

## Lesson Plan

Name of the Faculty	: Sh.Ashish
Discipline	: Medical Lab Technology
Year	: 1 <sup>st</sup> SEM
Subject	: BASIC MICROBIOLOGY-I
Lesson Plan	: 15 weeks
Work load (lecture/practical) per week (in hours)	: Lectures-03, practicals-04

Week	Theory			Practical	
	Lecture day	Date	Topic (including assignment test)	Practical Day (2 hours lab each day), (2 hours each day*2 days in week=4 weekly load)	Topic
1 <sup>st</sup>	1 <sup>st</sup>		Definition, history, relationship of microorganisms to man.		Demonstration of safety rules (Universal precautions) in a microbiology laboratory.
	2 <sup>nd</sup>		Safety guideline in a microbiology laboratory. Universal precautions		
	3 <sup>rd</sup>		Bio-safety cabinets: principle, types of bio-safety cabinets and their applications.		
2 <sup>nd</sup>	4 <sup>th</sup>		i. Classification of micro-organisms		Preparation of cleaning agents and techniques of cleaning glasswares.
	5 <sup>th</sup>		ii. Morphology of Bacteria		
	6 <sup>th</sup>		iii. Bacterial cell wall		
3 <sup>rd</sup>	7 <sup>th</sup>		iv. Cell wall structures		Preparation of materials for sterilization in an autoclave and hot air oven.
	8 <sup>th</sup>		v. Physiology of bacteria		
	9 <sup>th</sup>		vi. Bacterial growth and nutrition		
4 <sup>th</sup>	10 <sup>th</sup>		<b>Sterilization- definition and types of sterilization.</b> i. Physical methods of sterilization: Equipments used for sterilization, operation of autoclave and hot air oven, sterilization control and sterilization indicators. Sterilization by radiation and filtration (membrane).		Sterilization in autoclave and hot air oven and placing of the sterilization indicators.
	11 <sup>th</sup>				
	12 <sup>th</sup>				
5 <sup>th</sup>	13 <sup>th</sup>		Chemical methods of Sterilization: Antiseptics and disinfectants- Definition, types, properties and uses of common disinfectants and disinfectants (e.g. Formaldehyde, Ethylene oxide, phenol compounds, Alcohol, hypochlorite). Definition of Phenol coefficient and determination Phenol coefficient by Rideal Walker method.		Sterilization by filtration by membrane method.
	14 <sup>th</sup>				
	15 <sup>th</sup>				

6 <sup>th</sup>	16 <sup>th</sup>		<b>Microscopy and staining techniques</b> i. Handling of a compound microscope. Care and maintenance of different parts of a compound microscope. Principle of working of fluorescent microscope.		Handling and care of different types of microscopes.
	17 <sup>th</sup>				
	18 <sup>th</sup>				
7 <sup>th</sup>	19 <sup>th</sup>		ii. Staining techniques: Method of smear preparation. Differential staining methods: Gram staining, AFB staining, Albert's staining, staining of capsule. Preparation of staining solutions and their storage.		Staining techniques: Gram, Albert's staining, ZiehlNeelsonstaining, Capsule and bacterial spore staining.
	20 <sup>th</sup>				
	21 <sup>st</sup>				
8 <sup>th</sup>	22 <sup>nd</sup>		<b>Culture Media and culture techniques</b> i. Definition, synthetic and non-synthetic media. Types of culture media: liquid, and solid media, routine laboratory media (Basal. Enriched, selective, enrichment, indicator, transport, and storage) with two examples of each type.		Demonstration of bacterial motility by hanging drop technique.
	23 <sup>rd</sup>				
	24 <sup>th</sup>				
9 <sup>th</sup>	25 <sup>th</sup>		ii. Different types of inoculating loops, different types of swabs and their uses. Types of bacterial culture: broth culture, stab culture, slant culture. Culture techniques: streak plate, pour plate, spreading/ lawn culture, .Aerobic and anaerobic culture, Isolation of pure cultures and disposal of cultures.		Preparation of culture media: Nutrient agar, blood agar, chocolate agar, MacConkey agar, DCA, XLD and Peptone water. Inoculation of bacteria on these culture media by aerobic / anaerobic culture method.
	26 <sup>th</sup>				
	27 <sup>th</sup>				
10 <sup>th</sup>	28 <sup>th</sup>		REVISION		Isolation of organisms in pure culture, study of colony characteristics and demonstration of haemolysis on blood agar.
	29 <sup>th</sup>		REVISION		
	30 <sup>th</sup>		REVISION		
11 <sup>th</sup>	31 <sup>st</sup>		REVISION		REVISION
	32 <sup>nd</sup>		REVISION		
	33 <sup>rd</sup>		REVISION		
12 <sup>th</sup>	34 <sup>th</sup>		REVISION		REVISION
	35 <sup>th</sup>		REVISION		
	36 <sup>th</sup>		REVISION		
13 <sup>th</sup>	37 <sup>th</sup>		REVISION		REVISION
	38 <sup>th</sup>		REVISION		
	39 <sup>th</sup>		REVISION		
14 <sup>th</sup>	40 <sup>th</sup>		REVISION		REVISION
	41 <sup>st</sup>		REVISION		
	42 <sup>nd</sup>		REVISION		
15 <sup>th</sup>	43 <sup>rd</sup>		REVISION		REVISION
	44 <sup>th</sup>		REVISION		
	45 <sup>th</sup>		REVISION		

