



<b>Subject</b>	<b>Microbiology</b>
<b>Paper No. and Title</b>	<b>Microbial techniques P-II</b>
<b>Module Title</b>	<b>Monochrome staining</b>
<b>Module Tag</b>	<b>DAYA.MICRO.M1SND</b>

By,

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**Module No. 1**

## Title - Monochrome Staining

- **Prerequisites** – 1. use of compound microscope
  2. preparation of saline
  3. use of aseptic technique
  4. preparation of staining solutions
  
- **Objectives of the Module**
  1. Learn to prepare suspension of bacterial culture aseptically.
  2. Learn how to prepare a bacterial smear & fix on slide from cultured organisms.
  3. Learn how to perform the monochrome staining procedure.
  4. Use oil immersion objective of compound microscope to examine gram stained cells.
  5. Learn how to study morphology of bacteria to identify & classify them.

### → Unit 1.1 – Introduction

	Content	Objectives (Learner should be able to )	Cognitive Level
A	Definition of staining & necessity	Define staining	Remembering
		Memorise the definition staining	Remembering
		Recall the definition of staining	Remembering
		Necessity of staining	Understanding
		Compare stained cells with unstained	apply
	Observe unstained & stained cell under microscope	Evaluating	
B	<b>TERMS RELATED TO STAINING</b>	Define -stain dye, fixation	Understanding
		Memorise- what is stain dye, fixation	Understanding
		Recall – definitions of stain dye, fixation	
		Necessity of fixation	Applying
		Compare the Definition of stain & dye	Analysing

### Unit 1.2 - Staining techniques & kinds of stains

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	Content	Objectives (Learner should be able to )	Cognitive Level
1	introduction	Definition of monochrome staining	remembering
		Understand what is monochrome	Understanding
		Examples of stains used	Remembering

		Recall the examples	Understanding
		Significance of monochrome staining	apply
2	Principle	mechanism	Understanding
		Recall mechanism	Remembering
3	Procedure	Steps involved	Understanding
		Recall Steps involved	Remembering
		Memorise the illustrations	Remembering
		Perform actual staining	apply
		Observe stained cells	evaluating

## Detailed Plan of Out-of -class and In-class activities

### Week 1

#### Unit 1.1 – Introduction

#### Objectives –

- To know the definition of various terms
- To understand the deference between stain & dye
- To understand necessity of staining

### Week 2

#### Unit 1.2 - Staining techniques & kinds of stains

#### Objectives –

- To know meaning of monochrome staining
- To understand steps involved in monochrome staining
- To know purpose of monochrome staining

Units	Out-of –class activity Details of Activity	In-class activity Details of Activity	Assessment
1.1	Students should read out the topic from Text book  Students should refer ppt & notes	Discussion on the topic Check the level of understanding through Question – answer session	Question – answer session
1.2	Students should	Same as above	Question to write in

	<p>read out the topic from Text book</p> <p>Students should listen the recordings</p>	<p>Help students to apply the various terms</p>	<p>detail</p>
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## Resources Needed –

→ Title and Nature of Resources –

### 1] Syllabus of B.Sc.I of Microbiology

Link:

<https://classroom.google.com/c/MzM4NjgzODA3ODEz/p/MzM4NjkwOTM1NzU4/details>

### 1] Reference Books

1. Tortora GJ, Funke BR and Case CL. (2008). Microbiology: An Introduction. 9th edition. Pearson Education
2. Cappucino J and Sherman N. (2010). Microbiology: A Laboratory Manual. 9th edition. Pearson Education Limited
3. Pelczar MJ, Chan ECS and Krieg NR. (1993). Microbiology. 5th edition. McGraw Hill Book Company.

### 2) Instructor-made -

PPT -

<https://classroom.google.com/c/MzM4NjgzODA3ODEz/p/MzM4NjkwOTM1NzAz/details>

### 3) Instructor-made -

Notes-

<https://classroom.google.com/c/MzM4NjgzODA3ODEz/p/MzM4NjkwOTM1NjU5/details>

### 4] Instructor prepared assessment:

<https://classroom.google.com/c/MzM4NjgzODA3ODEz/p/MzM4NjkwOTM1NzEx/details>