

Circular

Department of Microbiology

Value Added Programme on “Basic Techniques in Microbiology”

This is to inform all III year B.Sc Microbiology students that Department of Microbiology is organizing 3 days Value Added Programme on “**Basic Techniques in Microbiology**”

The workshop will be conducted 3 days from 21st to 24th November 2023 from 9.00am to 5.00pm, in Microbiology UG Lab and Classroom.

Interested students are required to give their names to the coordinators Mrs. Soumya S Shanbhag, on or before 18th November 2022.

Resource person for the workshop is Mrs. Soumya S Shanbhag, Dr. Prasanna Srinivas R, and Dr. Nimitha Venugopal C, Assistant Professor, Department of Microbiology.



Head of the Department



Principal

*Principal,
M.S. Ramaiah College of Arts, Science & Commerce
MSRIT Post, MSR Nagar
Bangalore - 560 054*

Dr. M. R. Jayaram, Chairman - GEF
Sri. M. R. Janakiram, Director - GEF
Sri. M. R. Kodandaram, Director - GEF
Dr. Parswanath H V, Chief Executive - GEF
Prof. Karisiddappa, Chief Academic Advisor, GEF
Sri. Ramachandra G, COF – GEF

ORGANIZING COMMITTEE MEMBERS

Dr. Vatsala G, Principal, MSRCASC
Dr. Pushpa H, Vice Principal, Professor & Head
Dr. Savitha J, Research Advisor
Dr. Prasanna Srinivas R, Assistant Professor & Head (PG)
Dr. Snehalatha V, Associate Professor
Dr. Vemula Vani, Associate Professor
Mrs. Soumya S. Shanbhag, Assistant Professor & Head (UG)
Dr. Juliya Rani Francis, Assistant Professor
Dr. Nimitha Venugopal, Assistant Professor
Dr. Bhanupriya Ch., Assistant Professor
Dr. Vishal M, Assistant Professor
Dr. Prashanthi R, Assistant Professor
Dr. Vidya Jagadeeshan, Assistant Professor

REGISTRATION FORMAT

Participants: III-year BSc Students

Registration: All the students can give their names to the coordinator.

Payment Details: Entry is Free

For further details contact:

Mrs. Soumya S Shanbhag Assistant Professor & Head,
UG Department of Microbiology, MSRCASC.
Ph. No. 9740819951



RAMAIAH
College of Arts, Science
& Commerce- Autonomous



VALUE ADDED PROGRAM **on** **BASIC TECHNIQUES IN** **MICROBIOLOGY**

21st to 24th November 2023



Organized by
Department of Microbiology

**M. S. Ramaiah College of Arts, Science and Commerce-
Autonomous**

MSRIT Post, MSR Nagar, Bangalore - 560 054

www.msrmc.edu.in

(Re-accredited "A" by NAAC,
Affiliated to Bangalore City University,
Approved by AICTE)

M. S. RAMAIAH COLLEGE OF ARTS, SCIENCE AND COMMERCE (MSRCASC)

Dr. M S Ramaiah, a visionary and philanthropist established “Gokula Education Foundation (GEF)”, in the year 1962, to deliver education and healthcare for the betterment of mankind. Under the tutelage of GEF, Ramaiah College of Arts, Science and Commerce (RCASC) was established in 1994. MSRCASC is Re-accredited with “A” Grade by NAAC, Permanently affiliated to Bengaluru City University (BCU), and approved by AICTE. It is also recognized under section 2(f) & 12(B) of the UGC Act 1956. It has produced several rank holders and has alumni in distinguished institutions all over the world. The College has a legacy of organizing National Conferences and workshops in various disciplines of Science, Commerce and Management in addition to Quality Initiatives in Higher Education.

DEPARTMENT OF MICROBIOLOGY

The Department of Microbiology, established in the year 1999, offers both undergraduate and postgraduate courses. The faculty of the department are highly qualified with experience and expertise in various domains of Microbiology. The department has very good infrastructural facilities to carry out teaching and research activities. The theory and practical classes lay emphasis on ‘problem-based learning’, knowledge content, utility value, application in real life, latest developments etc. The department is undertaking research projects in the major thrust areas of microbiology and attracted funds from various agencies. Also, the faculty of the department carry out multi-disciplinary research programs, encourage students to carryout in-house research projects, present papers, publish their research work and to participate in co-curricular and extra-curricular activities.

ABOUT THE ADD-ON PROGRAMME

The program emphasizes on the understanding and applications of Basic Microbial techniques which will help students to overcome the vacuum created in the knowledge and hands on experience by Corona Pandemic.

Objective: The Add-on programme aims to train the students with hands on experience on the basic Pure Culture Techniques which involves- Streak Plate, Serial Dilution Technique, Spread plate and Pour plate Technique.

Outcome: This workshop envisions to make students well acquainted with basic techniques of isolation of pure cultures which will help them to perform efficiently with better understanding and designing new approaches in the area of Basic Microbiological Research.

Modules

Module 1: Basics of Pure Culture	Module 2: Concept of Sampling and Serial Dilution	Module 3: Pure Culture Techniques
<ul style="list-style-type: none"> •Introduction to pure culture •Types of pure culture techniques 	<ul style="list-style-type: none"> •Sample selection •Concept of serial dilution 	<ul style="list-style-type: none"> •Different types of streak plate methods •Spread plate technique •Pour plate technique •Counting the colonies using colony counter •Interpretation of results

Programme Schedule

Day 1	Inauguration
	Introduction to the Add On Programme
	Concept of Pure culture (Lecture)
	Preparation of Media (Liquid and Solid), Slants
	Concept of different streak, spread and pour plate technique
	Different types of streaking
	Discussion on results of streaking
	Concepts of serial dilution (Lecture)
	Sample collection and preparation of dilution tubes
	Spread plate technique
Pour plate technique	
Day 2	Discussion and interpretation of results
	Calculation of CFU
	Pure Culture Techniques- making pure cultures of colonies isolated from different samples on slants and plates
Day 3	Different types of media- Differential and specific media
	Growth pattern of microorganisms on specific media
	Discussion and Assessment
	Feedback and Valedictory

Report on
Value added Program
on
BASIC TECHNIQUES IN MICROBIOLOGY

Title: Basic Techniques in Microbiology.

Date: 21st to 24th November 2023

Venue: 402 classroom & UG Microbiology Lab

Participants: III Year BSc students

Resource Persons: Dr. Prasanna Srinivas R, Mrs. Soumya S Shanbhag, Dr. Nimita Venugopal.

No. of Participants: 180

Objectives:

The primary goal of the program was to familiarize participants with fundamental microbiological techniques, enabling them to:

- Understand and apply aseptic methods and learn the types of Pure culture techniques.
- Learn the types of streaking for isolation of single colony.
- Learn the basics of microbial enumeration by serial dilution and isolation of microorganisms by spread, pour plate technique.

The Department of Microbiology organized a three-days value-added program on "**Basic Techniques in Microbiology**" from 21st to 24th November 2023. The program aimed to enhance participants' knowledge and hands-on skills in microbiological techniques, catering to students, researchers, and enthusiasts keen on exploring the fascinating world of microbes.

180 students of III- year B.Sc. registered for the add on program. The sessions of the add on program were divided into 3 modules for 3 days.

On day one, the program was inaugurated by Dr. Pushpa H, Vice Principal and HOD, department of Microbiology. She welcomed students and gave an overview of the Value-Added Programs conducted by department of Microbiology for the academic year. Mrs. Soumya S Shanbhag addressed the students for the add on program and gave an overview of the program and the schedule.

Day 1 of the value-added program on "**Basic Techniques in Microbiology**" was dedicated to introducing participants to essential microbial handling techniques, focusing on streaking, serial dilution, and plating methods. These methods are critical for isolating, quantifying, and cultivating microorganisms under controlled conditions.

The session began with a briefing on the importance of aseptic techniques to prevent contamination and ensure accurate results in microbiological experiments. The resource person highlighted the practical applications of streaking, dilution, and plating methods in research and industry. Later **Hands-On Session on Preparation of nutrient agar plates, Demonstration of streaking using aseptic techniques (quadrant method)** was done also participants practiced streaking with bacterial cultures under supervision.

In second session serial dilution was introduced as a method to quantify microbial populations in a sample. **Hands-On Session on preparation of serial dilutions (1:10, 1:100, 1:1000, etc.) and discussion on the importance of accuracy in pipetting and mixing during dilutions and Spread Plate Technique was demonstrated and performed by students.** Participants learned the spread plate method for enumerating microbial colonies.

Post lunch session was hands on training on **Pour Plate Technique** were mixing measured volumes of diluted microbial suspension with sterile molten agar, pouring the mixture into sterile petri plates and allowing it to solidify and incubating of plates for colony development was carried out.

Day 2 started with the discussion on interpretation of results of isolation techniques and calculation of colony forming units (CFU)

Day 3 sessions focused on "**Different Types of Media**"-The preparation and application of differential and specific media for studying microbial growth.

Differential media are designed to distinguish between microorganisms based on their biochemical characteristics. For example, **MacConkey agar** differentiates lactose fermenters (pink colonies) from non-fermenters (colourless colonies) due to the presence of lactose and pH indicators.

Specific media, also called selective media, promote the growth of particular microbes while inhibiting others. **Mannitol Salt Agar (MSA)** supports the growth of halophiles like *Staphylococcus spp.*, where mannitol fermentation produces a yellow colour change.

Participants observed unique growth patterns on these media, reflecting microbial metabolism. For instance, *E. coli* showed bright pink colonies on MacConkey agar, while *Staphylococcus aureus* turned MSA yellow. This session enhanced participants' understanding of how media can be tailored to isolate and identify microorganisms effectively.

At the end, a test was given to the students for the assessment of their understanding and knowledge of the concepts of the value-added program and the feedback on the add on program was taken from the students.

Outcome of the Value-Added Programme

- This workshop envisions to make students well acquainted with basic techniques of isolation of pure cultures which will help them to perform efficiently with better understanding and designing new approaches in Basic Microbiological Research. Participants expressed satisfaction with the hands-on experience and theoretical sessions.

Department of Microbiology
Organizes
Value Added Programme
On
BASIC TECHNIQUES IN MICROBIOLOGY

COURSE CONTENT

Module 1 (Basics of Pure Culture)

- Introduction to pure culture
- Types of pure culture techniques

Module 2 (Concepts of Sampling and Serial Dilution)

- Sample selection
- Concept of serial dilution

Module 3 (Pure Culture Techniques)

- Different types of streak plate methods
- Spread plate technique
- Pour plate technique
- Counting the colonies using colony counter
- Interpretation of results

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Programme Schedule

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