



Subject	Microbiology
Paper No. and Title	Microbial techniques P-II
Module Title	Gram staining
Module Tag	DAYA.MICRO.M2SND

By,

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Module No. 2

Title - Gram Staining

- **Prerequisites** – 1.use of compound microscope
 - 2.preparation of saline &suspension
 3. use of aseptic technique
 4. preparation of staining solutions
 - 5.how to fix smear
- **Objectives of the Module**
 1. Learn the differences between simple staining and differential staining techniques.
 2. Learn how to know role of various staining solutions.
 3. Learn the differences between gram positive and gram negative bacteria.
 4. Learn how to perform the gram stain procedure.
 5. Use oil immersion objective of compound microscope to examine gram stained cells.
 6. Learn to apply the Gram staining to diagnose diseases.
 - 7.Learn how to study morphology& gram nature of bacteria to identify & classify them.

→ Unit 2.1 – Introduction

	Content	Objectives (Learner should be able to)	Cognitive Level
	Definitions of terms	Define differential staining,Gram positive & Gram negative bacteria	Remembering
		Memorise the definition of differential staining, Gram positive & Gram negative bacteria	Remembering
		Recall the definitions	Remembering
		Necessity of staining	Understanding
		Compare stained cells with unstained	apply
		Observe unstained & stained cell under microscope	Evaluating &analysing

Unit 2.2 - Principle, technique & applications

	Content	Objectives (Learner should be able to)	Cognitive Level
A	Principle	Definition of various terms	remembering
		Understand various terms	Understanding
		Examples of priary,counterstain decolorizer,mordant	Remembering
		Recall the examples	Understanding
B	Requirement	Know what solutions required	Understanding
		Recall solutions required	Remembering
C	Basic Steps	Steps involved	Understanding
		Recall Steps involved	Remembering
		Memorise the illustrations	Remembering
		Perform actual staining	Apply
		Observe stained cells	evaluating
D	Applications	Use method for studing morphology,gram nature of bacteria	Evaluating &apply

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

Week 1

Unit 2.1 – Introduction

Objectives –

- To know the definition of terms
- To understand the deference between differential & simple staining
- To understand necessity of staining

Week 2

Unit 2.2 – Principle ,technique & applications

Objectives –

1. Learn how to perform the gram stain procedure.
2. Use oil immersion objective of compound microscope to examine gram stained cells.
3. Learn to apply the Gram staining to diagnose diseases.
4. Learn how to study morphology& gram nature of bacteria to identify & classify them.

Units	Out-of –class activity Details of Activity	In-class activity Details of Activity	Assessment
2.1	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
2.2	Students should read out the topic from Text book Students should listen the recordings	Same as above Help students to apply the various terms	Question to write in detail

Resources Needed –

→ Title and Nature of Resources –

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/MzM4OTY0ODc3NzYw/details>

3) Instructor-made -
Notes-

<https://classroom.google.com/c/MzM4NjgzODA3ODEz/p/MzM4OTY0ODc3NzMw/details>

4]Instructor prepared assessment:

<https://classroom.google.com/c/MzM4NjgzODA3ODEz/p/MzM4OTcwMDA2MDc5/details>