control or quality assurance technician, responsible for setting up periodic testing and analysis during both the research and development and the manufacturing processes of biomolecules, pharmaceuticals, or medical devices.
- This certificate emphasizes testing for microbiological contamination or biological formulation of a product.
- Describe potential microbial contamination problems which would compromise the wholesomeness and safety of Pharmaceutical and Healthcare products.
- Define the role of the microbiologist in the implementation of appropriate Quality Assurance (QA) and Quality Control (QC) programmes.
- Identify potential sources of microbial contamination in industry.
- Assess specific microbiological problems associated with 'water for pharmaceutical purposes' and monitor such water.
- Construct appropriate microbiological QC testing protocols for raw materials, waters, in-process and finished products.
- Plan and undertake pharmacopoeial 'microbial limits tests'.
- Perform total cell counts and viable counts, using a broad range of analytical techniques.


Reference Books:

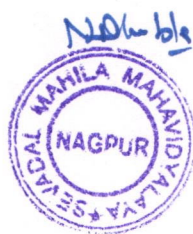
1. Keith Wilson & John Walker – 1994. Practical Biochemistry, Principles & Techniques.
2. Principles of applied biomedical instrumentations- A. Geddes & LE Baken John Wiley & Sons.
3. Instrumental methods of analysis – Den Willard & Merit- Asian edition.
4. Manual of Diagnostic Microbiology- Dr. B.J. Wadhai & Dr. G. L. Bhoosreddy - 1st Edition Himalaya Publishing House.
5. Basic experimental Microbiology by Ronal M. Atlas, Alfred E. Brown, Kenneth W. Dobra, Wonas Miller (1986) Pren- Tice Hall.
6. Biologies guide to principles, techniques of practical Biochemistry by K. Wilson and K.H.
7. Goulding Edward Arnold Publications.



ABBREVIATIONS

Sr.No.	Abbreviation	Expanded Form
1	%	Percentage
2	μm	Micrometer
3	$^{\circ}\text{C}$	Degree Celsius
4	Hr	Hour
5	L	Liter
6	min	Minutes
7	mL	Milliliter
8	mm	millimeter
9	μL	Micro liter
10	IS	Indian Standard
11	ppb	Parts per billion
12	ppm	Parts per million
13	ISO	International Organization for Standardization
14	gm	Gram
15	mg	Milligram
16	Cfu	Colony forming unit
17	sp.	species
18	μg	Microgram
19	UV	Ultra Violet


Course Coordinator
(Dr. P. R. Bhandari)



N.S. Dhoble
Principal
(Prof. (Mrs.) N. S. Dhoble)
Off. Principal
Sevadai Mahila Mahavidyalaya
Nagpur.

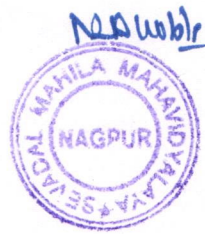
N.S. Dhoble

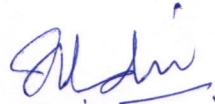
Sevadal Mahila Mahavidyalaya and Research Academy, Nagpur.
Post Graduate Department of Microbiology

Certificate Course in
"Microbiological Quality control and Testing of Food and Water"

Academic session 2023-24
List of Students Enrolled in the Course

Sr. No.	Name of the Students	Signature
1	Abhishree Hemant Deulkar	
2	Anuradha Nivruti Choudhary	
3	Dipti Vilas Sawarkar	
4	Harshada Atul Mahlankar	
5	Isha Nilkanth Nakshane	
6	Krutika Jagdish Gajbhiye	
7	Madhuri Pramod Deshmukh	
8	Prachi Balkrushna Shende	
9	Priya Damodar Wankhede	
10	Rutuja Khushal Vaidya	
11	Saba Afreen Md Sharif	
12	Sakshi Ganesh Chavan	
13	Sakshi Kailash Meshram	
14	Shreya Sanjay Zarbade	
15	Suvidha Girdhar Hedau	
16	Vaishnavi Gulab Mundare	
17	Yogeshwari G. Dhawale	




Dr. P. R. Bhandari
Course Co-ordinator



Sevalal Shikshan Sanstha's
NAAC RE-ACCREDITED WITH 'A' GRADE
Sevalal Mahila Mahavidyalaya
Place for Higher Learning and Research (Research Academy)
Sakkardara Square, Umrer Road, Nagpur-440024

Certificate of Completion

This certificate is awarded to

Ms. Dipti V. Sawarkar

she has successfully completed the Certificate Course in
"Microbial Quality Control & Testing",
conducted by the Department of Microbiology.

Date : 30/04/2024

Dr. Prabhakar R. Bhandari

Dr. Prabhakar R. Bhandari
Course Coordinator



N. Dhoble

Prof. (Mrs.) Nirupama S. Dhoble
Off. Principal
Sevalal Mahila Mahavidyalaya, Nagpur

Off. Principal
Sevalal Mahila Mahavidyalaya
Nagpur.

SEVADAL MAHILA MAHAVIDYALAYA

Sakkardara Chowk, Umrer Road, Nagpur-440024

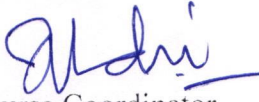
Date: 08/01/2024

NOTICE


All the members of All the members of the UG and PG Department of Microbiology are hereby informed that Hon'ble principal has called the meeting regarding the to start the Certificate Course in **Microbiological Quality Control and Testing of Food and Water**, and to discuss & decide its working strategy for the session 2023-24 on 10th January 2024 at 01:00 pm at Hon'ble Principal's office.

Agenda of the meeting:

- 1) To start Certificate course in Microbiological Quality Control and Testing of Food and Water.
- 2) To discuss regarding working of the course, date of commencement and framing the syllabus.
- 3) Any other matter with the permission of the Chair.



Course Coordinator
(Dr. P. R. Bhandari)





Principal
(Prof. P.N. Charde)
Principal
Sevalal Mahila Mahavidyalaya
Umrer Road, Nagpur-9.

Copy to:

Dr. A.P. Lambat- NAAC Coordinator 

Dr. (Mrs.) S. R. Nimbarte 

Dr. (Mrs.) K. V. Dubey 

Ms. M. J. Thakkar

Ms. C. A. Sukheja



SEVADALMAHILAMAHAVIDYALAYA
Sakkardara Chowk, Umrer Road, Nagpur-440024

Date: 10/01/2024

Minutes of Meeting on Certificate Course: 2023-24

The meeting for the to start the Certificate Course in Microbiological Quality Control and Testing of Food and Water for the academic session 2023-24 was held on 10th January 2023 at 1:00 PM in the Hon`ble Principal`s chamber.

The following member were present,

1) Dr. P. N. Charde	Principal	Chairperson
2) Dr. A.P. Lambat	NAAC Coordinator	
3) Dr. P.R. Bhandari	HOD	Co-ordinator
4) Dr. (Mrs.) S. R. Nimbarte	Lecturer	Member
4) Dr. (Mrs.) K. V. Dubey	Lecturer	Member
5) Ms. M. J. Thakkar	CHB Lecturer	Member
6) Ms. C. A. Sukheja	CHB Lecturer	Member

The Co-ordinator welcomed all the members and Hon`ble principal called the Meeting "In Order". With the permission of the principal and the agenda is discussed as below

Agenda of the meeting:

- 1) To start Certificate course in Microbiological Quality Control and Testing of Food and Water.
- 2) To discuss regarding working of the course, Duration of the course, date of commencement and framing the syllabus.
- 3) Any other matter with the permission of the Chair.

Item No. 1: To start Certificate course in PG Department of Microbiology.

It was decided that to start new Certificate Course in the P G Dept. of Microbiology (M. Sc) in Microbiological Quality Control and Testing of Food and Water for the academic session 2023-24 for the second year Post Graduate students of Microbiology and also for UG B. Sc. Final Year.

Item No.2: To discuss regarding working of the course, date of commencement and framing the syllabus.

It was decided that Certificate Course in Microbiological Quality Control and Testing of Food



Responsible



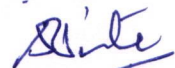


and Water in the UG and PG Department of Microbiology from February 2024 in the session 2023-24 and the Syllabus of the course will be designed by all the members and set all the theory and practical as per the BIS Rules and regulation. It was also decided that the whole course will be of 50 Hours Duration to complete the syllabus Theory and Practicals.

Agenda-3: Any other matter with the permission of chair.

Since there was no matter to discuss and decide hence the meeting was ended with vote of thanks to the chair.

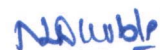
Name

1. Dr. P. N. Charde
2. Dr. A.P. Lambat
3. Dr. P. R. Bhandari
4. Dr. (Mrs.) S. R. Nimbarte
5. Dr. (Mrs.) K. V. Dubey
6. Ms. M. J. Thakkar
7. Ms. C. A. Sukheja


Signature
Principal
Sevadal Mahila Mahavidyalaya
Nagpur





SEVADALMAHILAMAHAVIDYALAYA

Sakkardara Chowk, Umrer Road, Nagpur-440024

Date: 02/04/2024

NOTICE

All the members of all the members of the UG and PG Department of Microbiology are hereby informed that Hon'ble principal has called the meeting to regarding Certificate Course in **Microbiological Quality Control and Testing of Food and Water**, to discuss & on examination pattern and certification of the course on 3rd April 2024 at 01:00 pm at Hon'ble Principal's office.

Agenda of the meeting:

- 1) To confirm the minutes of last meeting.
- 2) To discuss about the Exam Pattern and certification of Certificate Course
- 3) Any other matter with the permission of the Chair.



Course Coordinator

(Dr. P. R. Bhandari)



Principal

(Prof. (Mrs.) N. S. Dhoble)

Off. Principal

Sevadal Mahila Mahavidyalaya
Nagpur.

Copy to:

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Dr. (Mrs.) K. V. Dubey 

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The meeting for the to start the Certificate Course in Microbiological Quality Control and Testing of Food and Water for the academic session 2023-24 was held on 3rd April 2024 at 1:00 PM in the Hon'ble Principal's chamber.

The following member were present,

1) Prof. (Mrs.) N. S. Dhoble	Principal	Chairperson
2) Dr. A.P. Lambat	NAAC Coordinator	
3) Dr. P.R. Bhandari	HOD	Co-ordinator
4) Dr. (Mrs.) S. R. Nimbarte	Lecturer	Member
4) Dr. (Mrs.) K. V. Dubey	Lecturer	Member
5) Ms. M. J. Thakkar	CHB Lecturer	Member
6) Ms. C. A. Sukheja	CHB Lecturer	Member

The Co-ordinator welcomed all the members and Hon'ble principal called the Meeting "In Order". With the permission of the principal and the agenda is discussed as below

Item No. 1: To confirm the minutes of last meeting.






The minutes of the last meeting held on 10/01/2024 were read and confirmed unanimously by all the members.

Item No.2: To discuss about the Exam Pattern and certification of Certificate Course.

It was decided that the after completion of the course syllabus in 60 Hours duration, students have to give the theory and practical exam separately and submit the assignment. On completion of the examination declare the result ad distribute the certificates to the successful students.

Agenda-3: Any other matter with the permission of chair.

Since there was no matter to discuss and decide hence the meeting was ended with vote of thanks to the chair.

Name	Signature
1. Prof. (Mrs.) N. S. Dhoble	
2. Dr. A.P. Lambat	
3. Dr. P. R. Bhandari	
4. Dr. (Mrs.) S. R. Nimbarte	
5. Dr. (Mrs.) K. V. Dubey	
6. Ms. M. J. Thakkar	
7. Ms. C. A. Sukheja	